

# Gulf Canada Corporation Coal Division Geophysical Log

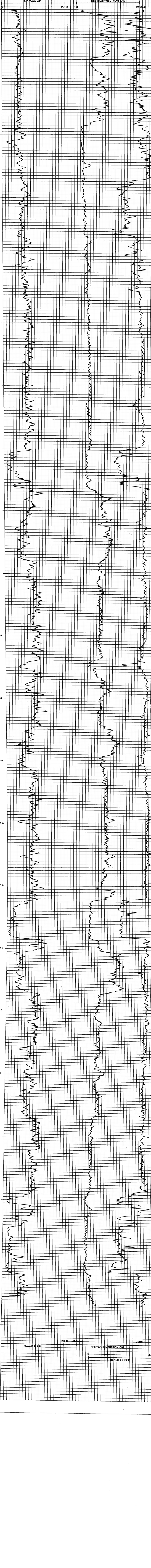
# 723

Datasource: **KPNLRDDH86009** Province: BC Northing: 6344520.00 Lat: 571444  
 Log Date: 86-09-01 Zone: 9 Easting: 507380.00 Long: 1285240  
 Company: CENTURY Measuring Point: Elevation: 1595.6  
 Geologist: LOVE

Scale: 1 to 100.0  
 Depth Range: 0.0 to 212.0  
 True Thickness: NO

Comments:  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



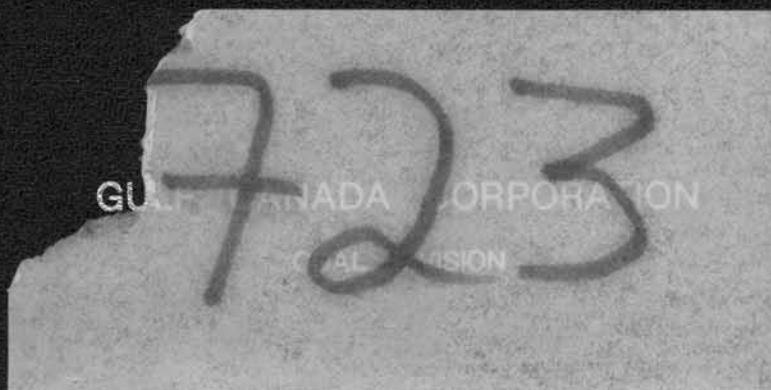


MOUNT KLAPPAN ANTHRACITE PROJECT  
LOST - FOX AREA  
GEOLOGICAL REPORT  
1986

APPENDIX IV

DIAMOND DRILL HOLE DATA  
VOLUME II

KPNLRDDH 86010  
TO  
KPNLRDDH 86019





KPNLRDDH86010



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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86010

DATE - 02/13/87

- HISTORY -

START DATE - 29/08/86  
END DATE - 01/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - BARKER

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC  
ELEVATION - 1547.13

ZONE - 9  
NORTHING - 6344713.00  
EASTING - 507615.75

LICENCE/LEASE NUMBER -

LATITUDE - 571450  
LONGITUDE - 1285226

- ORIENTATION -

LENGTH - 181.96  
CORE SIZE - 0.0

INCLINATION - 90.0  
AZIMUTH - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

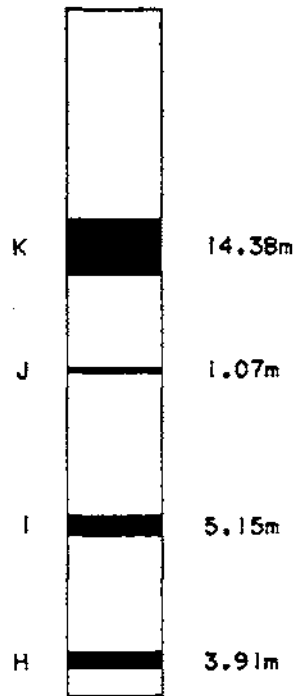
CASING DEPTH (M) - 30.48  
AQUIFER DEPTHS (M) - 0.00  
0.00  
LOST CIRC. DEPTHS (M) - 0.00  
0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



SEAM      TRUE SEAM THICKNESS  
                 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86010

GULF CANADA CORPORATION  
11/03/87  
KLAP: [205057]870063010.LOG





87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	30.48	30.48	60			OVERBURDEN	CASING.
1	30.48	30.74	0.26	60			SANDSTONE	M. GY. VBRKN CORE TWIST OFF. RUBBLE. ROUNDED CHUNKS OF FINE ANDMG SANDSTONE. OVBDR.
1	30.74	30.85	0.11	60			MUDSTONE	CARB. DK. GY. MAS. VBRKN COAL STRINGERS 1-15 MM WIDE.
1	30.85	32.61	1.76	60			ROCK LOSS	
1	32.61	32.98	0.37	60			MUDSTONE	CARB. DK. GY. MAS. VBRKN COAL STRINGERS 1-10 MM WIDE. PYRITE LEN SES 15 MM WIDE. CRUSHED CORE.
1	32.98	33.83	0.85	60			ROCK LOSS	
1	33.83	34.14	0.31	60			MUDSTONE	CARB. DK. GY. MAS. VBRKN POORLY CONSOLIDATED SLUMP FROM UPHOLE? V. DARK. MASSIVE.
2	34.14	34.51	0.37	60			MUDSTONE	CARB. DK. GY. MAS. VBRKN V. POORLY CONSOLIDATED LIKE PLASTICENE. SLUMP FROM UPHOLE?
2	34.51	35.97	1.46	60			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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	35.97	36.61	0.64	60			MUDSTONE	DK. GY. MAS. BIOTR. VBRKN FAINT BIOTURBATION & MOTTLING. MINOR DI SSEMINATED PYRITE.
3	36.61	36.74	0.13	60			MUDSTONE	CARB. DK. GY. MAS. BIOTR. VBRKN CRUSHED CORE. MINOR MOTTLING AT TOP OF BOX. COAL BLEBS(?) 1-2 CM IN DIAMETER.
3	36.74	37.49	0.75	60			ROCK LOSS	
3	37.49	38.14	0.65	*60			MUDSTONE	DK. GY. LAM. BIOTR. VBRKN OCC. V. FAINT LAMINAE. CRUSHED CORE. MIN OR BIOTURB'N & MOTTLING AS BELOW "L SEA M" IN 86004. ON ONE PIECE.
3	38.14	38.71	0.57	60			ROCK LOSS	
3	38.71	39.20	0.49	60			MUDSTONE	DK. GY. MAS. VBRKN CORE CRUSHED. SLICKENSIDES WITH TALC.
4	39.20	40.23	1.03	*60			MUDSTONE	DK. GY. LAM. VBRKN OCC. FAINT LAMINAE. CRUSHED CORE. SOME SLUMP FROM UPHOLE?
4	40.23	40.54	0.31	60			ROCK LOSS	

\* DENOTES MEASURED BCA



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	40.54	40.85	0.31	*60			MUDSTONE	DK. GY. LAM. VBRKN OCC. FAINT LAMINAE. CRUSHED CORE.
5	40.85	41.34	0.49	*35			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SLIGHTLY MORE SILT THAN ABOVE. FINE SILTY LAMINAE THROUGHOUT. BCA'S 30-40 DEGR EES.
5	41.34	41.76	0.42	28			ROCK LOSS	
5	41.76	42.35	0.59	*20			MUDSTONE	SLTY. DK. GY. LAM. VBRKN OCC FINE SILTY LAMINAE.
5	42.35	42.74	0.39	*18			MUDSTONE	SLTY. DK. GY. LAM. VBRKN MUDST BRECCIA. FAINTLY LAMINATED AS ABOVE. PIECES IN A CLAYEY MATRIX. FAULT ZONE?
6	42.74	43.87	1.13	*80			MUDSTONE	SLTY. DK. GY. LAM. VBRKN LITH. AS ABOVE. CLAY FRACTURE FILL. CORE CRUSHED IN PLACES. MUCH QTZ VEINING AT BASE OF INTERVAL.
6	43.87	44.81	0.94	79			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: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	44.81	45.05	0.24	78			MUDSTONE	SLTY. DK. GY. MAS. VBRKN CRUSHED CORE.
7	45.05	46.28	1.23	77			SILTSTONE	DK. GY. LAM. SSD. VBRKN SLIGHTLY COARSER THAN ABOVE. FLAME STRUCTURES. TOPS UP.
7	46.28	47.86	1.58	76			ROCK LOSS	
7	47.86	48.06	0.20	*75			SILTSTONE	DK. GY. LAM. BRKN LITH AS ABOVE.
8	48.06	49.37	1.31	*70			MUDSTONE	SLTY. DK. GY. VTHMB. BRKN FAINT BEDDING. GRADES FROM FINE MUD TO SILT WITHIN. 1-2 CM THICK BANDS.
7	49.37	49.69	0.32	70			ROCK LOSS	
8	49.69	50.22	0.53	70			MUDSTONE	SLTY. DK. GY. VTHMB. BRKN LITH AS ABOVE.
9	50.22	50.85	0.63	*70			MUDSTONE	CLYY. DK. GY. LAM. BRKN UNIFORM BEDDING. ALMOST RHYTHMIC.
9	50.85	52.01	1.16	*70			CLAYSTONE	M. GY. LAM. VBRKN GRADUALLY BECOMING MORE CLAYEY DOWNWARD. UNIFORM BEDDING 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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	52.01	52.10	0.09	70			CLAYSTONE	M.GY.MAS.BRKN AS ABOVE.V. UNIFORM CLAYSTONE. SHARP CO LOR BREAK AT BASE OF INTERVAL.
10	52.10	53.28	1.18	70			CLAYSTONE	LT.GY.MAS.VBRKN VERY LIGHT GREY. EXTREMELY FINE EVEN TEXTURE. LOOKS LIKE SMOOTH PORCELAIN. 3 C. M WIDE POORLY CONSOLIDATED CLAYEY BAND AT TOP.
10	53.28	53.56	0.28	70			ROCK LOSS	
10	53.56	53.78	0.22	70			CLAYSTONE	LT.GY.MAS.VBRKN LITH AS ABOVE.
11	53.78	55.04	1.26	*70			CLAYSTONE	LT.GY.MAS.VBRKN LITH AS ABOVE BUT BECOMING SLIGHTLY DARKER IN COLOR DOWNWARD. VERY GRADUAL CHANGE. TUFFITE? NO. BENTONITE.
11	55.04	55.10	0.06	71	05280		CLAYSTONE	SLTY.LT.GY.MAS.SLD POORLY CONSOLIDATED.SLIGHTLY SILTIER THAN ABOVE. GRADATIONAL UPPER CONTACT.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	55.10	55.21	0.11	71	05280		SANDSTONE	SLTY.FG.M.GY.MAS.BRKN SHARP UPPER AND LOWER CONTACTS. QZ VEINING. COAL BELOW.
11	55.21	55.48	0.27	71	05281 K		COAL	C-4.VBRKN
12	55.48	55.57	0.09	71	05281 K		COAL	C-3.BRKN
12	55.57	55.58	0.01	71	05281 K		COAL	C-6.SLD
12	55.58	55.63	0.05	71	05281 K		COAL	C-2.VBRKN
12	55.63	55.68	0.05	71	05281 K		MUDSTONE	CARB.DK.GY.SLD
12	55.68	56.30	0.62	71	05281 K		COAL	C-2.BRKN

\* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	56.30	56.37	0.07	72	05281	K	COAL	C-3.SLD
12	56.37	57.90	1.53	72	05281	K	COAL LOSS	SLD
12	57.90	57.96	0.06	73	05281	K	MUDSTONE	CARB.DK.GY.SLD MINOR PLANT FRAGS,SOME COALIFIED.
12	57.96	58.04	0.08	73	05281	K	COAL	C-3.SLD
12	58.04	58.90	0.86	74	05281	K	COAL	C-3.BRKN C-2 AND C-3.
13	58.90	59.20	0.30	74	05281	K	COAL	C-3.VBRKN
13	59.20	59.46	0.26	74	05281	K	COAL	C-3.BRKN
13	59.46	59.47	0.01	74	05281	K	MUDSTONE	CARB.DK.GY.SLD
13	59.47	60.18	0.71	75	05281	K	COAL	C-3.BRKN SHEARED,CONTORTED,AND POWDERED IN PLACE S. MUDDY BANDS WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	60.18	61.45	1.27	76	05281	K	COAL LOSS	
13	61.45	61.72	0.27	76	05282	K	MUDSTONE	CARB.DK.GY.BRKN MINOR PLANT FRAGS WITHIN.
14	61.72	62.52	0.80	77	05282	K	MUDSTONE	CARB.OK.GY.BRKN MINOR PLANT FRAGS WITHIN.
14	62.52	62.62	0.10	77	05283	K	COAL	C-3.BRKN
14	62.62	62.65	0.03	77	05283	K	COAL	C-6.SLD
14	62.65	63.12	0.47	77	05283	K	COAL	C-3.VBRKN
14	63.12	63.15	0.03	78	05283	K	MUDSTONE	CARB.DK.GY.SLD
14	63.15	63.21	0.06	78	05283	K	COAL	C-3.VBRKN
14	63.21	63.25	0.04	78	05283	K	COAL	C-6.SLD
14	63.25	63.54	0.29	78	05283	K	COAL	C-3.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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	63.54	63.72	0.18	78	05283	K	COAL	C-3.VBRKN
15	63.72	63.75	0.03	78	05283	K	MUDSTONE	CARB.DK.GY.SLD
15	63.75	63.96	0.21	78	05283	K	COAL	C-3.PHRD
15	63.96	64.26	0.30	79	05283	K	COAL	C-5.BRKN LAST 10 CM POWDERED.
15	64.26	65.10	0.84	79	05283	K	COAL LOSS	
15	65.10	65.42	0.32	80	05284	K	MUDSTONE	SLTY.M-DK.GY.BRKN PLANT FRAGS WITHIN.SLIGHTLY CARB.
15	65.42	66.15	0.73	80	05284	K	MUDSTONE	SLTY.M-DK.GY.BRKN PLANT FRAGS WITHIN. SLIGHTLY CARBONACEO US.
16	66.15	66.29	0.14	80	05284	K	MUDSTONE	SLTY.M-DK.GY.BRKN PLANT FRAGS WITHIN. SLIGHTLY CARBONACEO US.
16	66.29	66.34	0.05	80	05285	K	COAL	C-6.SLD BONE COAL.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	66.34	67.03	0.69	81	05285	K	COAL	C-4.BRKN MUDDY BANDS THROUGHOUT.SHEARED IN PLACE S.
16	67.03	67.69	0.66	81	05286	K	MUDSTONE	CARB.DK.GY.BRKN MINOR PLANT FRAGS WITHIN.
16	67.69	68.03	0.34	82	05287	K	COAL	C-3.SHRD VERY LOW BCA'S (15-30 DEGREES).
17	68.03	68.54	0.51	82	05287	K	COAL	C-3.SHRD LITRIC SURFACES ABUNDANT.
17	68.54	69.43	0.89	83	05287	K	COAL	C-3.VBRKN SHEARED MUDDY BANDS (CONTORTED) THROUGH OUT.
17	69.43	69.99	0.56	83	05287	K	COAL LOSS	
17	69.99	70.50	0.51	84	05288		MUDSTONE	CARB.DK.GY.BRKN PLANT FRAGS THROUGHOUT. UPPER 25 CM SAM PLED.
18	70.50	70.87	0.37	84			MUDSTONE	DK.GY.MAS.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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	70.87	71.01	0.14		85		ROCK LOSS	
18	71.01	71.93	0.92	*	85		MUDSTONE	SLTY. DK. GY. MAS. BIOTR. VBRKN SLIGHTLY SILTY. MUCH BIOTURBATION. GRAD ES DOWNHARD TO VFG SS SOMEWHERE WITHIN THE CRUSHED CORE.
19	71.93	72.04	0.11		78		SANDSTONE	SLTY. FG. LT. GY. MAS. SLD
19	72.04	72.81	0.77		72		SANDSTONE	SLTY. FG. LT. GY. MAS. BIOTR. BRKN BIOTRBN AT LOWER CONTACT WITH FG GRAINED. CLEANER SAND. SLICKENSIDES.
19	72.81	73.74	0.93		60		SANDSTONE	FG. LT. GY. MAS. BRKN CLEANER MASSIVE SAND THAN ABOVE. QTZ VEINING.
20	73.74	75.58	1.84	*	40		SANDSTONE	SLTY. FG. LT. GY. MAS. BRKN SAND AS ABOVE. OCC SILTY WISPS NEAR BASE.
21	75.58	76.70	1.12	*	70		SANDSTONE	SLTY. FG. LT. GY. MAS. BRKN MINOR SILTY LAMINAE. MORE MASSIVE DOWNWARD.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	76.70	77.22	0.52		71		ROCK LOSS	
21	77.22	77.97	0.75		72		SANDSTONE	FG. LT. GY. MAS. BRKN MASSIVE CLEAN SAND BELOW K SEAM.
22	77.97	79.03	1.06		74		SANDSTONE	FG. LT. GY. MAS. VBRKN AS ABOVE. QTZ VEINS THROUGHOUT.
22	79.03	79.28	0.25		75		ROCK LOSS	
22	79.28	79.81	0.53		75		SANDSTONE	FG. LT. GY. MAS. VBRKN LITH AS ABOVE.
23	79.81	80.55	0.74		76		SANDSTONE	FG. LT. GY. MAS. BRKN LITH AS ABOVE. QTZ VEINING THROUGHOUT.
23	80.55	81.51	0.96		78		SANDSTONE	FG. LT. GY. MAS. VBRKN LITH AS ABOVE.
23	81.51	81.67	0.16		78		ROCK LOSS	
24	81.67	82.35	0.68		79		SANDSTONE	FG. LT. GY. MAS. VBRKN LITH AS ABOVE. QTZ VEINING. SHARP LOWER CONTACT.
24	82.35	82.69	0.34		80		SILTSTONE	M. GY. LAM. VBRKN QTZ VEINING.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	82.69	83.33	0.64	81			SILTSTONE	M.GY.LAM.BRKN INTENSE QTZ VEINING AND BRECCIATION THROUGHOUT.
25	83.33	84.28	0.95	82			SILTSTONE	M.GY.LAM.VBRKN LITH AS ABOVE.
25	84.28	84.51	0.23	83			ROCK LOSS	
25	84.51	85.14	0.63	84			SILTSTONE	M.GY.LAM.VBRKN LITH AS ABOVE.
26	85.14	86.39	1.25	*85			SILTSTONE	M.GY.LAM.BRKN AS ABOVE.VERY FINELY LAM'D.APPROACHING COASTERS.
26	86.39	86.65	0.26	84			ROCK LOSS	
26	86.65	87.15	0.50	83			SILTSTONE	M.GY.LAM.BRKN SLIGHTLY FINER THAN ABOVE. COASTER LITHOLOGY. NOT YET FISSILE.
27	87.15	88.90	1.75	82			SILTSTONE	M.GY.LAM AS ABOVE.COASTER LITH.
28	88.90	89.30	0.40	*80			SILTSTONE	DK.GY.LAM.VBRKN COASTER ZONE. PARTS ALONG BEDDING MORE READILY THAN ABOVE.

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	89.30	89.70	0.40	80			ROCK LOSS	
28	89.70	89.97	0.27	80			SILTSTONE	DK.GY.LAM.VBRKN AS ABOVE.COASTERS.CORE TWIST OFF.
28	89.97	90.50	0.53	80			SILTSTONE	DK.GY.LAM.VBRKN AS ABOVE.COASTERS.
29	90.50	92.31	1.81	80			SILTSTONE	DK.GY.LAM.VBRKN AS ABOVE.
29	92.31	92.75	0.44	80			ROCK LOSS	
30	92.75	93.49	0.74	*80			SILTSTONE	DK.GY.LAM.VBRKN AS ABOVE. NOW FISSILE.
30	93.49	93.88	0.39	78			SILTSTONE	CARB.DK.GY.LAM.VBRKN MORE CARB THAN ABOVE. QTZ VEINING PARALLEL TO BEDDING. BCA'S 65-80 DEGREES.
30	93.88	94.36	0.48	77			ROCK LOSS	
30	94.36	94.64	0.28	75	05289		MUDSTONE	CARB.BLK.MAS.VSHRD POORLY CONSOLIDATED MIXTURE OF VERY CARB. MUDST GRADING TO C-5 COAL IN PLACES. J SEAM.

\* DENOTES MEASURED BCA

F  
M  
4  
0  
0  
1



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	94.64	94.72	0.08		75	05289	MUDSTONE	CARB. DK. GY. SLD
31	94.72	94.91	0.19		74	05290 J	COAL LOSS	
31	94.91	95.19	0.28		74	05290 J	COAL	C-3.VBRKN
31	95.19	95.24	0.05		73	05290 J	COAL	C-6.SLD
31	95.24	95.50	0.26		73	05290 J	COAL	C-2.VBRKN
31	95.50	95.53	0.03		72	05290 J	COAL	C-3.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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	95.53	95.57	0.04		72	05290 J	COAL LOSS	
31	95.57	95.65	0.08		72	05290 J	MUDSTONE	CARB. DK. GY. SLD COALY.
31	95.65	95.83	0.18		71	05290 J	COAL	C-4.BRKN MIXTURE OF COALY AND MUDDY BANDS.
31	95.83	96.79	0.96		70	05291	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT. UPPER 25 CM SAMPLED.
32	96.79	98.61	1.82	*65			MUDSTONE	SLTY. M. GY. MAS. BRKN PREDOMINANTLY MASSIVE MIXTURE OF FINE D. ARK MUD WITH FINE COALY STRINGERS TO FG SAND. RARE FAINT BEDDING.
33	98.61	98.72	0.11		68		MUDSTONE	SLTY. M. GY. MAS. BRKN LITH AS ABOVE.
33	98.72	100.12	1.40	*70			MUDSTONE	SLTY. M. GY. LAM. BIOTR. VBRKN MOTTLED-BIOTURBATION(?). BRECCIATED. FR AC. ZONE?
33	100.12	100.36	0.24		66		ROCK LOSS	

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	100.36	100.61	0.25	65			MUDSTONE	SLTY. M. GY. MAS. YBRKN NO BEDDING VISIBLE.
34	100.61	101.09	0.48	64			ROCK LOSS	
34	101.09	102.16	1.07	*60			MUDSTONE	SLTY. M. GY. MAS. YBRKN V. FAINT RARE BEDDING.
34	102.16	102.25	0.09	60			MUDSTONE	SLTY. M. GY. MAS. SLD
35	102.25	103.91	1.66	60			MUDSTONE	SLTY. M. GY. MAS. BIOTR. BRKN V. FAINT SWIRLED (BIOTR?) BEDDING EVIDE NT AT CONTACT WITH SILTIER MUDST DOWNNA RD.
36	103.91	104.69	0.78	60			SILTSTONE	M. GY. MAS. BIOTR. YBRKN SWIRLED TEXTURE.
36	104.69	105.21	0.52	60			ROCK LOSS	
36	105.21	106.00	0.79	60			SILTSTONE	DK. GY. MAS. YBRKN DARKER AND SLIGHTLY LESS SILT THAN ABOVE.
37	106.00	108.00	2.00	*60			SILTSTONE	SSY. M. GY. LAM. WRMBU. BRKN FINELY LAMINATED. SSD AND VERT WRMBURS 5 MM WIDE THROUGHOUT. MUD TO FG SAND LA MINAE THROUGHOUT. TOPSUP.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	108.00	108.26	0.26	60			ROCK LOSS	
38	108.26	110.13	1.87	60			SILTSTONE	SSY. M. GY. LAM. WRMBU. BRKN LITH AS ABOVE WITH SLIGHTLY MORE SAND T HAN ABOVE. MINOR QTZ VEINING.
39	110.13	110.93	0.80	60			SANDSTONE	SLTY. FG. M. GY. LAM. XBDG. BRKN FINE DARK MISPY SILT LAMS.
39	110.93	112.00	1.07	*60			SANDSTONE	SLTY. FG. M. GY. LAM. XBDG. BRKN LITH AS ABOVE. QTZ VEINING. ONE 2 CM WI DE QTZ VEIN.
40	112.00	113.22	1.22	61			SANDSTONE	SLTY. FG. M. GY. LAM. SSD. YBRKN SLIGHTLY FEWER SILT LAMINAE THAN ABOVE. MODERATE QTZ VEINING. SCOURED SILT LAMI NAE.
40	113.22	113.37	0.15	62			ROCK LOSS	
40	113.37	113.52	0.15	62			SANDSTONE	FG. M. GY. LAM. YBRKN LITH AS ABOVE.
40	113.52	113.82	0.30	62			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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	113.82	115.02	1.20	63			BRECCIA	FG.M.GY.LAM.VBRKN SANDSTONE PIECES IN INTENSE QTZ VEINING AND FG SILTY FRAC FILL. FRAC ZONE?
41	115.02	115.50	0.48	63			ROCK LOSS	
41	115.50	115.85	0.35	64			BRECCIA	FG.M.GY.MAS.BRKN QTZ BRECCIA.SS PIECES.
42	115.85	116.65	0.80	64			SILTSTONE	SSY.M.GY.LAM.VBRKN V. FINELY LAMINATED. HIGHLY BRECCIATED THROUGHOUT. QTZ VEINING.
42	116.65	116.72	0.07	65			ROCK LOSS	
42	116.72	117.42	0.70	*65			SILTSTONE	SSY.M.GY.LAM.VBRKN LITH AS ABOVE. SANDIER DOWNHARD.
43	117.42	118.95	1.53	*65			SANDSTONE	SLTY.FG.M.GY.LAM.VBRKN FINE WISPY SILT LAMINAE THROUGHOUT. COA RSENS DOWNHARD. MOD QTZ VEINING.
43	118.95	119.46	0.51	65			ROCK LOSS	
43	119.46	119.58	0.12	65			SANDSTONE	FG.M.GY.MAS.BRKN LESS SILT THAN 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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	119.58	120.37	0.79	65			SANDSTONE	FG.LT.GY.MAS.BRKN MASSIVE SAND AS ABOVE.
44	120.37	121.40	1.03	*65			SILTSTONE	SSY.M.GY.LAM.WRMBU.BRKN VERY FINELY LAM'D. VERT WRMBURS 2-3 MM WIDE. SHARPPER CONTACT WITH OVERLYING SAND. SANDIER DOWNHARD.
44	121.40	121.71	0.31	68			ROCK LOSS	
45	121.71	122.80	1.09	70			SANDSTONE	FG.M.GY.MAS.VBRKN BRECCIA. FRAC ZONE(?). INTENSE QTZ VEINING AND SHEARING WITH CLAY FRAC FILL.
45	122.80	123.54	0.74	74			ROCK LOSS	
45	123.54	123.85	0.31	76			SILTSTONE	SSY.M.GY.LAM.VBRKN LAM'D SILTY SS. INTENSE QTZ VEINING AT TOP OF INTERVAL.
46	123.85	125.62	1.77	*80			SILTSTONE	SSY.M.GY.LAM.SSD.VBRKN FINELY LAM'D SANDY SILTST BRECCIA. SHEA RED CLAY FRAC FILL. SSD. VERTICAL 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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	125.62	125.93	0.31	79			ROCK LOSS	
47	125.93	126.56	0.63	78			SILTSTONE	SSY.M.GY.LAM.WRMBU.VBRKN LITH AS ABOVE.
47	126.56	126.90	0.34	78			ROCK LOSS	
47	126.90	127.44	0.54	77			SILTSTONE	SSY.M.GY.LAM.VBRKN LITH AS ABOVE WITH INTENSE QUARTZ VEINING.
47	127.44	127.82	0.38	77			ROCK LOSS	
47	127.82	128.30	0.48	76			SILTSTONE	M.GY.LAM.SLD LESS SAND THAN ABOVE.
48	128.30	130.05	1.75	*75			SILTSTONE	M.GY.LAM.WRMBU.BRKN FINE GRAINED FINELY LAMINATED SILTST. W RMBURS. 1-2 MM WIDE.
48	130.05	130.31	0.26	75			SILTSTONE	M.GY.LAM.BRKN LITH AS ABOVE.
49	130.31	132.20	1.89	*75			SILTSTONE	M.GY.LAM.XBDG.BRKN LITH AS ABOVE. LESS BIOGENIC ACTIVITY. FAINTER, MORE EVEN BEDDING. QTZ VEINING.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	132.20	132.77	0.57	75			SILTSTONE	CLY.M.GY.LAM.BRKN SILTST SIMILAR TO TUFFITE ABOVE I SEAM BUT DARKER IN COLOUR. FRACTURES WITH CLAY FILL. 2-3 CM WIDE QTZ VEINS.
50	132.77	133.44	0.67	75			CLAYSTONE	M.GY.LAM.XBDG.BRKN MINOR DARK SILTY CROSS LAMINATIONS, BECOMES LESS SILTY DOWNWARDS AND APPEARS SIMILAR TO CLAYSTONE ADJACENT TO BENTONITE ABOVE I SEAM.
50	133.44	133.48	0.04	75			BENTONITE	LT.GY.MAS.BRKN SOFT. APPEARS TO BE BENTONITE BUT IS THINER THAN A FRACTURE (CROSS CUTS BEDDING). SHARP UPPER AND LOWER CONTACTS.
50	133.48	134.12	0.64	75			MUDSTONE	DK.GY.MAS.SLD MODERATE QTZ VEINING.
51	134.12	134.68	0.56	75	05292		MUDSTONE	CARB.W-DK.GY.SLD COALY STRINGERS AT BASE. LOWER 25 CM SAMPLED.
51	134.68	134.89	0.21	75	05293	I	COAL	C-2.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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	134.89	134.91	0.02	75	05293	I	MUDSTONE	CARB. DK. GY. SLD
51	134.91	134.95	0.04	75	05293	I	COAL	C-3. SLD
51	134.95	134.98	0.03	75	05293	I	MUDSTONE	CARB. DK. GY. SLD
51	134.98	135.12	0.14	75	05293	I	COAL	C-2. SHRD
51	135.12	135.15	0.03	75	05293	I	COAL	C-3. SLD
51	135.15	135.27	0.12	75	05293	I	COAL LOSS	
51	135.27	135.41	0.14	75	05293	I	MUDSTONE	SLTY. M-DK. GY. BRKN
51	135.41	135.62	0.21	75	05293	I	COAL	C-3. 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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	135.62	135.72	0.10	75	05293	I	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
51	135.72	136.10	0.38	75	05293	I	COAL	C-2. VBRKN
51	136.10	136.13	0.03	75	05293	I	COAL	C-6. SLD BONE COAL.
51	136.13	136.16	0.03	75	05293	I	COAL	C-2. VBRKN
52	136.16	136.31	0.15	75	05293	I	COAL	C-2. VBRKN POWDERED IN PLACES.
52	136.31	136.65	0.34	75	05293	I	COAL LOSS	
52	136.65	136.75	0.10	75	05293	I	MUDSTONE	CARB. DK. GY. BRKN VERY CARB. AND COALY.
52	136.75	138.18	1.43	75	05294	I	COAL	C-2. VBRKN SHEARED AND POWDERED IN PLACES. QUALITY C-1 PERIODICALLY.
52	138.18	138.51	0.33	75	05294	I	COAL LOSS	
52	138.51	138.61	0.10	75	05294	I	COAL	C-2. 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: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	132.61	140.01	1.40	75	05294	I	COAL	C-1.VBRKN
52	140.01	140.49	0.48	75	05295		MUDSTONE	CARB.DK.GY.SHRD LITRST SURFACES ABUNDANT. UPPER 25 CM S AMPLED.
54	140.49	141.84	1.35	75			BRECCIA	DK.GY.MAS.VBRKN SILTST BRECCIA WITH POORLY CONSOLIDATED CLAYEY MATRIX.
54	141.84	141.89	0.05	75			BRECCIA	DK.GY.MAS.VBRKN LITH AS ABOVE.
55	141.89	142.55	0.66	75			BRECCIA	DK.GY.MAS.VBRKN LITH AS ABOVE. BECOMES SANDIER AT BASE.
55	142.55	143.37	0.82	75			ROCK LOSS	
55	143.37	144.34	0.97	75			SANDSTONE	FG-LT.GY.MAS.VBRKN MODERATE QTZ VEINING. MUDST RIP UP CLAS TS. F-MG.
56	144.34	144.81	0.47	75			SANDSTONE	PBLY.MG.LT.GY.MAS.VBRKN CHERT & MUDST CLASTS 5-12 MM IN DIAMETE R.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	144.81	145.08	0.27	75			SANDSTONE	PBLY.MG.LT.GY.MAS.VBRKN LITH AS ABOVE. SHARP LOWER CONTACT.
56	145.08	145.38	0.30	75			ROCK LOSS	
56	145.38	146.43	1.05	*75			MUDSTONE	SLTY.DK.GY.LAM.WRMBU.VBRKN FINE SILT LAMINAE THROUGHOUT. XBDG AND HORIZ WRMBURS 1-3 MM WIDE.
57	146.43	146.94	0.51	73			MUDSTONE	SLTY.DK.GY.LAM.BRKN LITH AS ABOVE. 7 CM QTZ VEIN AT BASE.
57	146.94	148.30	1.36	70			MUDSTONE	DK.GY.LAM.VBRKN LITH AS MUDST ABOVE WITH FEWER LAMINAE.
58	148.30	149.82	1.52	*65			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.VBRKN SILT MIXED IN BY BIOTURBATION AT TOP. F INE LAMINAE THROUGHOUT REST OF INTERVAL. VERT WRMBURS 5-10 MM WIDE. SLICKENSIDE S.
58	149.82	150.00	0.18	65			ROCK LOSS	
58	150.00	150.23	0.23	65			MUDSTONE	SLTY.DK.GY.LAM.WRMBU.VBRKN LITH SAME AS ABOVE. SLICKENSIDES WITH T ALC.

\* DENOTES MEASURED BCA

FORM 40001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	150.23	151.41	1.18	*65			MUDSTONE	SLTY. DK. GY. LAM. HRMBU. BRKN LITH AS ABOVE. HRMBURS THROUGHOUT.
59	151.41	151.97	0.56	65			SANDSTONE	FG. LT. GY. VTHNB. BRKN TWO 1 CM WIDE MUD BANDS. MUDST RIPUP CLASTS. SAND RANGES FROM SILT TO CG CLASTS.
60	151.97	152.64	0.67	*65			SANDSTONE	CG. LT. GY. VTHNB. BRKN SIMILAR TO SILTY BANDED SAND BUT THE SAND BANDS ARE CG TO VCGR. SILT BANDS WITH SHARP CONTACTS THROUGHOUT. M-I INTERSEAM.
60	152.64	153.05	0.41	64			ROCK LOSS	
60	153.05	154.03	0.98	62			SANDSTONE	MG. LT. GY. VTHNB. BRKN SIMILAR TO ABOVE LITHOLOGY BUT SLIGHTLY FINER GRAINED. COALY RIPUP CLASTS.
61	154.03	154.16	0.13	61			SANDSTONE	MG. VPR. LT. GY. VTHNB. BRKN LITH AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	154.16	154.59	0.43	*60			SANDSTONE	MG. VPR. LT. GY. LAM. XBDG. BRKN LITH AS ABOVE WITH FINE SILT XBDG LAMINAE IN ADDITION TO THE VTHNB SILT BANDS.
61	154.59	155.08	0.49	61			SANDSTONE	CG. VPR. LT. GY. VTHNB. SLD V. HIGH ENERGY. NUMEROUS LARGE MUDST RIPUP CLASTS.
61	155.08	155.94	0.86	63			SANDSTONE	FG. VPR. M. GY. VTHNB. HRMBU. VBRKN FINER GRAINED THAN ABOVE. CLOSER TO USUAL-LOOKING SILTY BANDED SANDST UNIT WITH A 4CM WIDE "STORMY BAND" MUDST RIPUP CLASTS. VERT. HRMBURS. 1 CM WIDE. FG-MG.
61	155.94	156.02	0.08	64			ROCK LOSS	
62	156.02	156.15	0.13	64			SANDSTONE	FG. VPR. M. GY. VTHNB. VBRKN LITH AS ABOVE. SHARP LOWER CONTACT. FG-MG.
62	156.15	156.69	0.54	65			MUDSTONE	DK. GY. MAS. VBRKN DARK UNIFORM MUDST. LISTRIC SURFACES. CALIFIED PLANT WASH THROUGHOUT. 5 CM WIDE PYRITE BAND.

\* DENOTES MEASURED BCA



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	156.69	157.29	0.60	67			ROCK LOSS	
62	157.29	158.03	0.74	69			MUDSTONE	DK.GY.MAS.VBRKN LITH AS ABOVE. COALIFIED PLANT MAT'L THR OUGHOUT.
62	158.03	158.83	0.80	71			ROCK LOSS	
63	158.83	160.59	1.76	74			MUDSTONE	DK.GY.MAS.VBRKN LITH AS ABOVE BUT WITH LESS COALIFIED P LANT MAT'L AND LESS PLANT FOSSILS DOWNH ARD.
64	160.59	162.59	2.00	79			MUDSTONE	DK.GY.MAS.BRKN LITH AS ABOVE. DARK FEATURELESS MUDST. NO PLANTS, NO BIVALVES.
65	162.59	163.47	0.88	83			MUDSTONE	DK.GY.MAS.BRKN LITH AS ABOVE.
65	163.47	164.40	0.93	*85			MUDSTONE	DK.GY.VTHNB.BRKN FAINT COLOUR BANDS 2 CM WIDE. GRADATION AL CONTACTS. TWO 2 CM WIDE QTZ VEINS PA RALLEL TO BEDDING.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	164.40	164.73	0.33	84			ROCK LOSS	
66	164.73	166.52	1.79	83			MUDSTONE	DK.GY.VTHNB.BRKN AS ABOVE.
66	166.52	166.64	0.12	82			MUDSTONE	DK.GY.VTHNB.SLD AS ABOVE.
67	166.64	168.35	1.71	81			MUDSTONE	DK.GY.VTHNB.BRKN 2 CM BANDS OF WELL- AND LESS CONSOLIDAT ED MUDST.
68	168.35	169.13	0.78	*80			MUDSTONE	DK.GY.VTHNB.BRKN AS ABOVE.
68	169.13	170.23	1.10	80			MUDSTONE	DK.GY.LAM.BRKN MINOR SILTY LAMS.
69	170.23	171.65	1.42	80	05296		MUDSTONE	CARB.M-DK.GY.BRKN PLANT FRAGS THROUGHOUT. SILTY AT TOP. L OHER 25 CM SAMPLED.
69	171.65	171.80	0.15	80	05297	H	COAL	C-4.BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	171.80	172.00	0.20	80	05297	H	ROCK LOSS	
69	172.00	172.23	0.23	80	05297	H	COAL LOSS	
69	172.23	172.32	0.09	80	05297	H	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS WITHIN.
69	172.32	172.36	0.04	80	05297	H	COAL	C-3.SLD
69	172.36	172.43	0.07	80	05297	H	COAL	C-2.PMRD
69	172.43	172.62	0.19	80	05297	H	COAL	C-2.PMRD
70	172.62	172.87	0.25	80	05297	H	COAL	C-2.PMRD
70	172.87	172.89	0.02	80	05297	H	COAL	C-5.SLD
70	172.89	172.98	0.09	80	05297	H	COAL	C-2.PMRD
70	172.98	173.65	0.67	80	05297	H	COAL	C-3.VBRKN SHEARED. DIFFICULT TO DETERMINE GRADE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	173.65	173.68	0.03	80	05297	H	COAL	C-5.SLD
70	173.68	173.90	0.22	80	05297	H	MUDSTONE	CARB. DK. GY. BRKN PLANT FRAGS THROUGHOUT.
70	173.90	174.00	0.10	80	05298	H	COAL	C-3.VBRKN
70	174.00	174.21	0.21	80	05298	H	COAL LOSS	
70	174.21	174.28	0.07	80	05298	H	COAL	C-3.VBRKN
70	174.28	174.32	0.04	80	05298	H	MUDSTONE	CARB. DK. GY. SLD
70	174.32	174.46	0.14	80	05298	H	COAL	C-3.VBRKN
70	174.46	174.49	0.03	80	05298	H	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
71	174.49	174.55	0.06	80	05298	H	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
71	174.55	174.73	0.18	80	05298	H	COAL	C-3.SHRD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	174.73	174.80	0.07	80	05298	H	MUDSTONE	CARB. DK. GY. SLD QTZ WITHIN.
71	174.80	174.82	0.02	80	05298	H	COAL LOSS	
71	174.82	175.38	0.56	80	05298	H	COAL	C-2. SHRD
71	175.38	175.51	0.13	80	05298	H	COAL	C-2. SHRD
71	175.51	175.58	0.07	80	05298	H	MUDSTONE	CARB. DK. GY. SLD
71	175.58	175.62	0.04	80	05298	H	COAL	C-4. BRKN
71	175.62	176.21	0.59	80	05299		MUDSTONE	CARB. DK. GY. BRKN QTZ COALY LENSES & STRINGERS WITHIN. UP PER 25 CM SAMPLED.
72	176.21	178.15	1.94	80			MUDSTONE	CARB. BLK. MAS. BRKN PYRITE BLEBS. COALY STRINGERS 1-10 MM W IDE. SLICKENSIDES WITH TALC. MINOR QTZ.
73	178.15	178.22	0.07	80			MUDSTONE	CARB. BLK. MAS. BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	178.22	179.74	1.52	80			MUDSTONE	DK. GY. MAS. BRKN LESS CARB THAN ABOVE. SILTYER DOWNWARD.
73	179.74	180.00	0.26	80			SANDSTONE	SLTY. FG. VPR. DK. GY. MAS. BRKN SLUMPED UPPER CONTACT. MIXED WITH OVERL YING SILT. ONE MUDST RIPUP CLASTS.
74	180.00	180.93	0.93	80			SANDSTONE	SLTY. FG. VPR. M. GY. MAS. VBRKN LESS SILT THAN ABOVE. HIGHLY FRACTURED WITH CLAY FRACTURE FILL. ONE BRECCIATED ZONE 26 CM LONG. M.T.D. DRILLER'S MARK ER = 181.97 M.

\* DENOTES MEASURED BCA  
NEWPAGE









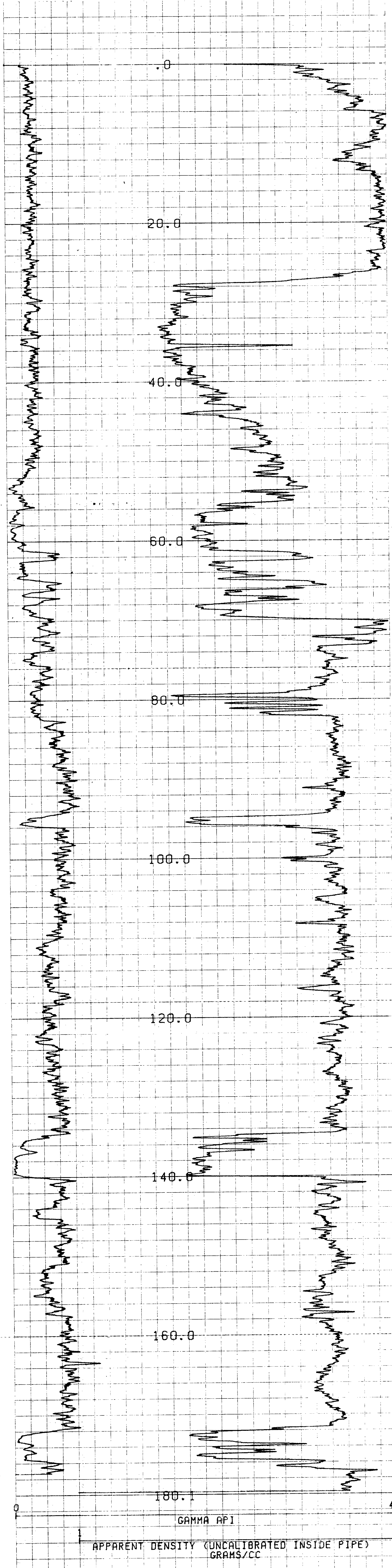












481

479

477

GAMMA API

APPARENT DENSITY (UNCALIBRATED INSIDE PIPE)  
GRAMS/CC

723

CDMPU-LOG V8L2 PLDT 09-01-86

DDH-86-10

GULF CANADA

MT. KLAPPAN

HOLE DIAMETER : 09.5

PROBE # 9030A - 444

SENSOR #4 CAL STD CPS = 6588

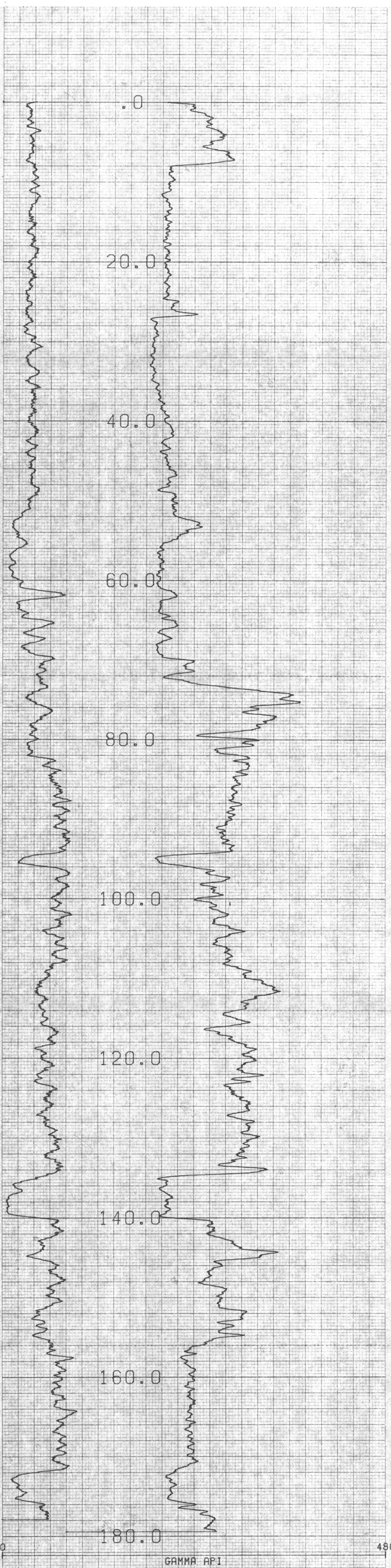
SENSOR #4 CAL RUN CPS = 3500

SENSOR #4 CAL BIAS = 17

DATA V8L2WA TRUCK # P811

S. FORSTER APPL.#3704L1





493

491

489

723

COMPU-LOG V8L2 PLOT 09-01-86  
 DDH-86-10  
 GULF CANADA  
 MT. KLAPPAN  
 HOLE DIAMETER : 09.5  
 PROBE # 9055A - 054  
 SENSOR #4 CAL STD CPS = 152  
 SENSOR #4 CAL RUN CPS = 194  
 SENSOR #4 CAL BIAS = 0  
 DATA V8L2WA TRUCK # P811  
 S. FORSTER APPL.#1007L1



KPNLRDDH86011

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRBDH86011

DATE - 02/13/87

- HISTORY -

START DATE - 01/09/86

END DATE - 02/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LOVE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1534.42

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6344537.00

EASTING - 507835.44

LATITUDE - 571445

LONGITUDE - 1285213

- ORIENTATION -

LENGTH - 66.14

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 7.62

AQUIFER DEPTHS (M) - 0.00

0.00

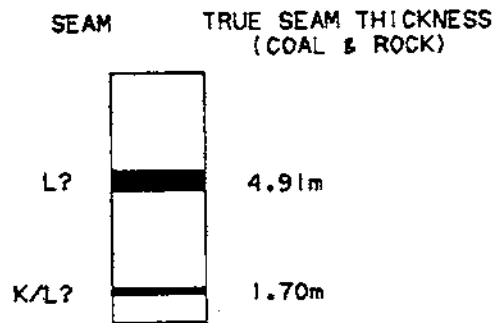
LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====





**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDHB6011

GULF CANADA CORPORATION  
11/03/87  
KLAP1(205057)870063011.L06



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	7.62	7.62	35			OVERBURDEN	CASING.
1	7.62	8.17	0.55	35			SANDSTONE	SLTY. FG. VPR. M. GY. VBRKN APPROACHING THE CONSISTENCY OF CHUNKY PEANUT BUTTER. VERY SOFT AND WEATHERED.
1	8.17	9.14	0.97	35			ROCK LOSS	
1	9.14	9.49	0.35	35			SANDSTONE	SLTY. FG. VPR. M. GY. VBRKN SAME AS ABOVE.
1	9.49	10.97	1.48	35			ROCK LOSS	
1	10.97	11.37	0.40	35			SANDSTONE	SLTY. FG. VPR. M. GY. VBRKN SAME AS ABOVE.
1	11.37	12.19	0.82	35			ROCK LOSS	
1	12.19	12.39	0.20	35			SANDSTONE	SLTY. FG. VPR. M. GY. VBRKN SAME AS ABOVE.
2	12.39	13.69	1.30	*35			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. BRKN WISPY WITH RARE, V THIN BEDS OF SILT. S LIGHTLY UNDULOSE LAYERING.
2	13.69	14.33	0.64	37			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	14.33	14.47	0.14	38			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. BRKN SAME AS ABOVE.
3	14.47	15.51	1.04	39			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE BUT VERY VERY BROKEN IN PLACES.
3	15.51	17.38	1.87	42			ROCK LOSS	
3	17.38	17.72	0.34	*44			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. SSD. BRKN SAME ROCK TYPE AS ABOVE. TOPS UP.
4	17.72	19.37	1.65	*55			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. SSD. BRKN LOCALLY VBRKN. LOCALLY SHEARED WITH MANY LISTRIC SURFACES. FEW THIN SILTY BEDS, MOSTLY WISPY.
5	19.37	19.63	0.26	60			SANDSTONE	SLTY. FG. VPR. LT-M. GY. LAM. SSD. BRKN SAME AS ABOVE.
5	19.63	20.43	0.80	63			ROCK LOSS	
5	20.43	21.51	1.08	*68			SANDSTONE	SLTY. FG. VPR. LT-M. GY. VTHNB. SSD. BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	21.51	22.75	1.24	*37			SANDSTONE	SILTY, FG, VPR, LT-M, GY, LAM, SSD, BRKN LOCALLY VBRKN, FEW V THIN SILTY BEDS, M OSTLY WISPY, SIMILAR TO ABOVE, TOPS UP.
6	22.75	23.30	0.55	47			SANDSTONE	SILTY, VFG, VPR, LT-M, GY, LAM, SSD, SHRD SIMILAR TO ROCK TYPE ABOVE.
6	23.30	23.69	0.39	53			ROCK LOSS	
7	23.69	25.44	1.75	*65	05271		SILTSTONE	SSY, YPR, M, GY, LAM, SSD, BRKN GRADATIONAL FROM ABOVE, LESS WISPY, MORE DISTINCT LAMINAE, BECOMING SHEARED TOW ARDS BASE AND SOFTER, FEW COALY LENSES NEAR BASE, LOWER 25 CM SAMPLED.
7	25.44	25.59	0.15	64	05272	L?	COAL	C-3, PMRD SHEARED.
8	25.59	25.66	0.07	64	05272	L?	COAL	C-3, SHRD
8	25.66	25.76	0.10	64	05272	L?	COAL	C-3, BRKN
8	25.76	25.89	0.13	64	05272	L?	COAL LOSS	
8	25.89	26.17	0.28	64	05272	L?	ROCK LOSS	
8	26.17	26.19	0.02	64	05272	L?	MUDSTONE	CARB, DK, GY, SLD

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	26.19	26.37	0.18	64	05272	L?	COAL	C-2, SLD
8	26.37	26.64	0.27	64	05272	L?	COAL	C-4, SLD
8	26.64	26.68	0.04	64	05272	L?	COAL	C-3, SLD
8	26.68	27.00	0.32	64	05272	L?	ROCK LOSS	
8	27.00	27.24	0.24	64	05272	L?	COAL LOSS	
8	27.24	27.26	0.02	64	05272	L?	MUDSTONE	CARB, DK, GY, SLD SOFT.
8	27.26	27.51	0.25	63	05272	L?	COAL	C-2, VBRKN
8	27.51	27.86	0.35	63	05272	L?	COAL	C-4, BRKN
8	27.86	27.91	0.05	63	05272	L?	MUDSTONE	CARB, DK, GY, VBRKN
8	27.91	28.17	0.26	63	05272	L?	COAL LOSS	
8	28.17	28.39	0.22	63	05272	L?	ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	28.39	28.46	0.07	63	05272	L?	COAL	C-3.SHRD
9	28.46	28.81	0.35	63	05272	L?	COAL	C-2.VBRKN
9	28.81	29.02	0.21	63	05272	L?	ROCK LOSS	
9	29.02	29.05	0.03	63	05272	L?	MUDSTONE	CARB.DK.GY.SLD SOFT.
9	29.05	29.45	0.40	62	05272	L?	COAL	C-2.VBRKN
9	29.45	29.47	0.02	62	05272	L?	MUDSTONE	CARB.M-DK.GY.BRKN
9	29.47	30.23	0.76	62	05272	L?	COAL LOSS	
9	30.23	30.35	0.12	62	05272	L?	COAL	C-3.PHRD
9	30.35	30.49	0.14	62	05272	L?	MUDSTONE	CARB.DK.GY.SLD
9	30.49	30.79	0.30	62	05272	L?	COAL LOSS	
9	30.79	30.95	0.16	62	05272	L?	COAL	C-3.BRKN

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 6

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	30.95	31.11	0.16	62	05273		MUDSTONE	CARB.DK.GY.BRKN LISTRIC SURFACES.
9	31.11	31.20	0.09	61	05273		MUDSTONE	CARB.DK.GY.BRKN LISTRIC SURFACES.
10	31.20	31.86	0.66	61			MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS THROUGHOUT.
10	31.86	32.25	0.39	61			MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS THROUGHOUT.
10	32.25	32.28	0.03	61			COAL	C-3.SLD
10	32.28	32.42	0.14	61			MUDSTONE	CARB.DK.GY.BRKN
10	32.42	32.48	0.06	61			COAL	C-4
10	32.48	32.98	0.50	61			MUDSTONE	CARB.DK.GY.BRKN
11	32.98	33.18	0.20	60			MUDSTONE	CARB.DK.GY.SLD COALY LENSES AND LAYERS MANY COALIFIED PLANT FRAGMENTS.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	33.18	33.37	0.19		60		SILTSTONE	LT-M.GY.BIOTR.SLD MOTTLED MASSIVE SLST. PROBABLY COMPLETELY BIOTURBATED.
11	33.37	33.71	0.34		60		SANDSTONE	SLTY.FG.M.GY.LAM.SLD WISPY DISCONTINUOUS SILTY LAMINAE.
11	33.71	33.99	0.28	*60			SANDSTONE	SLTY.FG.M.GY.LAM.BRKN DISTINCTLY LAMINATED.
11	33.99	34.39	0.40		57		SILTSTONE	SSY.M.GY.VTHNB.VBRKN
12	34.39	34.70	0.31		54		SILTSTONE	SSY.M.GY.VTHNB.SHRD SAME ROCK TYPE AS ABOVE.
12	34.70	35.50	0.80	*50			SANDSTONE	SLTY.LT-M.GY.LAM.VBRKN WISPY.
12	35.50	37.23	1.73		52		ROCK LOSS	
12	37.23	37.84	0.61		53		MUDSTONE	DK.GY.LAM.BRKN PARTLY LAMINATED, PARTLY MOTTLED.
13	37.84	39.46	1.62	*55			SILTSTONE	M.GY.LAM.BRKN PARTLY LAMINATED, PARTLY MOTTLED, OCCASIONALLY SANDY WITH VFG WISPY SAND.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	39.46	40.00	0.54		54		SILTSTONE	M.GY.LAM.BIOTR.VBRKN LOCALLY SHEARED, PARTLY MOTTLED, MAYBE INTENSE BIOTURBATED.
14	40.00	40.89	0.89		53		ROCK LOSS	
14	40.89	41.77	0.88		53		SILTSTONE	M.GY.LAM.BIOTR.VBRKN SAME AS ROCK TYPE ABOVE, LOCALLY BRECCIATED WITH QTZ CARB MATRIX.
15	41.77	42.57	0.80		52		SILTSTONE	M.GY.LAM.BIOTR.BRKN SAME ROCK TYPE AS ABOVE.
15	42.57	43.42	0.85		51		SILTSTONE	M.GY.BRKN MANY QTZ CARB VEINS, MANY SPHERULITIC THINGS THAT LOOKS LIKE RECRYSTALLIZATION - PETRIFIED TREE.
15	43.42	43.94	0.52		51		ROCK LOSS	
15	43.94	44.11	0.17		50		SILTSTONE	M-DK.GY.LAM.VBRKN LOCALLY SHEARED.
16	44.11	44.91	0.80	*50			SILTSTONE	M-DK.GY.LAM.VBRKN SAME ROCK TYPE AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 9

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	44.91	45.30	0.39	*30			SILTSTONE	M-DK. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE.
17	45.30	45.55	0.25	*55			SILTSTONE	SSY. M. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE, BECOMING SANDY WITH DEPTH.
17	45.55	45.93	0.38	57			ROCK LOSS	
17	45.93	46.28	0.35	*60			SANDSTONE	SLTY. VFG. VPR. M. GY. LAM. VBRKN GRADATIONAL FROM ABOVE.
17	46.28	46.99	0.71	*68			SANDSTONE	SLTY. VFG. VPR. M. GY. LAM. XBDG. SLD MOSTLY LAMINATED. LOCALLY X-BEDDED.
17	46.99	48.20	1.21	*70			SANDSTONE	SLTY. VFG. VPR. M. GY. LAM. BRKN ONE 5 CM BANDED QTZ CARB VEIN SIMILAR TO ROCK TYPE ABOVE, MOSTLY EVENLY LAMINATED.
17	48.20	48.47	0.27	70			ROCK LOSS	
18	48.47	50.02	1.55	*70			SILTSTONE	SLTY. VFG. VPR. M. GY. LAM. XBDG. BRKN SIMILAR TO ROCK TYPE ABOVE. COMMONLY X-BEDDED.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 10

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	50.02	50.33	0.31	70			SILTSTONE	SLTY. VFG. VPR. M. GY. LAM. XBDG. BRKN SAME AS ABOVE.
19	50.33	52.34	2.01	*70			SANDSTONE	SLTY. VFG. VPR. M. GY. LAM. XBDG. BRKN SAME AS ABOVE.
20	52.34	52.78	0.44	64			SANDSTONE	SLTY. VFG. VPR. M. GY. LAM. XBDG. BRKN SAME AS ABOVE.
20	52.78	54.09	1.31	*60			SILTSTONE	SSY. M. GY. LAM. XBDG. BRKN SIMILAR TO ROCK TYPE ABOVE BUT SILTIER AND LESS SANDY.
21	54.09	55.49	1.40	62			MUDSTONE	SLTY. DK. GY. BIOTR. VBRKN FAINTLY LAMINATED IN PLACES. LOCALLY MOTTLED. MANY COALY PLANT FRAGMENTS.
21	55.49	55.85	0.36	64			MUDSTONE	SLTY. DK. GY. BIOTR. VBRKN SAME AS ABOVE.
21	55.85	56.88	1.03	*65	05274		SANDSTONE	SLTY. VFG. M. GY. LAM. SHRD LOWER 22 CM SAMPLED. LOCALLY VERY SHEARED AND SOFTER.
22	56.88	56.93	0.03	66	05274		MUDSTONE	CARB. DK. GY. SLD

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 11

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	56.91	57.56	0.65	66	05275	K/L?	COAL	C-2.VBRKN
22	57.56	57.92	0.36	66	05275	K/L?	COAL LOSS	
22	57.92	57.93	0.01	67	05275	K/L?	MUDSTONE	CARB.DK.GY.SLD
22	57.93	58.05	0.12	67	05275	K/L?	COAL	C-3.VBRKN
22	58.05	58.11	0.06	67	05275	K/L?	MUDSTONE	M-DK.GY.SLD
22	58.11	58.19	0.08	67	05275	K/L?	ROCK LOSS	
22	58.19	58.26	0.07	67	05275	K/L?	COAL LOSS	
22	58.26	58.32	0.06	67	05275	K/L?	COAL	C-4.VBRKN

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 12

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	58.32	58.46	0.14	67	05275	K/L?	MUDSTONE	CARB.DK.GY.BRKN COALY.
22	58.46	58.76	0.30	67	05275	K/L?	COAL	C-3.VBRKN
22	58.76	58.81	0.05	68	05276		MUDSTONE	CARB.M-DK.GY.BRKN
23	58.81	59.31	0.50	68	05276		MUDSTONE	CARB.DK.GY.BRKN SILTY TOWARDS BASE, UPPER 20 CM SAMPLED.
23	59.31	59.45	0.14	68			MUDSTONE	SLTY.DK.GY.VSHRD
24	59.45	59.77	0.32	68			MUDSTONE	SLTY.DK.GY.VSHRD SAME ROCK TYPE AS ABOVE.
24	59.77	60.11	0.34	69			SANDSTONE	MG.PR.LT-M.GY.MAS.SLD BRECCIATED IN SITE, BUT SOLID CORE.
24	60.11	60.79	0.68	69			SANDSTONE	MG.PR.LT-M.GY.MAS.SLD SIMILAR TO ROCK TYPE ABOVE. TOP 20 CM BR ECCIATED BUT SOLID.
24	60.79	61.49	0.70	*70			SANDSTONE	SLTY.MG.LT-M.GY.LAM.SLD WISPY. V FEW RIPUP CLASTS (<2 CM).

\* DENOTES MEASURED BCA

1  
2  
3  
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11  
12



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	61.49	63.23	1.74	70		SANDSTONE	SLTY. MG. LT-M. GY. LAM. SLD SAME AS ABOVE. END OF HOLE. TOTAL DEPTH = 66.14 M.

\* DENOTES MEASURED BCA  
NEWPAGE





GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86011

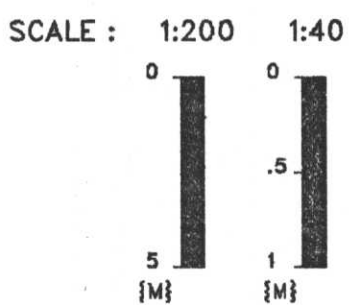
723

GEOLOGIST : LOVE

DATE : FEB 26/87

DRAWING NO. :

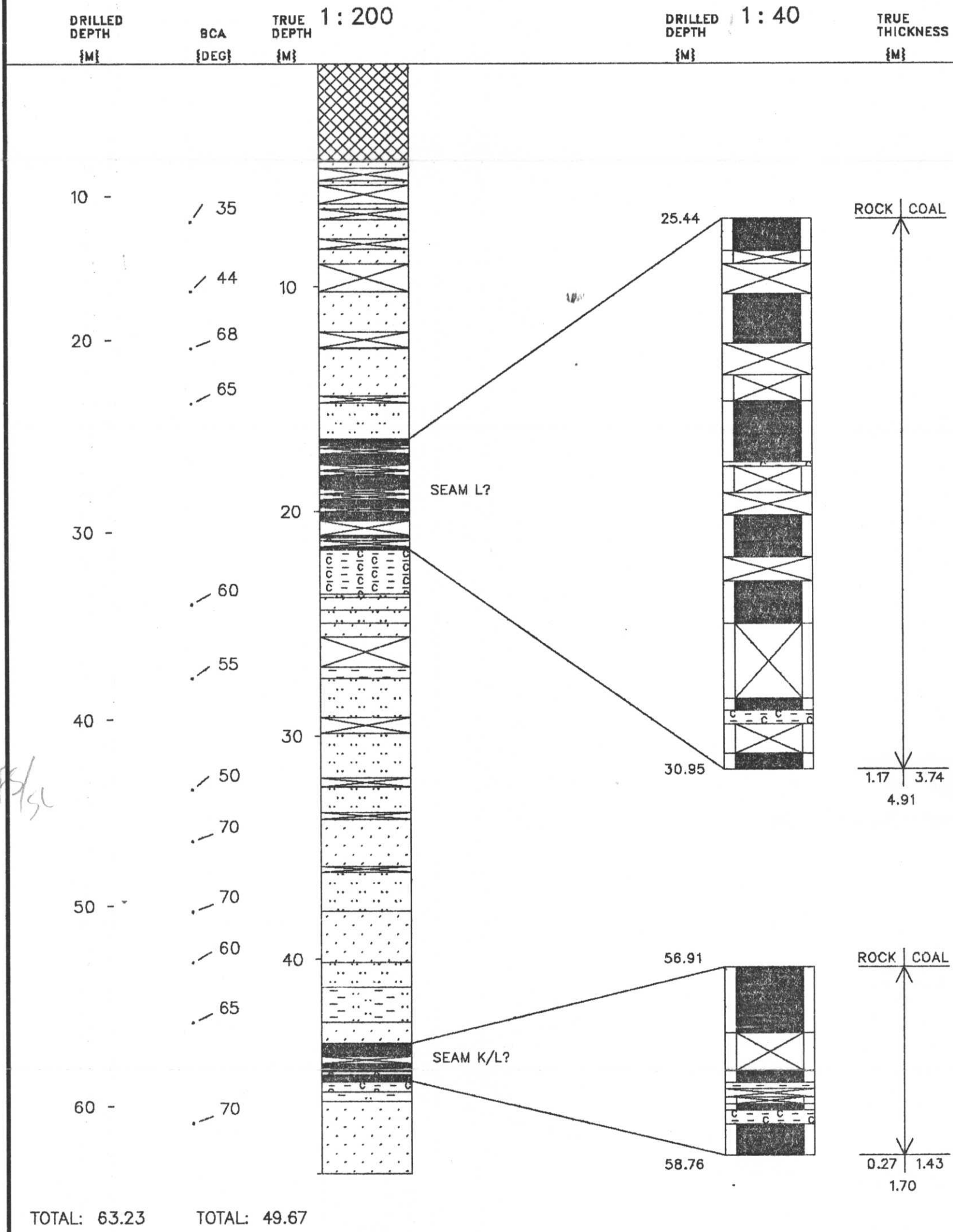
LITHOLOGIC SYMBOLS



NORTHING: 6344537.0 N  
 EASTING: 507835.4 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

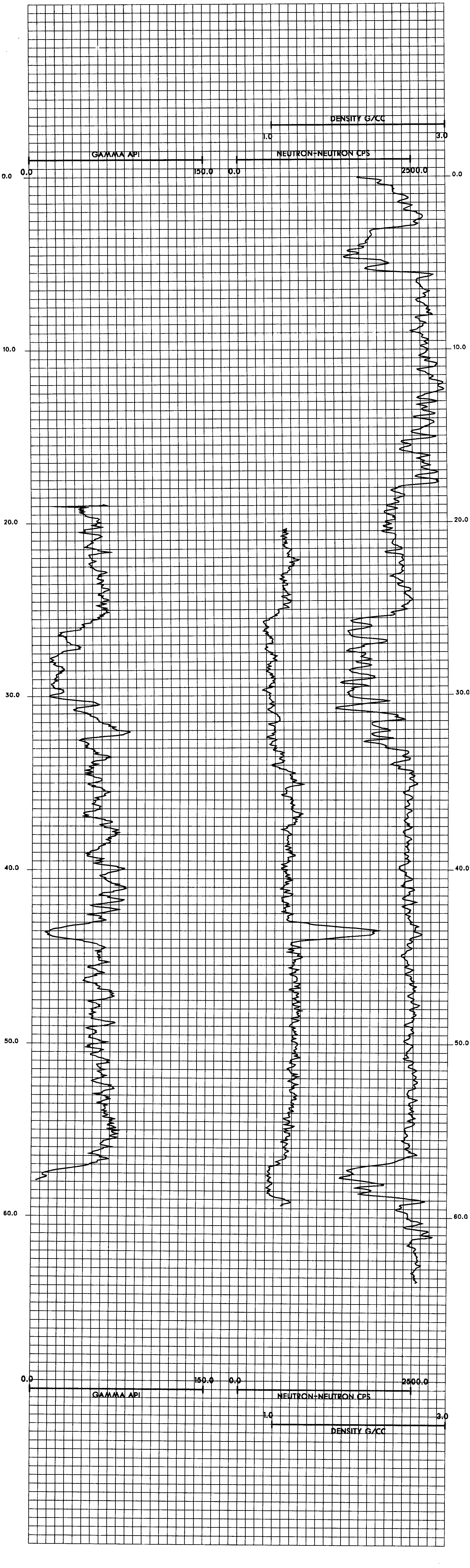


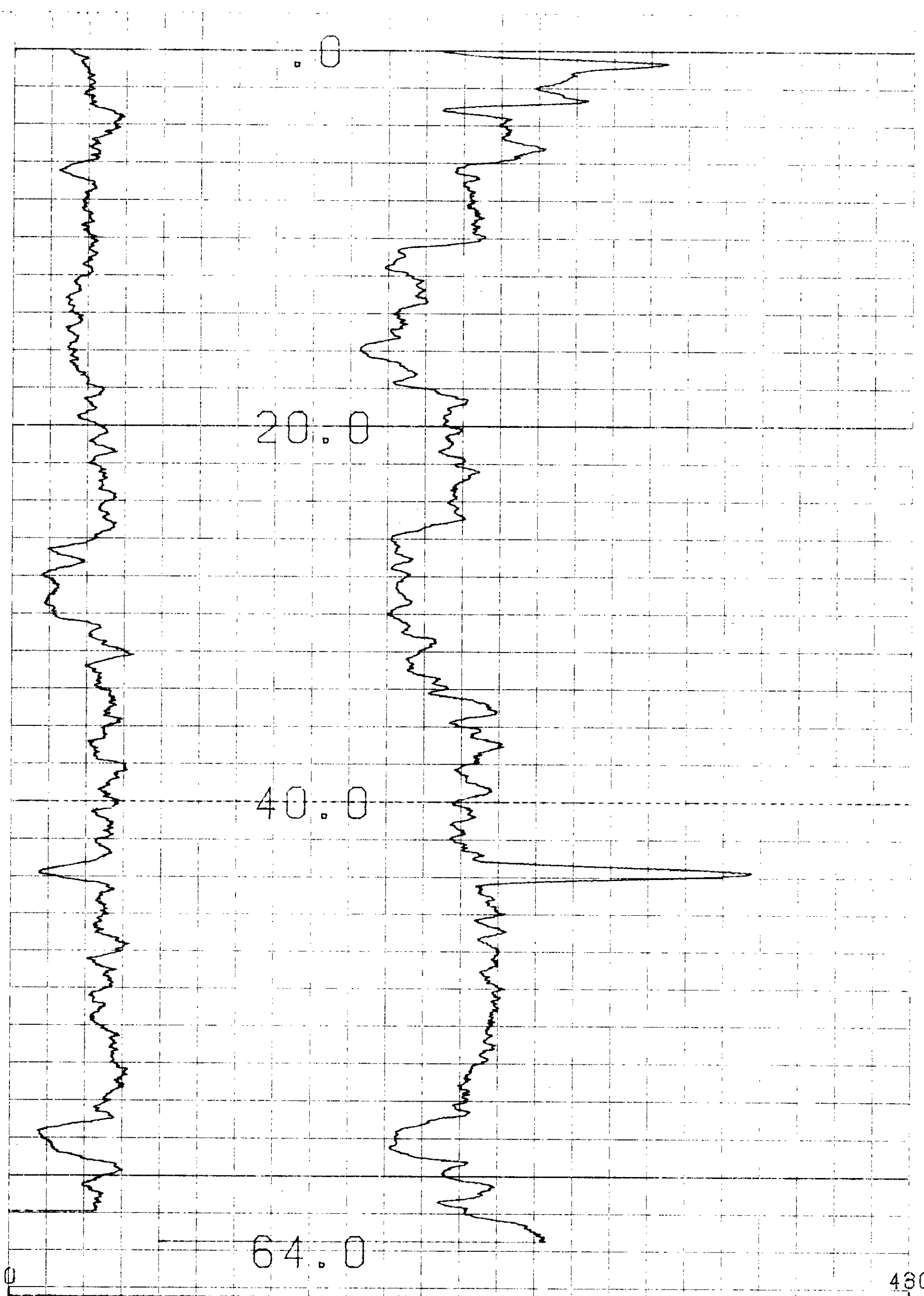
# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

Datasource: <b>KPNLRDDH86011</b> Log Date: 86-09-02 Company: CENTURY Geologist: LOVE	Province: BC    Northing: 6344540.00    Lat: 571445 Zone: 9    Easting: 507835.00    Long: 1285213 Measuring Point:    Elevation: 1534.4																								
Scale: 1 to 100.0 Depth Range: 0.0 to 69.0 True Thickness: NO	Comments: 1. LOGGED THROUGH THE RODS 2.																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Logs Plotted:</th> <th style="text-align: center;">Axis Range</th> <th style="text-align: center;">Axis Length</th> <th style="text-align: center;">Smoothing Points</th> <th style="text-align: center;">Tool</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td>1. GAMMA API</td> <td style="text-align: center;">0.0 to 150.0</td> <td style="text-align: center;">10.0</td> <td style="text-align: center;">31</td> <td style="text-align: center;">9055A</td> <td>OPEN HOLE</td> </tr> <tr> <td>2. NEUTRON-NEUTRON CPS</td> <td style="text-align: center;">0.0 to 2500.0</td> <td style="text-align: center;">10.0</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9055A</td> <td>OPEN HOLE</td> </tr> <tr> <td>3. DENSITY G/CC</td> <td style="text-align: center;">1.0 to 3.0</td> <td style="text-align: center;">10.0</td> <td style="text-align: center;">15</td> <td style="text-align: center;">9030A</td> <td>IN PIPE</td> </tr> </tbody> </table>		Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments	1. GAMMA API	0.0 to 150.0	10.0	31	9055A	OPEN HOLE	2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	OPEN HOLE	3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE
Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments																				
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	OPEN HOLE																				
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	OPEN HOLE																				
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE																				





723

COMPU-LOG V8L2 PLOT 09-02-86  
 DDH-86-11  
 GULF CANADA  
 MT. KLAPPAN  
 HOLE DIAMETER : 09.5  
 PROBE # 9055A - 054  
 SENSOR #4 CAL STD CPS = 152  
 SENSOR #4 CAL RUN CPS = 194  
 SENSOR #4 CAL BIAS = 0  
 DATA V8L2\*A TRUCK # P811  
 S. FORSTER APPL.#1007L1

KPNLRDDH86012

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86012

DATE - 02/13/87

- HISTORY -

START DATE - 02/09/86

END DATE - 04/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - BARKER

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1717.87

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6344327.00

EASTING - 507019.06

LATITUDE - 571438

LONGITUDE - 1285301

- ORIENTATION -

LENGTH - 144.78

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 7.62

AQUIFER DEPTHS (M) - 0.00

0.00

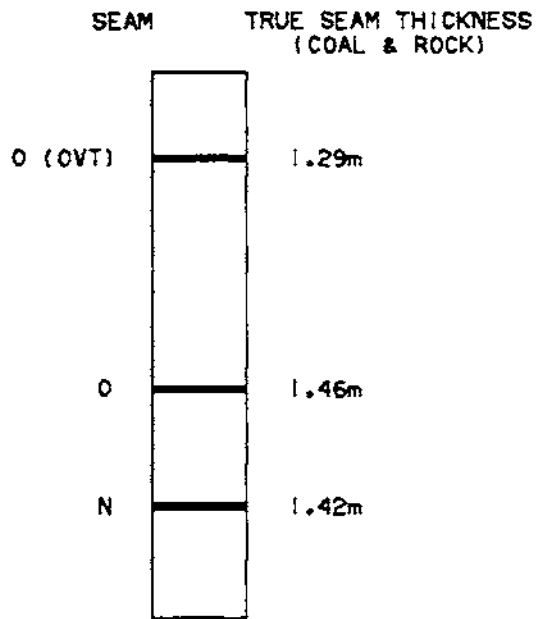
LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====





**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86012

GULF CANADA CORPORATION  
11/03/87  
KLAP: [205057]870063012.L06



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

ROY	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	7.62	7.62	30			OVERBURDEN	CASING.
1	7.62	8.93	1.31	*30			MUDSTONE	DK.GY.MAS.VBRKN DARY MUDST. COALIFIED PLANT HASH THROUGH HOLT. MINORQTZ VEINING.
1	8.93	9.45	0.52	18			ROCK LOSS	
1	9.45	9.63	0.18	13			MUDSTONE	DK.GY.MAS.VBRKN AS ABOVE. QTZ AND COAL FILLING FRACTURE 3CM WIDE. ✓
2	9.63	11.12	1.49	*02			MUDSTONE	DK.GY.LAM.VBRKN PLANT HASH THROUGHOUT. V. FAINT LAMINAE MODERATE QTZ VEINING.
3	11.12	11.32	0.20	*01			MUDSTONE	DK.GY.LAM.VBRKN LITH AS ABOVE.
3	11.32	12.71	1.39	04			ROCK LOSS	
3	12.71	13.74	1.03	*08			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE.
3	13.74	13.94	0.20	08			ROCK LOSS	
3	13.94	14.35	0.41	08			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

ROY	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	14.35	14.45	0.10	08			ROCK LOSS	
4	14.45	15.99	1.54	09			MUDSTONE	DK.GY.MAS.VBRKN SHIRLED MOTTLED MIXTURE OF DARK & M GY MUD. BCA'S STILL LIKELY VERY LOW. NO GOOD BEDDING VISIBLE. PLANT HASH THROUGH OUT.
5	15.99	16.66	0.67	*09			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE. FAINT BEDDING & PLANT FOSSILS ALIGNED ALONG BEDDING.
5	16.66	17.69	1.03	*15			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE. LOCAL PARASITIC FOLD AXES. ✓
5	17.69	17.89	0.20	17			ROCK LOSS	
6	17.89	18.91	1.02	*18			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE. SLIGHTLY MORE PLANT MAT'L. BC A'S 1-18 DEGREES.
6	18.91	19.33	0.42	*20			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE WITH COAL STRINGERS 3MM WIDE.
7	19.33	20.10	0.77	20	05300		MUDSTONE	CARB. DK.GY.SLD COALY STRINGERS AND PLANT FOSSILS THROU GHOUT. LOWER 25 CM SAMPLED.

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	20.10	20.17	0.07	20	05154	0 OVT	COAL	C-3. VBRKN
7	20.17	20.23	0.06	20	05154	0 OVT	COAL	C-3. VBRKN
7	20.23	20.34	0.11	20	05154	0 OVT	COAL LOSS	
7	20.34	20.58	0.24	20	05154	0 OVT	MUDSTONE	CARB. DK. GY. SLD POORLY CONSOLIDATED.
7	20.58	21.25	0.67	21	05154	0 OVT	COAL	C-3. PHRD POWDERED DUE TO SHEARING. DIFFICULT TO DETERMINE GRADE.
8	21.25	21.36	0.11	21	05154	0 OVT	ROCK LOSS	
8	21.36	21.91	0.55	21	05154	0 OVT	COAL	C-3. SHRD DIFFICULT TO DETERMINE GRADE. VERY SHEA RED.
8	21.91	21.94	0.03	21	05154	0 OVT	COAL	C-5. SHRD

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	21.94	22.99	1.05	21	05154	0 OVT	COAL	C-3. SHRD DIFFICULT TO DETERMINE GRADE.
8	22.99	23.08	0.09	21	05190	0 OVT	MUDSTONE	CARB. DK. GY. BRKN
9	23.08	23.31	0.23	21	05190	0 OVT	MUDSTONE	SLTY. M. GY. BRKN
9	23.31	23.38	0.07	21	05190	0 OVT	MUDSTONE	CARB. DK. GY. SLD QTZ & COALY STRINGERS WITHIN.
9	23.38	23.56	0.18	21	05190	0 OVT	COAL LOSS	
9	23.56	23.75	0.19	21	05190	0 OVT	COAL	C-3. SLD
9	23.75	25.09	1.34	21	05155		MUDSTONE	CARB. M-DK. GY. BRKN CARB. NEAR SEAM BECOMING CLAYEY WITH DEP TH.
10	25.09	25.75	0.66	22			MUDSTONE	CLY. DK. GY. MAS. VSHRD. POORLY CONSOLIDATED. V. SOFT. BECOMES S ANDIER AT BASE.
10	25.75	26.66	0.91	*22			SANDSTONE	SLTY. FG. VPR. DK. GY. LAM. BIOTR. SHRD MINOR BEDDING APPARENT, MOST HIGHLY DIS TURBED BY BIOTURBATION.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	26.66	28.32	1.66	*45		SANDSTONE	FG. VPR. DK. GY. VTHNB. BRKN OVERALL SILT CONTENT DECREASES MARKEDLY DOWNWARD. LESS SILT MIXED IN WITH SAND AND BECOMES CONCENTRATED IN DISTINCT B ANDS DOWNWARD. IRREGULAR QTZ VEINING.
11	28.32	28.49	0.17	49		ROCK LOSS	
12	28.49	30.00	1.51	53		SANDSTONE	FG. PR. H. GY. VTHNB. SSD. VBRKN INTER BEDDED SILT AND SAND. SSD. TOPS UP. MODERATE QTZ VEINING.
12	30.00	30.36	0.36	58		ROCK LOSS	
13	30.36	31.54	1.18	61		SANDSTONE	SLTY. VPR. M. GY. LAM. VBRKN FINE SILTY LAMINAE THROUGHOUT WITH HELM INTHOPSIS.
13	31.54	32.02	0.48	*65		SANDSTONE	SLTY. VPR. M. GY. LAM. BRKN AS ABOVE. NUMEROUS HELMINTHOPSIS.
14	32.02	33.53	1.51	*65		SANDSTONE	SLTY. VPR. M. GY. LAM. VBRKN AS ABOVE.
14	33.53	33.67	0.14	65		ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 6

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.67	34.92	1.25	66		MUDSTONE	DK. GY. MAS. VSHRD V. POORLY CONSOLIDATED & SOFT. EXTREMELY SHEARED. SLICKENSIDES.
16	34.92	35.04	0.12	66		MUDSTONE	SLTY. M. GY. MAS. BIOTR. SLD SWIRLED TEXTURE BIOTRB(?) MUCH PYRITE. ONE THICK BIVALVE SHELL 3CM IN DIA.
16	35.04	35.09	0.05	66		COAL	C-3. BLK. SLD SMALL QTZ VEINS.
16	35.09	36.08	0.99	67		MUDSTONE	SLTY. DK. GY. MAS. VBRKN PREDOMINANTLY MASSIVE.
16	36.08	36.72	0.64	67		ROCK LOSS	
16	36.72	37.05	0.33	67		MUDSTONE	DK. GY. MAS. SLD COALIFIED PLANT HASH.
17	37.05	39.05	2.00	68		MUDSTONE	SLTY. DK. GY. MAS. SLD HELL MIXED-NO BEDDING APPARENT. SLIGHTLY MOTTLED. MINOR PLANT HASH.
18	39.05	39.79	0.74	69		MUDSTONE	SLTY. DK. GY. MAS. BIOTR. SLD V. MOTTLED. BIOTRB? LITH AS ABOVE.
18	39.79	41.04	1.25	69		MUDSTONE	SLTY. DK. GY. MAS. BIOTR. SLD LITH AS ABOVE. FEWER PLANTS.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	41.04	42.17	1.13	*70			SILTSTONE	DK. GY. LAM. BIOTR. SLD HIGHLY BIOTURBATED NEAR TOP. FINE MUD T O FG SS LAMINAE THROUGHOUT. SSD SHOWS T OPS UP.
19	42.17	42.89	0.72	*80			SANDSTONE	SLTY. FG. PR. M. GY. LAM. SSD. BRKN FINE SILTY LAMINAE DECREASING DOWNWARD.
20	42.89	43.76	0.87	72			SANDSTONE	FG. MOD. LT. GY. MAS. YBRKN FINE MUDDY LAMINAE AT BASE OF INTERVAL. NUMEROUS RIPPED UP MUD PIECES. FE STAIN ING ON FRAC SURFACES.
20	43.76	44.11	0.35	65			ROCK LOSS	
20	44.11	44.73	0.62	*60			SANDSTONE	FG. PR. LT. GY. LAM. HRMBU. YBRKN INTER LAMINATED MUD AND SAND IN FINE LA YERS. WORM BURROWS IMM WIDE IN MUD LAMS
21	44.73	46.08	1.35	*60			SANDSTONE	FG. PR. LT. GY. LAM. HRMBU. YBRKN LITH AS ABOVE-HRMBURS AND SSD SHOW TOPS UP.
21	46.08	46.56	0.48	62			SANDSTONE	FG. MEL. LT. GY. MAS. BRKN NO SILT OR LAMINAE. MINOR QTZ VEINING. FE STAINING ON FRACS SURFACES.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	46.56	48.42	1.86	64			SANDSTONE	FG-MEL. LT. GY. MAS. BRKN AS ABOVE. MUDST RIPUP CLASTS 1MM TO 2CM IN DIA. FE STAINING ON FRAC SURFACES. F G-MG.
23	48.42	49.01	0.59	66			SANDSTONE	FG-MEL. LT. GY. MAS. BRKN LITH AS ABOVE. ONE MINOR SILTY SCOUR IN FILL 1-4 MM WIDE. FG-MG.
23	49.01	49.13	0.12	67			ROCK LOSS	
23	49.13	49.85	0.72	*68			SILTSTONE	M. GY. LAM. HRMBU. YBRKN HORIZ HRMBURS IN FINE LAMINAE.
23	49.85	50.28	0.43	67			SANDSTONE	SLTY. FG. YPR. LT. GY. MAS. BIOTR. BRKN HIGHLY BIOTURBATED IN OCC SILTY LAMINAE
24	50.28	51.53	1.25	65			SANDSTONE	FG. MEL. LT. GY. MAS. HRMBU. SLD MASSIVE. OCC 5MM DIA VERT HRMBURS OUTLI NED IN FINEDARK MUD.
24	51.53	52.19	0.66	62			SANDSTONE	FG. MEL. LT. GY. MAS. SLD AS ABOVE. EXCEPT NO HRMBURS. QTZ VEININ G ALMOST PARALLEL TO CORE.
25	52.19	52.69	0.50	61			SANDSTONE	FG. MEL. LT. GY. MAS. SLD AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	52.69	52.87	0.18	*60			SANDSTONE	FG.WEL.LT.GY.VTHNB.SLD AS ABOVE, WITH SILT LAMINAE AT BASE.
26	52.87	54.52	1.65	60			SANDSTONE	FG.WEL.LT.GY.MAS.BRKN PREDDOMINANTLY MASSIVE. MINOR SILT LAMINAE. FE STAINING ON FRAC SURFACES.
26	54.52	55.74	1.22	60			ROCK LOSS	
26	55.74	56.02	0.28	60			SANDSTONE	FG.WEL.LT.GY.MAS.BRKN AS ABOVE.
27	56.02	57.31	1.29	*60			SANDSTONE	FG.PR.M.GY.LAM.BRKN SILT LAMINAE NUMEROUS.
27	57.31	58.01	0.70	*60			SILTSTONE	SSY.M.GY.LAM.SSD.BRKN V. FINELY LAMINATED. SSD & NUMEROUS VERTICAL & HORIZONTAL WRMBURS. 1MM TO 2CM IN DIA. TOPS UP.
28	58.01	58.43	0.42	*70			SILTSTONE	SSY.M.GY.LAM.SSD.SLD LITH AS ABOVE.
28	58.43	58.50	0.07	69			MUDSTONE	CARB.DK.GY.MAS.SSD.SLD V. SOFT-LIKE PLASTICENE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 10

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	58.50	59.29	0.79	67			MUDSTONE	SLTY.DK.GY.MAS.SLD WELL MIXED. PYRITE BLEBS.HELMINTHOPSIS. UPPER 2CM QTZ.
28	59.29	59.95	0.66	64			SILTSTONE	SSY.DK.GY.MAS.SLD GRADES SLOHLY DOWNWARD TO FG SS AT BASE
29	59.95	61.05	1.10	*60			SANDSTONE	MG-.WELL.LT.GY.MAS.BRKN RARE WISPY SILT LAMINAE. FINE TO MEDIUM GRAINED SS. FG-FG.
29	61.05	61.62	0.57	60			SANDSTONE	MG-.WELL.LT.GY.MAS.BRKN LITH AS ABOVE. SILT WISPS MORE COMMON THAN ABOVE. FG-MG.
29	61.62	62.29	0.67	60			ROCK LOSS	
30	62.29	63.78	1.49	*60			SANDSTONE	FG.MOD.LT.GY.LAM.BRKN WISPY DARK LAMS OF ORGANIC MAT'L. SILTYER DOWNWARD. NUMEROUS MUD LAMINAE AT BASE.
31	63.78	64.84	1.06	60			SANDSTONE	SLTY.VFG.VPR.M.GY.LAM.BIOTR.BRKN SWIRLED MOTTLED TEXTURE-BIOTRB OR SLUMP (?). MUCH SILT MIXED IN WITH SAND.

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 11

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	64.84	65.55	0.71	60			ROCK LOSS	
31	65.55	65.61	0.06	60			CLAYSTONE	M.GY.MAS.VBRKN V. SOFT-LIKE PLASTICENE. FRACTURE FILL ?) V. SMOOTH. CORE SPIN OFF ON LOWER CONTACT.
31	65.61	66.49	0.88	60			SANDSTONE	SLTY.VFG.VPR.M.GY.LAM.SSD.SLD SILTY MUD LAYERS THROUGHOUT NOT BIOTURBATED AS THE ABOVE SS HAS LESS SAND DOWNWARD.
32	66.49	66.83	0.34	60			SILTSTONE	DK.GY.LAM.SSD.SLD V. FAINT BEDDING. FINER GRAINED THAN ABOVE. IRREGULAR PYRITE BLEB 2CM IN DIA.
32	66.83	68.35	1.52	*60			SILTSTONE	M.GY.LAM.SSD.BRKN LITH. AS ABOVE. CLAY FRACTURE FILL 2CM WIDE.
32	68.35	68.66	0.31	60			ROCK LOSS	
33	68.66	69.67	1.01	60			SILTSTONE	M.GY.LAM.SSD.BRKN SLIGHTLY MORE SAND THAN ABOVE. 9CM WIDE SOFT CLAY BAND-FRACTURE FILL?

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 12

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	69.67	70.47	0.80	*60			SANDSTONE	FG.PR.LT.GY.LAM.BRKN OCC FINE SILT LAMINAE. SHARP UPPER CONTACT.
34	70.47	71.10	0.63	60			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.VBRKN MUCH MORE SILT LAMINAE THAN ABOVE.
34	71.10	72.07	0.97	60			SILTSTONE	SSY.VPR.M.GY.LAM.SSD.BRKN FEWER SAND BANDS THAN ABOVE, DECREASING DOWNWARD. HELMINTHOPSIS ABUNDANT AT BASE. SSD SHOW TOPS UP.
35	72.07	73.89	1.82	*60			MUDSTONE	SLTY.DK.GY.LAM.BRKN LESS SILT THAN ABOVE. V. FAINT BEDDING. PYRITE BLEB & STRINGERS 1CM IN DIAMETER. NO PLANTS, NO BIVALVES.
36	73.89	75.77	1.88	61			MUDSTONE	DK.GY.LAM.BRKN SLIGHTLY LESS SILT THAN ABOVE. FAINT BEDDING. NO PLANTS, NO BIVALVES.
37	75.77	76.42	0.65	62			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE.
37	76.42	77.08	0.66	62			ROCK LOSS	
37	77.08	78.08	1.00	63			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE WITH ONE PYRITE STRINGER.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 13

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	78.08	79.96	1.88	64			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE. NUMEROUS PYRITE BLEBS 3MM TO 3CM IN DIA. NO FOSSILS.
39	79.96	80.54	0.58	65			MUDSTONE	DK.GY.MAS.VBRKN LITH AS ABOVE. RARE BEDDING. PYRITE BLE BS.
39	80.54	81.46	0.92	65			MUDSTONE	DK.GY.MAS.VBRKN AS ABOVE. SLICKENSIDES. ONE 4CM WIDE QTZ VEIN.
40	81.46	82.41	0.95	66			MUDSTONE	SLTY.M.GY.MAS.BRKN
40	82.41	82.62	0.21	66	05156		MUDSTONE	CLYY.LT.GY.MAS.SLD
40	82.62	82.67	0.05	66	05156		MUDSTONE	CARB.DK.GY.MAS.SLD
40	82.67	82.72	0.05	66	05157	0	COAL	C-3.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: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	82.72	82.91	0.19	66	05157	0	COAL LOSS	
40	82.91	83.18	0.27	66	05157	0	ROCK LOSS	
40	83.18	83.42	0.24	67	05157	0	COAL LOSS	
40	83.42	83.44	0.02	67	05157	0	COAL	C-6.SLD BONE COAL.
40	83.44	83.63	0.19	67	05157	0	COAL	C-2.BRKN
40	83.63	83.80	0.17	67	05157	0	COAL	C-3.BRKN
40	83.80	83.96	0.16	67	05157	0	COAL	C-2.BRKN
40	83.96	84.00	0.04	67	05157	0	MUDSTONE	CARB.DK.GY.SLD POORLY CONSOLIDATED. COALY.
41	84.00	84.26	0.26	67	05157	0	COAL	C-6.BRKN VITRINITE STRINGERS THROUGHOUT.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	84.26	85.74	1.48	68	0515B		MUDSTONE	SILTY M-DK.GY.BRKN CARB NEAR TOP. GRADING TO 'SILTY' AT BASE . CARB PLANT FRAGS THROUGHOUT.
42	85.74	86.31	0.57	68	0515B		MUDSTONE	DK.GY.MAS.VBRKN SLICKENSIDES. COALIFIED PLANT WASH & SM ALL THIGS.
42	86.31	86.42	0.11	69			ROCK LOSS	
42	86.42	87.64	1.22	69			MUDSTONE	SSY.DK.GY.LAM.VBRKN NUMEROUS SLICKENSIDES. SHIRLED SAND LAM INAE SLUMPI(?) AT BASE.
43	87.64	89.35	1.71	*70			SILTSTONE	DK.GY.LAM.BRKN SANDY AT TOP GRADING TO FINELY LAM'D SL TST DOWNWARD.
43	89.35	89.47	0.12	70			ROCK LOSS	
43	89.47	89.69	0.22	70			SILTSTONE	DK.GY.LAM.BRKN LITH AS ABOVE.
44	89.69	91.37	1.68	*70			SANDSTONE	FG.PR.M.GY.LAM.WRMBU.BRKN INTER LAM'D MUD AND SAND. FINE LAMINAE. HORIZ WRMBURS 1-5MM WIDE.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	91.37	91.79	0.42	70			SANDSTONE	FG.PR.M.GY.LAM.WRMBU.BRKN LITH AS ABOVE. SANDIER THAN ABOVE.
45	91.79	93.15	1.36	*70			SANDSTONE	FG.PR.M.GY.LAM.WRMBU.VBRKN SAND CONTENT DECREASES DOWNWARD.
45	93.15	93.31	0.16	68			ROCK LOSS	
46	93.31	94.84	1.53	*65			SANDSTONE	FG.PR.M.GY.LAM.WRMBU.BRKN LITH AS ABOVE. NUMEROUS VERT & HORIZ WR MBURS. MODERATE QTZ VEINING.
46	94.84	95.25	0.41	65			SILTSTONE	VPR.DK.GY.LAM.WRMBU.SLD LESS SAND THAN ABOVE.
47	95.25	97.05	1.80	65			MUDSTONE	SILTY.VPR.DK.GY.LAM.WRMBU.BRKN LESS SILT & SAND THAN ABOVE. FINER LAMI NAE. NUMEROUS HELMINTHOPSIS THROUGHOUT.
48	97.05	97.74	0.69	64			MUDSTONE	PR.DK.GY.MAS.SLD AS ABOVE. NO APPARENT BEDDING. HELMINTH OPSIS THROUGHOUT.
48	97.74	98.44	0.70	64			MUDSTONE	SSY.VPR.M.GY.MAS.XBDG.SLD SUDDEN INFLUX OF SAND MIXING IN WITH MU D. FINES GRADUALLY UPWARD IN THIS INTER VAL. ONE SET OF CROSS BEDS. SHARP LOWER CONTACT.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	98.44	99.10	0.66	64			MUDSTONE	PR. DK. GY. MAS. SLD MASSIVE UNIFORM MUDST. NUMEROUS BIVALVE S 2-4CM IN DIA.
49	99.10	100.63	1.53	64			MUDSTONE	DK. GY. MAS. BRKN LITH AS ABOVE. BIG BIVALVES.
49	100.63	101.09	0.46	63			ROCK LOSS	
49	101.09	101.33	0.24	63			MUDSTONE	DK. GY. MAS. SHRD AS ABOVE. BIG BIVALVES.
50	101.33	103.31	1.98	63			MUDSTONE	DK. GY. MAS. SHRD AS ABOVE. BIVALVES.
51	103.31	103.96	0.65	63			MUDSTONE	DK. GY. MAS. VBRKN AS ABOVE. BIVALVES.
51	103.96	104.16	0.20	63			ROCK LOSS	
51	104.16	104.37	0.21	63			BENTONITE	WH. MAS. VBRKN "CREST ZONE" SOFT WHITE CLAY. SHARP UPPER AND LOWER CONTACTS.
51	104.37	104.98	0.61	63			MUDSTONE	DK. GY. MAS. VBRKN AS MUDST ABOVE. BIVALVES.
51	104.98	105.20	0.22	62			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: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	105.20	107.19	1.99	62			MUDSTONE	DK. GY. MAS. VBRKN AS ABOVE.
53	107.19	107.42	0.23	62			MUDSTONE	DK. GY. MAS. VSHRD AS ABOVE WITH LISTRIC SURFACES.
53	107.42	109.12	1.70	62			MUDSTONE	DK. GY. MAS. SHRD V. FRACTURED ROCK. LITH AS ABOVE.
53	109.12	109.27	0.15	61			ROCK LOSS	
54	109.27	110.89	1.62	61			MUDSTONE	DK. GY. MAS. VBRKN LITH AS ABOVE, BUT SLIGHTLY FEWER BIVALVES. SLICKENSIDES.
55	110.89	112.74	1.85	61			MUDSTONE	DK. GY. MAS. SLD LITH AS ABOVE. BIVALVES. SLICKENSIDES.
56	112.74	113.42	0.68	61	05159		MUDSTONE	SLTY. M-DK. GY. BRKN
56	113.42	113.46	0.04	60	05160 N		COAL	C-4. BRKN
56	113.46	113.52	0.06	60	05160 N		COAL	C-6. SLD BONE COAL. ABUNDANT PYRITE WITHIN.
56	113.52	114.17	0.65	60	05160 N		COAL	C-3. 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: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	114.17	114.21	0.04	60	05160	N	MUDSTONE	CARB. DK. GY. BRKN MINOR COALY STRINGERS WITHIN.
56	114.21	114.26	0.05	60	05160	N	COAL	C-4
57	114.26	114.44	0.18	60	05160	N	MUDSTONE	CARB. DK. GY. VBRKN VERY CARB MUDST MIXED WITH COAL.
57	114.44	115.06	0.62	60	05160	N	COAL	C-3. VBRKN
57	115.06	115.22	0.16	60	05161		MUDSTONE	SLTY. M-DK. GY. BRKN MINOR COAL STRINGERS WITHIN.
57	115.22	115.94	0.72	*60	05161		SANDSTONE	MG. PR. LT-M. GY. SLD MORE MUD TOWARDS TOP OF UNIT.
58	115.94	117.36	1.42	*65			SANDSTONE	MG. VPR. LT. GY. VTHNB. XBDG. SLD NUMEROUS SCOURS FILLED WITH ALTERNATING COARSE AND FINE SANDS. OCC MUDSTONE RIP UP CLASTS AND COAL LENSES 3MM WIDE. HIGH ENERGY.
58	117.36	117.99	0.63	64			SANDSTONE	MG. VPR. LT. GY. MAS. SLD V. POORLY SORTED SANDS AS ABOVE. RIPPED UP COAL LENSES 1-5MM WIDE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	117.99	120.08	2.09	62			SANDSTONE	MG. VPR. LT. GY. VTHNB. BRKN FINE STRINGERS OF ORGANIC MAT'L THROUGH OUT. MUDST RIPUPS AND BAND OF CHERT PEB BLES NEAR BASE. V. POORLY SORTED SAND. A S ABOVE. COAL BAND 12MM WIDE.
60	120.08	120.44	0.36	60			SANDSTONE	FG. MEL. LT. GY. MAS. SLD
60	120.44	121.35	0.91	59			SANDSTONE	PBLY. MG. VPR. LT. GY. MAS. BRKN CHERT & MUDST & COAL CLASTS 1-10MM WIDE
60	121.35	122.05	0.70	58			CONGLOMERATE	VPR. LT. GY. MAS. BRKN CHERT & MUDST & COAL CLASTS. MOSTLY CLA ST. SUPPORTED. ONE COAL CLAST 4 CM IN DI A. MOST CLASTS 1-5MM IN DIA.
61	122.05	123.38	1.33	57			CONGLOMERATE	VPR. LT. GY. THNB. SLD PREDOMINANTLY CLAST SUPPORTED. TWO 10CM WIDE BANDS OF MOSTLY MG SS.
61	123.38	124.04	0.66	55			CONGLOMERATE	VPR. LT. GY. THNB. SLD LITH AS ABOVE. COAL CLASTS 3CM IN DIA. 5CM WIDE POORLY CONSOLIDATED SAND BAND.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	124.04	125.95	1.91	54		CONGLOMERATE	VPR. LT. GY. THNB. BRKN AS ABOVE WITH COAL STRINGERS 1-10MM WID E. ONE COALY MUD BAND 5CM WIDE. 9CM WID F. PBL SS. BAND.
63	125.95	126.26	0.31	52		CONGLOMERATE	VPR. LT. GY. MAS. BRKN LITH AS ABOVE. COAL CLAST 4CM IN DIA. COAL STRINGERS.
63	126.26	127.65	1.39	51		CONGLOMERATE	VPR. LT. GY. MAS. BRKN LITH AS ABOVE. CLASTS LARGER, 5-10MM IN DIA.
64	127.65	128.45	0.80	49		CONGLOMERATE	VPR. LT. GY. MAS. BRKN AS ABOVE BUT WITH CLASTS 5-15MM IN DIA. OVERALL, THIS CGL UNIT FINES UPWARD. SHARP LOWER POLISHED CONTACT.
64	128.45	128.64	0.19	49		MUDSTONE	CARB. DK. GY. MAS. SHRD POORLY CONSOLIDATED.
64	128.64	129.29	0.65	48		MUDSTONE	CARB. DK. GY. MAS. VSHRD COALIFIED PLANT WASH AND FINE STRINGERS <1MM WIDE THROUGHOUT.
65	129.29	130.87	1.58	47		MUDSTONE	CARB. DK. GY. MAS. SHRD LESS CARBONACEOUS THAN ABOVE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	130.87	131.81	0.94	*45		MUDSTONE	DK. GY. LAM. VBRKN FAINT LAMINAE.
66	131.81	132.15	0.34	52		MUDSTONE	DK. GY. LAM. VBRKN FAINT LAMINAE.
67	132.15	133.26	1.11	60		MUDSTONE	DK. GY. MAS. VBRKN CRUSHED CORE.
68	133.26	134.06	0.80	*70		MUDSTONE	DK. GY. LAM. SSD. VBRKN MUD LAMINAE FINING UPWARD. SSD AND HORI Z WRMBS 3MM WIDE THROUGHOUT. LOOKS LIKE COASTER LITHOLOGY WITH MUCH SSD.
68	134.06	135.03	0.97	70		MUDSTONE	DK. GY. LAM. SSD. VBRKN LITH AS ABOVE.
69	135.03	137.18	2.15	70		MUDSTONE	DK. GY. LAM. SLD LITH AS ABOVE BUT FAINTER BEDDING.
70	137.18	139.24	2.06	70		MUDSTONE	DK. GY. LAM. BIOTR. BRKN LITH AS ABOVE WITH VERY FAINT BEDDING. LOCAL MINORBIOTURBATION.
71	139.24	139.50	0.26	70		MUDSTONE	DK. GY. LAM. BRKN LITH AS ABOVE.
71	139.50	141.29	1.79	70		MUDSTONE	DK. GY. LAM. SLD LITH AS ABOVE. V. FAINT BEDDING.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH86012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	141.29	142.60	1.31	70			MUDSTONE	DK. GY. LAM. SSD. BRKN SLIGHTLY FINER GRAYED THAN ABOVE. MUCH SSD & HORIZ HRMBURS SHON TOPS UP. T.D. = 144.78M. DRILLER'S MARK.

\* DENOTES MEASURED BCA  
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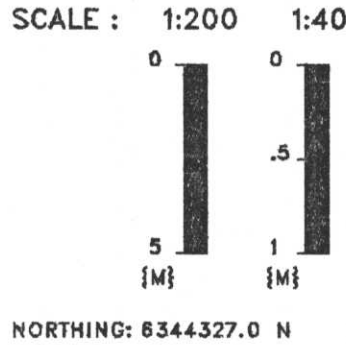
GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86012

723

GEOLOGIST : BARKER

DATE : FEB 26/87

DRAWING NO. :



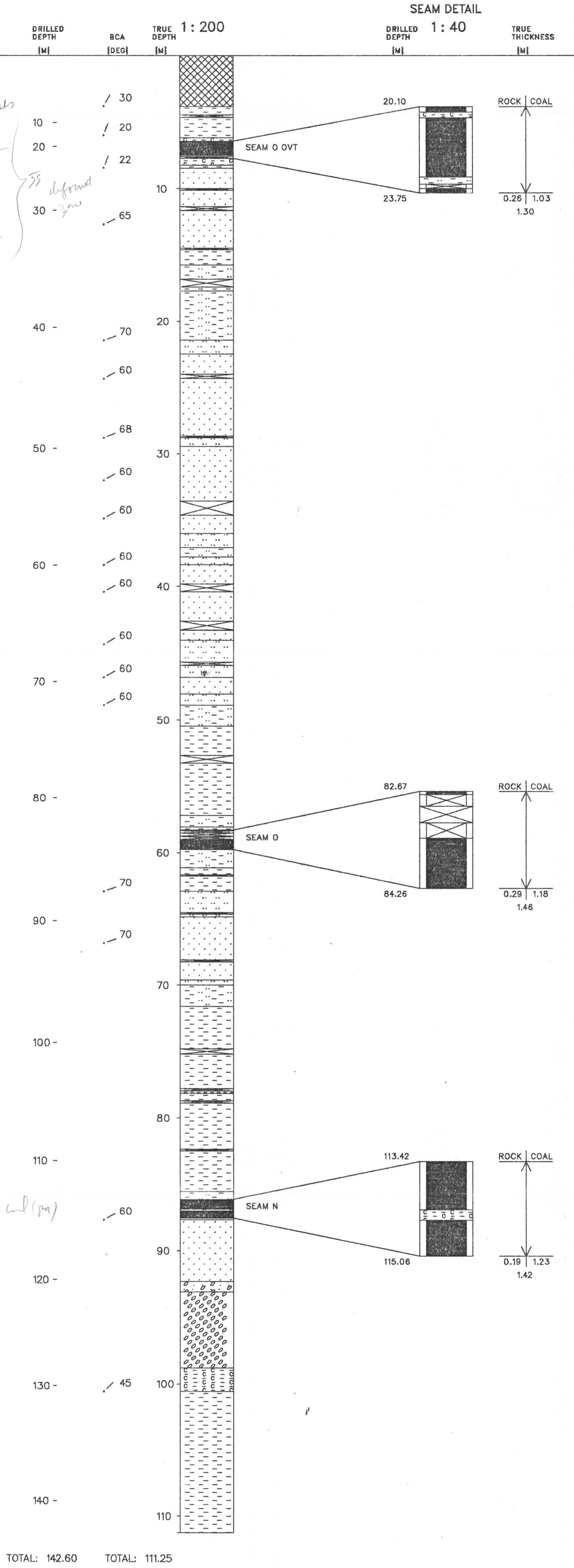
NORTHING: 8344327.0 N  
 EASTING: 507019.0 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

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

*Handwritten notes on the left margin:*  
 10 - 20 - 30 - zone  
 35 - deformed zone  
 80 - 90 - 100 - 110 - 120 - 130 - 140 -  
 Shear and (py)  
 Fract  
 PU  
 FU  
 C  
 8  
 4



TOTAL: 142.60      TOTAL: 111.25

# Gulf Canada Corporation Coal Division

Geophysical Log

# 723

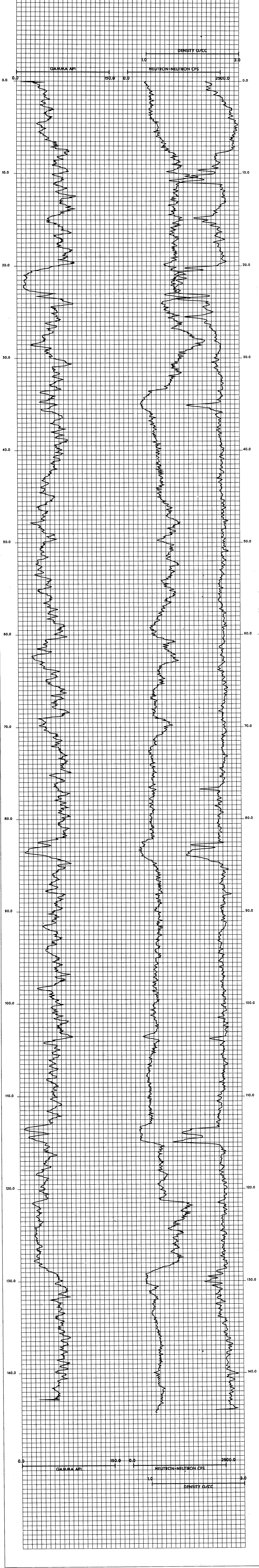
Datasource: **KPNLRDDH86012**  
 Log Date: 86-09-04  
 Company: CENTURY  
 Geologist: BARKER

Province: BC      Northing: 6344330.00      Lat: 571438  
 Zone: 9      Easting: 507019.00      Long: 1285301  
 Measuring Point:      Elevation: 1717.8

Scale: 1 to 100.0  
 Depth Range: 0.0 to 149.0  
 True Thickness: NO

Comments:  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



KPNLRDDH86013

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH86013

DATE - 02/13/87

- HISTORY -

START DATE - 02/09/86  
END DATE - 04/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - LOVE

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - COAL LOGGED BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC  
ELEVATION - 1537.42

ZONE - 9  
NORTHING - 6344244.00  
EASTING - 507847.00

LICENCE/LEASE NUMBER -

LATITUDE - 571435  
LONGITUDE - 1285212

- ORIENTATION -

LENGTH - 181.97  
CORE SIZE - 0.0

INCLINATION - 90.0  
AZIMUTH - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

CASING DEPTH (M) - 9.14  
AQUIFER DEPTHS (M) - 0.00  
0.00  
LOST CIRC. DEPTHS (M) - 0.00  
0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	9.14	9.14	60			OVERBURDEN	CASING.
1	9.14	9.41	0.27	60			ROCK LOSS	
1	9.41	10.81	1.40	60			SANDSTONE	MG.MOD.LT-M.GY.MAS.VBRKN GRAVEL AND V SOFT ROCK AT TOP OF INTERV AL.
1	10.81	11.14	0.33	60			SANDSTONE	MG.MOD.LT-M.GY.MAS.BRKN SAME ROCK TYPE AS ABOVE.
1	11.14	11.88	0.74	60			ROCK LOSS	
2	11.88	12.30	0.42	60			SANDSTONE	SLTY.MG.VPR.DK.GY.LAM.VBRKN VERY VERY BROKEN MUDST AND COAL RIPUP C LASTS.
2	12.30	12.40	0.10	60			SANDSTONE	SLTY.MG.VPR.DK.GY.LAM.VBRKN SAME AS ABOVE.
2	12.40	13.38	0.98	60			ROCK LOSS	
2	13.38	13.72	0.34	60			SANDSTONE	SLTY.MG.VPR.DK.GY.LAM.VBRKN SAME AS ABOVE.
2	13.72	14.02	0.30	60			ROCK LOSS	

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	14.02	14.52	0.50	60			MUDSTONE	DK.GY.MAS.VBRKN FEW COALY LENSES. VERY DARK GREY. FEW PLANT FRAGMENTS. MANY LISTRIC SURFACES.
3	14.52	14.60	0.08	60			MUDSTONE	DK.GY.MAS.BRKN SAME ROCK TYPE AS ABOVE BUT NOT AS SHEA RED.
3	14.60	14.76	0.16	60			MUDSTONE	DK.GY.MAS.BRKN SAME AS ABOVE.
3	14.76	15.98	1.22	*60			SANDSTONE	SLTY.MG.VPR.M.GY.VTHMB.SSD.VBRKN FEW V THIN M-DK GY SLTST. BEDS. V. RARE S. LTST LAMINAE IN SS.
3	15.98	17.00	1.02	59			ROCK LOSS	
4	17.00	17.25	0.25	59			SANDSTONE	MG.VPR.M.GY.BRKN
4	17.25	17.83	0.58	59			SILTSTONE	SSY.M-DK.GY.LAM.BIOTR.BRKN LOCALLY MOTTLED.
4	17.83	18.78	0.95	*58			SILTSTONE	SSY.M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	18.78	19.15	0.37	54			MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. BRKN LOCALLY SHEARED. GRADATIONAL FROM ABOVE
5	19.15	19.48	0.33	52			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SHRD WISPY SILT IN MD SS. CORE IS VERY BROKE N. LOCALLY. VEINED WITH QTZ CARB.
5	19.48	20.08	0.60	49			ROCK LOSS	
5	20.08	20.21	0.13	47			SANDSTONE	MG. LT-M. GY. MAS. BRKN
5	20.21	20.86	0.65	*45			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. BRKN SEVERAL LISTRIC SURFACES.
6	20.86	22.55	1.69	*52			SANDSTONE	SLTY. MG. VPR. M. GY. YBRKN FEW SILTY LAMINAE, ABUNDANT QTZ CARB VEI NING, AND BRECCIATION IN PLACES. LOCALLY SHEARED.
7	22.55	22.80	0.25	55			SANDSTONE	SLTY. MG. VPR. M. GY. YBRKN VERY VERY BROKEN, BRECCIATED WITH A QTZ CARB MATRIX.
7	22.80	23.13	0.33	56			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	23.13	23.75	0.62	58			SANDSTONE	SLTY. MG. VPR. M. GY. YBRKN SAME AS ABOVE.
7	23.75	24.35	0.60	60			ROCK LOSS	
7	24.35	24.93	0.58	62			SANDSTONE	SLTY. MG. VPR. M. GY. MAS. YBRKN SAME ROCK TYPE AS ABOVE, QTZ CARB VEINS AT TOP OF INTERVAL. FEW RIPUP CLASTS. MD STLY MASSIVE.
8	24.93	26.50	1.57	65			SANDSTONE	SLTY. MG. VPR. M. GY. MAS. YBRKN SAME ROCK TYPE AS ABOVE. SEVERAL QTZ CAR B VEINS. RARE COAL RIPUP CLASTS.
8	26.50	26.79	0.29	68			ROCK LOSS	
8	26.79	26.84	0.05	69			SANDSTONE	SLTY. MG. VPR. M. GY. MAS. YBRKN SAME AS ABOVE.
9	26.84	27.44	0.60	*70			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. BRKN RARE MUDST RIPUP CLAST. FEW QTZ CARB VE INS. LOCALLY MOTTLED, PROBABLY BY BIOTUR BATION. XBDG. BIOTRB.
9	27.44	28.27	0.83	70			SANDSTONE	MG. PR. LT-M. GY. MAS. 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: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	28.27	28.47	0.20	69			SANDSTONE	CG. MOD. LT-M. GY. MAS. SLD. GRADATIONAL FROM ABOVE. SHARP LOWER CONTACT.
9	28.47	28.57	0.10	69			MUDSTONE	DK. GY. MAS. BRKN. VERY DARK GREY.
9	28.57	28.67	0.10	69			MUDSTONE	DK. GY. MAS. BRKN. SAME AS ABOVE.
10	28.67	29.32	0.65	69			MUDSTONE	CARB. DK. GY. LAM. VBRKN. VERY DARK GREY. FAINTLY LAMINATED. MANY PLANT FRAGMENTS. FEW COALY LENSES UP TO 0.1 CM THICK. VERY PYRITIC AT BASE OF INTERVAL.
10	29.32	29.69	0.37	69			ROCK LOSS	
10	29.69	29.79	0.10	68			BENTONITE	LT-M. GY. MAS. BRKN. SOFT. SLIGHTLY GRITTY.
10	29.79	29.84	0.05	68			BENTONITE	LT-M. GY. MAS. BRKN. SAME AS ABOVE.
10	29.84	30.54	0.70	68			MUDSTONE	SLTY. DK. GY. LAM. VBRKN. LOCALLY MOTTLED. LOCALLY 1-3% PYRITE.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	30.54	31.14	0.60	68			ROCK LOSS	
11	31.14	32.84	1.70	*67			SILTSTONE	SSY. M-DK. GY. LAM. BIOTR. BRKN. TOPS UP. LOCALLY BIOTURBATED. UNEVENLY LAMINATED. SSD.
11	32.84	32.87	0.03	65			SILTSTONE	SSY. M-DK. GY. LAM. BIOTR. BRKN. SAME AS ABOVE. SSD.
12	32.87	33.18	0.31	65			SILTSTONE	SSY. M. GY. LAM. BIOTR. BRKN. SAME AS ROCK TYPE ABOVE. SSD.
12	33.18	34.49	1.31	*63			SANDSTONE	SLTY. FG. LT-M. GY. LAM. SSD. VBRKN. WISPY. LOCALLY X-BEDDED.
13	34.49	34.93	0.44	64			SANDSTONE	SLTY. FG. LT-M. GY. LAM. BIOTR. VBRKN. SAME AS ABOVE. SSD.
13	34.93	35.89	0.96	64			ROCK LOSS	
13	35.89	36.94	1.05	65			SANDSTONE	SLTY. FG. LT-M. GY. LAM. BIOTR. VBRKN. SAME AS ABOVE. SSD.
14	36.94	37.28	0.34	*65			SANDSTONE	SLTY. FG. M. GY. VTHNB. BRKN. GRADATIONAL FROM ABOVE. RIPPLE CLASTS AT BASE. SSD. BIOTR.
14	37.28	38.50	1.22	64			MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN. INDISTINCTLY LAMINATED. SSD.

\* DENOTES MEASURED BCA



PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	38.50	38.94	0.44	63			ROCK LOSS	
14	38.94	39.08	0.14	62			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. SSD.
15	39.08	40.12	1.04	62			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. SSD.
15	40.12	40.33	0.21	61			ROCK LOSS	
15	40.33	40.63	0.30	60			BENTONITE	LT.GY.LAM.BRKN RELATIVELY HARD.KAOLINITIC.VERY LIGHT G REX.INTERLAMINATED.LOWER CONTACT.
15	40.63	40.85	0.22	*60			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN
16	40.85	41.68	0.83	59			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN BECOMING LESS SILTY WITH DEPTH. FAIRLY EVENLY LAMINATED.
16	41.68	41.98	0.30	58			ROCK LOSS	
16	41.98	42.83	0.85	57			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN GRADATIONAL FROM ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	42.83	44.29	1.46	*55			MUDSTONE	DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. LOCALLY PYRITIC AT 70CM. BECOMING MASSIVE WITH DEPTH.
17	44.29	44.89	0.60	54			MUDSTONE	DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE.
17	44.89	45.63	0.74	53			ROCK LOSS	
18	45.63	45.98	0.35	53			MUDSTONE	DK.GY.MAS.BRKN MODERATELY ABUNDANT PLANT FRAGMENTS.
18	45.98	47.21	1.23	52			MUDSTONE	DK.GY.MAS.SHRD SAME ROCK TYPE AS ABOVE BUT MORE SHEARE D. FEW QTZ CARB VEINS. MANY LISTRIC SUR FACES.
19	47.21	47.45	0.24	51			MUDSTONE	DK.GY.MAS.VSHRD SAME ROCK TYPE AS ABOVE.
19	47.45	48.11	0.66	51			ROCK LOSS	
19	48.11	49.20	1.09	*50			MUDSTONE	SLTY.DK.GY.LAM.BRKN YBRKN AT TOP OF INTERVAL.
20	49.20	50.40	1.20	*60			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE. YBRKN AT BASE OF INTERVAL.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0NB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	50.40	50.80	0.40	62			MUDSTONE	SLTY. DK. GY. LAM. SLD SAME ROCK TYPE AS ABOVE.
21	50.80	51.40	0.60	63			MUDSTONE	SLTY. DK. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE.
21	51.40	52.74	1.34	65			SILTSTONE	DK. GY. LAM. SLD MUDDY SILTSTONE. GRADATIONAL FROM ABOVE
22	52.74	53.56	0.82	67	05173		MUDSTONE	SLTY. M-DK. GY. BRKN BECOMES CARB AND CONTAINS COALY STRINGE RS. NEAR BASE. LOWER 25CM SAMPLED.
22	53.56	53.60	0.04	68	05174	K	COAL	C-4. SLD
22	53.60	53.65	0.05	68	05174	K	COAL LOSS	
22	53.65	54.08	0.43	69	05174	K	COAL	C-3. SHRD.
22	54.08	54.15	0.07	70	05174	K	COAL	C-5. BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0NB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	54.15	54.60	0.45	70	05174	K	COAL	C-2. VBRKN PARTIALLY SHEARED.
22	54.60	54.66	0.06	71	05174	K	COAL	C-2. VBRKN PARTIALLY SHEARED.
23	54.66	54.98	0.32	71	05174	K	COAL	C-2. VBRKN
23	54.98	55.04	0.06	72	05175	K	MUDSTONE	CARB. DK. GY. BRKN
23	55.04	55.07	0.03	72	05175	K	COAL	C-6. SLD BONE COAL.
23	55.07	55.29	0.22	72	05175	K	COAL	C-2. VBRKN
23	55.29	55.69	0.40	73	05175	K	COAL	C-1. BRKN
23	55.69	55.80	0.11	73	05175	K	COAL	C-2. BRKN
23	55.80	55.87	0.07	73	05175	K	COAL	C-3. BRKN
23	55.87	56.20	0.33	74	05175	K	COAL	C-2. BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	56.20	56.33	0.13	74	05175	K	COAL	C-2. BRKN
23	56.33	56.66	0.33	75	05175	K	COAL LOSS	
23	56.66	56.70	0.04	75	05175	K	ROCK LOSS	
23	56.70	56.73	0.03	75	05175	K	MUDSTONE	CARB. DK. GY. BRKN COALY PLANT FRAGS WITHIN.
24	56.73	56.82	0.09	75	05175	K	COAL	C-2. BRKN
24	56.82	56.87	0.05	76	05175	K	MUDSTONE	CARB. DK. GY. BRKN COALY STRINGERS WITHIN.
24	56.87	56.93	0.06	76	05175	K	ROCK LOSS	
24	56.93	57.00	0.07	76	05175	K	COAL LOSS	
24	57.00	57.21	0.21	76	05175	K	COAL	C-4. BRKN BANDED C2 - C5.
24	57.21	57.35	0.14	77	05175	K	COAL	C-2. BRKN
24	57.35	57.92	0.57	77	05176	K	MUDSTONE	CARB. DK. GY. BRKN COALY PLANT FRAGS THROUGHOUT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	57.92	58.10	0.18	78	05177	K	COAL	C-2. VBRKN
24	58.10	58.21	0.11	78	05177	K	COAL LOSS	
24	58.21	58.53	0.32	79	05177	K	COAL	C-3. VBRKN
24	58.53	58.67	0.14	79			MUDSTONE	CARB. DK. GY. LAM. BRKN ALMOST CLAYSTONE. COALY STRINGERS WITHIN.
25	58.67	59.31	0.64	80	05178		MUDSTONE	CARB. DK. GY. LAM. VBRKN VERY VERY BROKEN. VERY COALY AT TOP OF INTERVAL. LOCALLY BIOTURBATED NEAR BASE OF INTERVAL. ABUNDANT PLANT FRAGMENTS. UPPER 25CM SAMPLED.
25	59.31	59.61	0.30	81			SILTSTONE	M. GY. LAM. BIOTR. SLD MUDDY SLTST. UPPER PART IS THNB.
25	59.61	59.88	0.27	82			SANDSTONE	FG. M. GY. MAS. BRKN
25	59.88	60.02	0.14	82			SANDSTONE	FG. M. GY. MAS. BRKN SAME AS ABOVE. BASE IS BIOTURBATED.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	60.02	60.39	0.37	*83			SILTSTONE	M-DK.GY.LAM.SLD MUDDY SLTST. LOCAL BIOTRB AT BASE OF IN Terval.
26	60.39	62.07	1.68	82			MUDSTONE	DK.GY.MAS.BIOTR.SLD LESS BIOTURBATED AND MORE MASSIVE WITH DEPTH.
26	62.07	62.93	0.86	81			ROCK LOSS	
26	62.93	63.10	0.17	81			MUDSTONE	DK.GY.MAS.BIOTR.VSHRD SAME ROCK TYPE AS ABOVE.
27	63.10	63.52	0.42	81			MUDSTONE	DK.GY.MAS.BIOTR.SHRD SAME ROCK TYPE AS ABOVE,BECOMING SILTY, LAMINATED AND BIOTURBATED AT BASE.
27	63.52	63.92	0.40	80			SANDSTONE	FG FINING UPWARD CYCLE. MASSIVE MG AT BASE , WISPY FG MIDDLE, SILTY LAMINATED TOP. SHARP BASE.
27	63.92	64.30	0.38	*80			SILTSTONE	SSY.M.GY.LAM.BIOTR.SLD ONLY LOCALLY BIOTURBATED,VFG.SS.LAMINAE IN SLTST.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	64.30	64.84	0.54	79			SANDSTONE	FG.PR.LT-M.GY.MAS.BIOTR.SLD ONLY LOCALLY LAMINATED AND BIOTURBATED. MOSTLY MASSIVE.
28	64.84	65.14	0.30	78			SILTSTONE	SSY.M.GY.LAM.BRKN LAMINATED TO WISPY. GRADATIONAL FROM AB OVE.
28	65.14	65.47	0.33	77			ROCK LOSS	
28	65.47	65.98	0.51	77			MUDSTONE	DK.GY.MAS.BIOTR.BRKN MOTTLED THROUGHOUT.
28	65.98	66.16	0.18	76			MUDSTONE	DK.GY.MAS.BIOTR.BRKN SAME AS ABOVE.
28	66.16	66.76	0.60	*75			SANDSTONE	FG.LT-M.GY.LAM.SLD WISPY.
28	66.76	67.11	0.35	77			SANDSTONE	FG.LT-M.GY.MAS.SLD NO LONGER WISPY, OTHERWISE SIMILAR TO A BOVE.
29	67.11	68.96	1.85	80			SANDSTONE	MG.LT-M.GY.MAS.BRKN LOCALLY WISPY. MOSTLY MASSIVE.
30	68.96	69.57	0.61	85			SANDSTONE	MG.LT-M.GY.MAS.VBRKN SAME ROCK TYPE AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	69.57	70.56	0.99	87			ROCK LOSS	
30	70.56	71.11	0.55	*90			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN HISPY NEAR TOP. LAMINATED NEAR BASE.
30	71.11	71.23	0.12	90			SANDSTONE	MG.LT-M.GY.MAS.SLD
31	71.23	71.48	0.25	90			SANDSTONE	MG.LT-M.GY.MAS.SLD SAME ROCK TYPE AS ABOVE.
31	71.48	72.32	0.84	89			SILTSTONE	SSY.M.GY.LAM.SLD
31	72.32	72.76	0.44	89			SILTSTONE	M-DK.GY.LAM.SLD
31	72.76	73.26	0.50	88			MUDSTONE	SLTY.DK.GY.LAM.SLD
32	73.26	75.46	2.20	87			MUDSTONE	SLTY.DK.GY.LAM.BRKN FAINTLY LAMINATED. FEW VFG SANDY LAMINA E. LOCALLY XBEDDED. TOP OF COASTER ZONE
33	75.46	75.53	0.07	87			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	75.53	77.35	1.82	*86			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE. FEW LISTRIC SURFACES. BE DS BENT NEAR SHEAR PLANES BUT AMBIGUOUS SENSE OF MOVEMENT.
34	77.35	78.50	1.15	86			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE.
34	78.50	79.35	0.85	86			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE.
35	79.35	81.38	2.03	85			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE.
36	81.38	81.45	0.07	85			MUDSTONE	SLTY.DK.GY.LAM.BRKN SAME AS ABOVE.
36	81.45	83.47	2.02	*85			MUDSTONE	SLTY.DK.GY.LAM.YBRKN SAME ROCK TYPE AS ABOVE.
37	83.47	84.17	0.70	84			MUDSTONE	SLTY.DK.GY.LAM.YBRKN SAME ROCK TYPE AS ABOVE.
37	84.17	85.10	0.93	84			MUDSTONE	SLTY.DK.GY.LAM.YBRKN V. RARE. BIOTR8. SAME ROCK TYPE AS ABOVE.
37	85.10	85.21	0.11	83			ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	85.21	86.96	1.75	83			MUDSTONE	SLTY, DK. GY. LAM. BIOTR. VBRKN RARE BIOTRB. SAME ROCK TYPE AS ABOVE. DISPLACEMENT OF BEDDING ON FRACTURES AND DEFORMATION OF BEDDING ADJACENT TO V RARE LISTRIC SURFACES.
39	86.96	87.11	0.15	82			MUDSTONE	SLTY, DK. GY. LAM. SLD SAME ROCK TYPE AS ABOVE. V MINOR SSD.
39	87.11	88.14	1.03	82			MUDSTONE	SLTY, DK. GY. LAM. SLD BECOMING LINEATED. MANY V SMALL SCALE DISPLACEMENTS OF BEDDING. SAME ROCK TYPE AS ABOVE.
39	88.14	88.49	0.35	82			MUDSTONE	SLTY, DK. GY. LAM. SHRD LINEATED. SAME ROCK TYPE AS ABOVE.
39	88.49	88.74	0.25	82			MUDSTONE	SLTY, DK. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE. LESS SHEARING AND DEFORMATION.
40	88.74	89.14	0.40	81	05179		MUDSTONE	CARB. M. BLK. LAM. VBRKN COALY. MANY PLANT FRAGMENTS IMMEDIATELY ABOVE J SEAM. LOWER 25 CM SAMPLED.
40	89.14	89.21	0.07	81	05180 J		COAL	C-2. SLD

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	89.21	89.30	0.09	81	05180 J		COAL LOSS	
40	89.30	89.33	0.03	81	05180 J		ROCK LOSS	
40	89.33	89.39	0.06	81	05180 J		MUDSTONE	CARB. M-DK. GY. SLD SILTY. PLANT FRAGS WITHIN.
40	89.39	89.76	0.37	81	05180 J		COAL	C-2. SLD
40	89.76	89.94	0.18	81	05181		MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
40	89.94	90.84	0.90	81			MUDSTONE	CARB. DK. GY. BRKN COALY PLANT FRAGS AND THIN BANDS THROUGHOUT. SILTY AT BASE.
40	90.84	90.98	0.14	80			MUDSTONE	CARB. M. BLK. LAM. BRKN COALY. MANY PLANT FRAGMENTS.
40	90.98	91.74	0.76	*80			MUDSTONE	CARB. DK. GY. LAM. BRKN COALY. SAME AS ABOVE. SEVERAL COAL LENS ES AND LAYERS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	91.74	92.46	0.72		82		MUDSTONE	DK.GY.LAM.BRKN LOCALLY SLIGHTLY COALY. MODERATELY ABUN DANT PLANT FRAGMENTS. FAINTLY LAMINATED
41	92.46	93.41	0.95	*85			SILTSTONE	M-DK.GY.LAM.SSD.BRKN TOPS UP.
41	93.41	93.71	0.30		84		SILTSTONE	M-DK.GY.LAM.VSHRD VERY BADLY BROKEN UP.
42	93.71	93.86	0.15		84		MUDSTONE	DK.GY.LAM.VBRKN VERY VERY BROKEN.
42	93.86	94.03	0.17		83		ROCK LOSS	
42	94.03	94.35	0.32		83		MUDSTONE	DK.GY.LAM.VBRKN SAME AS ABOVE.
42	94.35	94.64	0.29		82		ROCK LOSS	
42	94.64	95.61	0.97		81		MUDSTONE	DK.GY.LAM.BIOTR.BRKN FAINTLY LAMINATED. QUITE MOTTLED.
43	95.61	96.22	0.61	*80			SILTSTONE	M-DK.GY.LAM.SSD.BRKN TOPS UP.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	96.22	96.75	0.53		80		SANDSTONE	SLTY.FG.M.GY.LAM.SSD.BRKN LOCALLY MISPY. LOCALLY THIN BEDDED.
43	96.75	97.45	0.70		80		SANDSTONE	SLTY.FG.M.GY.LAM.SSD.BRKN SAME AS ABOVE. GETS SILTIER TOWARD BASE
44	97.45	98.30	0.85		80		MUDSTONE	SLTY.DK.GY.LAM.SSD.BRKN FAINTLY LAMINATED. LOCALLY BIOTURBATED.
44	98.30	99.37	1.07	*80			SANDSTONE	SLTY.VFG.VPR.M.GY.LAM.SSD.BRKN TOPS UP. LOCALLY MUDDY AND BIOTURBATED. MOSTLY LAMINATED TO MISPY.
45	99.37	99.68	0.31	*79			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.SSD.BRKN SIMILAR TO ABOVE BUT SLIGHTLY COARSER & RAINED AND SLIGHTLY LESS MUDDY.
45	99.68	101.36	1.68	*82			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.SSD.BRKN SAME AS ABOVE. TOPS UP BECOMES MG NEAR BASE OF INTERVAL. MODERATE QTZ CARB VE INING.
46	101.36	101.70	0.34	*84			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.SSD.BRKN SAME AS ABOVE.
46	101.70	103.40	1.70	*84			SANDSTONE	MG.PR.LT-M.GY.MAS.BRKN MOD. QTZ CARB VEINING.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	103.40	105.52	2.12	70			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN SAME AS ABOVE.
48	105.52	105.72	0.20	*62			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. BRKN TOPS UP.
48	105.72	105.96	0.24	64			ROCK LOSS	
48	105.96	107.08	1.12	71			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. BRKN SIMILAR TO ABOVE. TOPS UP. BIOTRB.
48	107.08	107.67	0.59	*80			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. BIOTR. BRKN SAME AS ABOVE. TOPS UP. SSD.
49	107.67	108.67	1.00	65			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. BIOTR. VBRKN LOCALLY BRECCIATED WITH QTZ CARB MATRIX MANY QTZ CARB VEINS. BEDDING EFFECTS ON FRACTURES.
49	108.67	109.00	0.33	52			ROCK LOSS	
49	109.00	109.40	0.40	*45			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. BIOTR. VBRKN SAME AS ABOVE. SSD.
50	109.40	109.90	0.50	*45			MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN VERY MOTTLED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	109.90	110.50	0.60	38			MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN LOCALLY VERY MOTTLED.
50	110.50	110.85	0.35	*32			MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN VERY VERY BROKEN.
50	110.85	111.44	0.59	36			ROCK LOSS	
50	111.44	111.49	0.05	39			MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN SAME AS ABOVE.
51	111.49	112.92	1.43	*45	05182		MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN TOPS UP. NUMEROUS QTZ CARB VEINS. NUMER OUS LISTRIC SURFACES. LOCALLY BRECCIATED WITH QTZ CARB MATRIX. LOWER 25 CM SAMPL ED. SSD.
51	112.92	113.08	0.16	46	05183 I		COAL	C-2. SHRD
52	113.08	113.73	0.65	47	05183 I		COAL	C-2. VBRKN PARTIALLY SHEARED.
52	113.73	113.89	0.16	48	05183 I		COAL LOSS	
52	113.89	114.08	0.19	48	05183 I		ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	114.08	114.19	0.11	48	05183	I	SILTSTONE	CLYY.M.GY.BRKN
52	114.19	114.48	0.29	49	05183	I	COAL	C-2.VBRKN PARTIALLY SHEARED AND POWDERED.
52	114.48	114.55	0.07	49	05183	I	MUDSTONE	SLTY.M.GY.SLD
52	114.55	114.78	0.23	49	05183	I	COAL	C-2.VBRKN
52	114.78	114.91	0.13	50	05183	I	MUDSTONE	CARB.DK.GY.BRKN
52	114.91	115.28	0.37	50	05183	I	COAL	C-2.VBRKN PARTIALLY SHEARED AND POWDERED.
53	115.28	115.49	0.21	51	05183	I	COAL	C-2.BRKN
53	115.49	115.58	0.09	51	05183	I	COAL LOSS	
53	115.58	115.73	0.15	51	05184	I	ROCK LOSS	
53	115.73	115.79	0.06	51	05184	I	MUDSTONE	CARB.M-DK.GY.SLD COALY PLANT FRAGS WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	115.79	116.09	0.30	51	05184	I	COAL	C-2.BRKN
53	116.09	116.22	0.13	52	05184	I	COAL	C-2.BRKN
53	116.22	116.26	0.04	52	05184	I	MUDSTONE	SLTY.M.GY.SLD
53	116.26	116.49	0.23	52	05184	I	COAL	C-3.BRKN
53	116.49	116.62	0.13	53	05184	I	COAL LOSS	
53	116.62	116.66	0.06	53	05184	I	MUDSTONE	SLTY.M.GY.SLD
53	116.68	117.03	0.35	53	05184	I	COAL	C-2.VBRKN
53	117.03	117.11	0.08	53	05184	I	COAL	C-2.BRKN
53	117.11	117.32	0.21	54	05184	I	COAL	C-1.VBRKN
54	117.32	117.84	0.52	54	05184	I	COAL	C-2.PWRD SHEARED. DIFFICULT TO DETERMINE GRADE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	117.84	117.86	0.02		55 05184	I	MUDSTONE	SLTY. M. GY. SLD
54	117.86	118.36	0.50		55 05184	I	COAL	C-2. VBRKN SHEARED.
54	118.36	118.45	0.09		56 05184	I	ROCK LOSS	
54	118.45	118.66	0.21		56 05185	I	COAL	C-2. VBRKN SHEARED.
54	118.66	118.71	0.05		56 05185	I	COAL	C-4. SLD
54	118.71	118.86	0.15		56 05185	I	COAL LOSS	
54	118.86	118.97	0.11		57 05185	I	ROCK LOSS	
54	118.97	119.26	0.29		57 05185	I	COAL LOSS	
54	119.26	119.28	0.02		57 05185	I	MUDSTONE	CARB. DK. GY. SLD
54	119.28	119.43	0.15		57 05185	I	COAL	C-4. VBRKN SHEARED AND CONTAINS MUDST THROUGHOUT.
54	119.43	119.94	0.51		58 05185	I	COAL	C-2. SHRD DIFFICULT TO DETERMINE GRADE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	119.94	120.44	0.50		59 05185	I	COAL	C-1. VBRKN POWDERED PARTIALLY.
55	120.44	120.46	0.02		59 05185	I	SILTSTONE	CLYY. M. GY. SLD
55	120.46	121.38	0.92		60 05185	I	COAL	C-1. VBRKN PARTIALLY POWDERED.
55	121.38	121.60	0.22		61 05185	I	COAL LOSS	
55	121.60	122.10	0.50		62 05186		MUDSTONE	CARB. DK. GY. SLD COALY PLANT FRAGS. UPPER 25CM SAMPLED.
56	122.10	122.51	0.41		63		MUDSTONE	DK. GY. MAS. BIOTR. BRKN FEW COALY LENSES. MODERATELY ABUNDANT SM ALL PLANT FRAGMENTS.
56	122.51	123.45	0.94		64		SANDSTONE	MG. VPR. M. GY. MAS. VBRKN LOCALLY LAMINATED. MOSTLY MASSIVE. LOCALLY BRECCIATED BUT STILL SOLID CORE. MOD QTZ. CARB. VEINING.
56	123.45	123.98	0.53	*65			SANDSTONE	MG. VPR. M. GY. MAS. VBRKN SAME AS ABOVE.
56	123.98	124.68	0.70		61		ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	124.68	126.23	1.55	54			SANDSTONE	PBLY. MG. VPR. LT-M. GY. MAS. YBRKN NUMEROUS QTZ CARB VEINS. LOCALLY BRECCIA TED WITH QTZ CARB MATRIX.
58	126.23	126.38	0.15	49			CONGLOMERATE	SSY. VPR. LT-M. GY. MAS. BRKN POLYMIC TIC PARACONGLOMERATE.
58	126.38	126.50	0.12	48			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD
58	126.50	127.91	1.41	43			SANDSTONE	MG. PR. LT-M. GY. MAS. YBRKN SAME AS ABOVE. RARE PEBBLES AND RIPUP C LASTS <2CM DIAMETER. MODERATE QTZ CARB VEINING.
58	127.91	128.05	0.14	38			ROCK LOSS	
59	128.05	128.38	0.33	37			SANDSTONE	MG. PR. LT-M. GY. MAS. YBRKN SAME AS ABOVE. LESS VEINING.
59	128.38	129.18	0.80	33			SANDSTONE	MG. PR. LT-M. GY. MAS. YBRKN SAME ROCK TYPE AS ABOVE. VERY VERY BROK EN. NO VEINING.
59	129.18	130.53	1.35	26			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	130.53	131.21	0.68	*20			SANDSTONE	SLTY. MG. PR. LT-M. GY. THNB. YBRKN OCCASIONAL 1-2CM SLTST BED 10-25CM APAR T IN SS. TOPS DOWN.
60	131.21	132.25	1.04	23			SANDSTONE	SLTY. MG. PR. LT-M. GY. THNB. SLD TOPS DOWN. SSD.
61	132.25	134.11	1.86	28			SANDSTONE	SLTY. MG. PR. LT-M. GY. THNB. BRKN LOCALLY ABUNDANT RIPUP CLASTS ORIENTED SUBPARALLEL TO CORE AXIS. SUGGESTING VERY LOW CORE ANGLE.
62	134.11	134.88	0.77	33			SANDSTONE	SLTY. MG. PR. M. GY. BRKN RIPUP CLASTS SUB PARALLEL TO CORE AXIS. APPARENT FOLD AXIS NEAR BASE OF INTERV AL.
62	134.88	135.92	1.04	*36			SILTSTONE	VPR. M-DK. GY. LAM. BIOTR. BRKN ONLY LOCALLY BIOTURBATED. TOPS UP. MUDDY SILTSTONE. SSD.
63	135.92	136.88	0.96	27			SILTSTONE	VPR. M-DK. GY. LAM. BIOTR. BRKN SAME AS ABOVE. SSD.
63	136.88	137.16	0.28	22			ROCK LOSS	
63	137.16	137.94	0.78	*17			SILTSTONE	VPR. M-DK. GY. LAM. BIOTR. BRKN TOPS DOWN. SAME ROCK TYPE AS ABOVE. SSD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	137.94	138.39	0.45	*05			SILTSTONE	VPR.M-DK.GY.LAM.BIOTR.BRKN SAME ROCK TYPE AS ABOVE. TOPS? SSD.
64	138.39	138.53	0.14	08			SILTSTONE	VPR.M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. SSD.
64	138.53	138.86	0.33	10			SILTSTONE	VPR.M-DK.GY.LAM.BIOTR.VBRKN SIMILAR TO ROCK TYPE ABOVE. MANY RIPUP CLASTS. SSD.
64	138.86	139.29	0.43	14			ROCK LOSS	
64	139.29	140.03	0.74	*20			SANDSTONE	SLTY.VFG.VPR.M-DK.GY.VTHNB.BRKN NUMEROUS RIPUP CLASTS.OCCASIONAL YTHIN SILTY BED. SSD.
65	140.03	140.65	0.62	*25			SANDSTONE	SLTY.VFG.VPR.M-DK.GY.VTHNB.BRKN SAME AS ABOVE. SSD.
65	140.65	141.40	0.75	*40			SILTSTONE	SSY.M-DK.GY.LAM.SSD.BRKN TOPS UP.
65	141.40	141.78	0.38	42			ROCK LOSS	
65	141.78	142.29	0.51	43			SILTSTONE	SSY.M-DK.GY.LAM.SSD.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH6013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	142.29	142.74	0.45	*45			SILTSTONE	M-DK.GY.LAM.SSD.BRKN TOPS UP.
66	142.74	144.03	1.29	53			MUDSTONE	DK.GY.MAS.VBRKN MANY LISTRIC SURFACES. LOCALLY FAINTLY LAMINATED. MODERATE QTZ CARB VEINLETS.
66	144.03	144.58	0.55	62			ROCK LOSS	
67	144.58	144.78	0.20	*65			MUDSTONE	SLTY.DK.GY.LAM.VSHRD
67	144.78	145.58	0.80	60			MUDSTONE	SLTY.DK.GY.LAM.SHRD MANY LISTRIC SURFACES PRESENT.ANTICLINA L FOLD AXIS IN THIS INTERVAL.
67	145.58	145.91	0.33	*55			MUDSTONE	SLTY.DK.GY.LAM.SHRD FAINTLY LAMINATED.DEFORMED BEDDING. BCA VARIES FROM 30 TO 80.
67	145.91	145.98	0.07	*50			SANDSTONE	MG.M.GY.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	145.98	147.21	1.23	*50		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. VBRKN TOPS DOWN. LOCALLY LAMINATED. LOCALLY W ANY LONG THIN RIPUP CLASTS ORIENTED PAR ALLEL TO BEDDING. OCCASIONAL VTHIN SILT Y BED. SSD.
68	147.21	147.83	0.62	46		ROCK LOSS	
68	147.83	148.09	0.26	44		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. VBRKN SAME AS ABOVE. SSD.
69	148.09	148.49	0.40	*42		SANDSTONE	FG. PR. LT-M. GY. LAM. VBRKN V RARE SLTST LAMINAE. V RARE RIPUPS ORI ENTED PARALLEL TO BEDDING. TOPS DOWN. S SD.
69	148.49	148.72	0.23	42		SANDSTONE	SLTY. M-DK. GY. BRKN 90 % RIPUP CLASTS WITH SAND MATRIX.
69	148.72	149.37	0.65	43		SANDSTONE	MG. MOD. LT-M. GY. MAS. BRKN RARE QZ CARB VEIN.
69	149.37	149.72	0.35	43		SANDSTONE	MG. MOD. LT-M. GY. MAS. BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	149.72	150.14	0.42	44		SANDSTONE	MG. MOD. LT-M. GY. MAS. BRKN SAME AS ABOVE.
70	150.14	151.61	1.47	*45		SANDSTONE	PBLY. MG. VPR. LT-M. GY. MAS. BRKN POLYMIC TIC. PEBBLES .5-2CH, MOSTLY SUB R OUNDED.
71	151.61	152.16	0.55	42		SANDSTONE	PBLY. MG. VPR. LT-M. GY. MAS. VBRKN V RARE PEBBLES.
71	152.16	152.62	0.46	41		ROCK LOSS	
71	152.62	154.01	1.39	39		SANDSTONE	MG. MOD. LT-M. GY. MAS. BRKN
72	154.01	155.39	1.38	35		SANDSTONE	MG. MOD. LT-M. GY. MAS. BRKN V RARE SMALL RIPUP CLASTS.
72	155.39	155.61	0.22	*33		SANDSTONE	SLTY. FG. M. GY. LAM. BRKN
72	155.61	155.84	0.23	36		SANDSTONE	SLTY. FG. M. GY. LAM. BRKN
73	155.84	156.98	1.14	*45		MUDSTONE	DK. GY. LAM. BIOTR. SLD FAINTLY LAMINATED. OFTEN MOTTLED.
73	156.98	157.42	0.44	46		MUDSTONE	SLTY. M-DK. GY. LAM. BIOTR. VBRKN SSD.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	157.42	157.92	0.50	46			ROCK LOSS	
73	157.92	158.14	0.22	47			MUDSTONE	DK.GY.MAS.BRKN PLANT FRAGMENTS.
74	158.14	159.00	0.86	47	05187		MUDSTONE	CARB.DK.GY.MAS.BRKN MANY COALY PLANT FRAGMENTS.RARE SILTY.V THIN BED. LOWER 25CM SAMPLED.
74	159.00	159.10	0.10	48	05188	I OVT	COAL	C-6.SLD
74	159.10	160.04	0.94	48	05188	I OVT	COAL	C-2.VBRKN POWDERED IN PLACES.
75	160.04	160.19	0.15	49	05188	I OVT	COAL	C-2.SLD
75	160.19	161.34	1.15	50	05188	I OVT	COAL	C-2.VBRKN INTENSELY SHEARED THROUGHOUT.
75	161.34	161.50	0.16	51	05188	I OVT	COAL	C-2.VBRKN INTENSELY SHEARED THROUGHOUT.
76	161.50	161.85	0.35	51	05188	I OVT	COAL	C-2.VBRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	161.85	161.87	0.02	51	05188	I OVT	MUDSTONE	SLTY.M.GY.SLD
76	161.87	162.03	0.16	51	05188	I OVT	COAL LOSS	
76	162.03	163.28	1.25	52	05188	I OVT	COAL	C-2.VBRKN SHEARED.
76	163.28	163.49	0.21	53	05188	I OVT	COAL	C-2.VBRKN SHEARED.
77	163.49	165.04	1.55	54	05188	I OVT	COAL	C-2.VBRKN SHEARED & POWDERED.
77	165.04	165.51	0.47	55	05188	I OVT	COAL	C-2.VBRKN SHEARED & POWDERED.
78	165.51	166.48	0.97	56	05188	I OVT	COAL	C-2.VBRKN
78	166.48	166.78	0.30	56	05188	I OVT	COAL	C-2.VBRKN
78	166.78	166.80	0.02	56	05188	I OVT	MUDSTONE	CARB.DK.GY.SLD
78	166.80	166.87	0.07	56	05188	I OVT	ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	166.87	167.21	0.34	57	05188	I OVT	COAL	C-2.VBRKN SHEARED AND POWDERED.
79	167.21	168.07	0.86	57	05188	I OVT	COAL	C-2.BRKN POWDERED LOCALLY.
79	168.07	168.20	0.13	58	05188	I OVT	COAL	C-6.SLD BONE COAL.
79	168.20	168.23	0.03	58	05188	I OVT	MUDSTONE	CARB.DK.GY.SLD.
79	168.23	169.01	0.78	58	05188	I OVT	COAL	C-2.VBRKN
80	169.01	169.32	0.31	59	05188	I OVT	COAL	C-2.BRKN
80	169.32	170.77	1.45	60	05188	I OVT	COAL	C-2.VBRKN SHEARED IN PLACES.POSSIBLY C-1.
81	170.77	171.91	1.14	61	05188	I OVT	COAL	C-2.VBRKN SHEARED IN PLACES.POSSIBLY C-1.
81	171.91	172.49	0.58	62	05188	I OVT	COAL	C-2.VBRKN HIGHLY SHEARED.
81	172.49	172.80	0.31	63	05188	I OVT	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: DDH86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	172.80	172.90	0.10	63	05188	I OVT	COAL	C-3.SHRD
82	172.90	173.27	0.37	63	05188	I OVT	COAL	C-2.VBRKN
82	173.27	173.34	0.07	64	05188	I OVT	COAL	C-4.BRKN
82	173.34	173.53	0.19	64	05188	I OVT	COAL	C-2.SHRD
82	173.53	173.57	0.04	64	05188	I OVT	COAL	C-4.BRKN
82	173.57	173.72	0.15	64	05188	I OVT	COAL	C-2.VBRKN
82	173.72	174.52	0.80	65	05188	I OVT	COAL	C-2.VBRKN SHEARED LOCALLY.
82	174.52	174.64	0.12	65	05188	I OVT	ROCK LOSS	
82	174.64	175.09	0.45	65	05188	I OVT	COAL LOSS	
82	175.09	175.37	0.28	66	05188	I OVT	COAL	C-2.VBRKN SHEARED LOCALLY.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	175.37	175.75	0.38	66	05188	1 OVT	COAL	C-2. VBRKN SHEARED.
83	175.75	176.64	0.89	67	05188	1 OVT	COAL	C-2. VBRKN SHEARED & POWDERED LOCALLY.
83	176.64	177.27	0.63	68	05189		MUDSTONE	CARB. M-DK. GY. BRKN SILTY NEAR BASE.
84	177.27	178.50	1.23	69			MUDSTONE	M. BLK. MAS. BRKN FEW V SMALL PLANT FRAGMENTS AT TOP OF INTERVAL. DECREASING IN ABUNDANCE DOWN H QLE. FAULT ZONE AT 25-30CM.
84	178.50	179.01	0.51	70			MUDSTONE	M. BLK. MAS. BRKN SAME AS ABOVE.
84	179.01	179.21	0.20	*70			MUDSTONE	SLTY. DK. GY. LAM. BIOTR. SLD
85	179.21	179.42	0.21	70			MUDSTONE	SLTY. DK. GY. LAM. BIOTR. SLD SAME AS ABOVE. LOCALLY PYRITIC AT BOTTO M OF INTERVAL.
85	179.42	181.02	1.60	70			SANDSTONE	MG. LT-M. GY. THNB. BRKN 1-2CM SLTST BEDS 20-80CM APART. BECOMING LAMINATED AT BOTTOM OF INTERVAL. TOTAL DEPTH 181.97 M.

\* DENOTES MEASURED BCA  
NEWPAGE





















# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

**Datasource:** KPNLRDDH86013

**Province:** BC

**Northing:** 6344240.00

**Lat:** 571435

**Log Date:** 86-09-04

**Zone:** 9

**Easting:** 507847.00

**Long:** 1285212

**Company:** CENTURY

**Measuring Point:**

**Elevation:** 1537.4

**Geologist:** LOVE

**Scale:** 1 to 100.0

**Comments:**

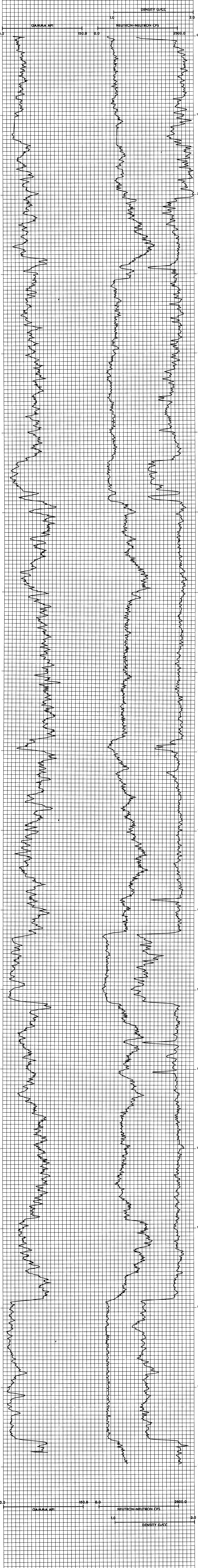
1. LOGGED THROUGH THE RODS
- 2.

**Depth Range:** 0.0 to 184.0

**True Thickness:** NO

**Logs Plotted:**

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



KPNLRDDH86014

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86014

DATE - 02/13/87

- HISTORY -

START DATE - 04/09/86  
END DATE - 06/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - BARKER

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - CORE BOXES WERE MISNUMBERED AFTER BOX 45. BOX 46 W  
AS OMITTED, NO CORE IS MISSING. THERMISTOR 75 M.

- LOCATION -

PROVINCE - BC  
ELEVATION - 1705.90

ZONE - 9  
NORTHING - 6344042.00  
EASTING - 506891.62

LICENCE/LEASE NUMBER -

LATITUDE - 571429  
LONGITUDE - 1285309

- ORIENTATION -

LENGTH - 163.67  
CORE SIZE - 0.0

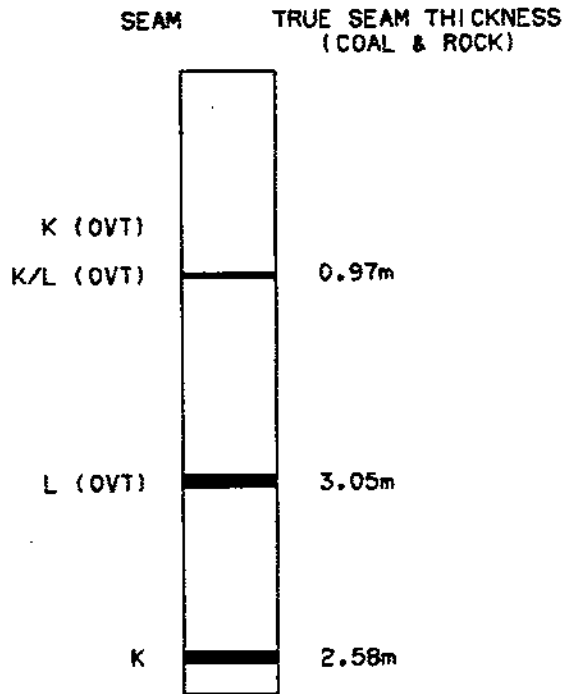
INCLINATION - 90.0  
AZIMUTH - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

CASING DEPTH (M) - 7.62  
AQUIFER DEPTHS (M) - 0.00  
LOST CIRC. DEPTHS (M) - 0.00  
0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86014

GULF CANADA CORPORATION  
11/03/87  
KLAP:(205057)870063014.LOG



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	7.62	7.62	05			OVERBURDEN	CASING.
1	7.62	7.87	0.25	05			SANDSTONE	FG. MOD. M. GY. MAS. BRKN VERY WEATHERED. QTZ VEINING.
1	7.87	8.23	0.36	05			ROCK LOSS	
1	8.23	9.29	1.06	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN INTENSE IRREGULAR QTZ VEINING. V WEATHE RED.
2	9.29	10.65	1.36	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN V. WEATHERED. MOD. QTZ VEINING.
2	10.65	11.28	0.63	05			ROCK LOSS	
2	11.28	11.42	0.14	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN INTENSE QTZ VEINING.
3	11.42	13.13	1.71	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN V. WEATHERED. QTZ BRECCIA IN UPPER HALF OF INTERVAL. SOME SLUMP FROM UPHOLE?
4	13.13	13.71	0.58	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN V. WEATHERED. INTENSE FER STAINING.
4	13.71	14.33	0.62	05			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	14.33	15.13	0.80	05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN HEATHERED. EITHER BCA'S OR JOINTING ALM OST PARALLEL TO CORE. TOO MASSVE TO SEE GOOD BCA'S.
5	15.13	15.47	0.34	*05			SANDSTONE	FG. MOD. M. BN. MAS. VBRKN NO GOOD BEDDING VISIBLE.
5	15.47	15.85	0.38	07			ROCK LOSS	
5	15.85	17.08	1.23	*10			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN AS ABOVE. 3 VERY FAINT SILT STRINGERS.
5	17.08	17.28	0.20	08			ROCK LOSS	
6	17.28	17.37	0.09	07			SANDSTONE	FG. MOD. M. GY. MAS. SLD AS ABOVE.
6	17.37	18.67	1.30	05			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN AS ABOVE. MUCH QTZ VEINING AT BASE.
7	18.67	19.83	1.16	*01			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN AS ABOVE.
7	19.83	20.42	0.59	06			ROCK LOSS	
7	20.42	20.85	0.43	09			SANDSTONE	FG. MOD. M. GY. MAS. BRKN 7CM OF QTZ BRECCIA AT TOP. V. FAINT MIS PY SILT STRINGERS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	20.85	22.48	1.63	*15			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN BCA'S 10-20 DEGREES ONLY. RARE FAINT SILT STRINGERS VISIBLE.
9	22.48	22.74	0.26	22			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN AS ABOVE.
9	22.74	22.86	0.12	24			ROCK LOSS	
9	22.86	24.47	1.61	30			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN AS ABOVE.
10	24.47	25.08	0.61	39			SANDSTONE	FG. MOD. M. GY. MAS. VBRKN LITH AS ABOVE. MOD. QTZ VEINING. SHARP LOWER CONTACT. "COASTER" SILT RIPUP CLASTS AT BASE. TOPS UP. (?)
10	25.08	25.30	0.22	42			ROCK LOSS	
10	25.30	25.88	0.58	*45			SILTSTONE	M. GY. LAM. VBRKN "COASTER ZONE". RHYTHMIC SILTSTONES. LAMINAE FINE DOWNWARD. TOPS DOWN (?) MIN. OR. QTZ. VEINING.
11	25.88	26.02	0.14	44			SILTSTONE	M. GY. LAM. VBRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	26.02	26.52	0.50	43			ROCK LOSS	
11	26.52	27.58	1.06	*40			SILTSTONE	M. GY. LAM. VBRKN AS ABOVE. LAMINAE FINE DOWNWARD.
12	27.58	27.95	0.37	*40			SILTSTONE	M. GY. LAM. XBDG. VBRKN AS ABOVE. SHARP LOWER CONTACT. ONE SCOUR OR CROSS BED SHOWS TOP DOWN. FAULTED CONTACT? QTZ VEIN IN UNDERLYING SS TRUNCATED BY COASTER ZONE.
12	27.95	28.21	0.26	38			ROCK LOSS	
12	28.21	29.57	1.36	33			SANDSTONE	FG. MOD. M. GY. MAS. BRKN SAME AS SANDSTONE UNIT ABOVE. INTENSE QTZ VEINING.
13	29.57	30.12	0.55	28			SANDSTONE	FG. MOD. M. GY. MAS. BRKN AS ABOVE.
13	30.12	30.71	0.59	24			SILTSTONE	SSY. M. GY. LAM. SSD. VBRKN INTERLAMINATED SILT AND SS. MUCH SSD AND SLUMPING. QUESTIONABLE TOPS.
13	30.71	31.39	0.68	21			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	31.39	31.59	0.20	16		SILTSTONE	SSY. M. GY. LAM. VBRKN AS ABOVE. INTERLAMINATED SILTSTONE AND S S. .08 QTZ VEIN AT TOP OF UNIT (BRECCIA TED CONTACT).
14	31.59	31.96	0.37	16		SILTSTONE	SSY. M. GY. LAM. SSD. VBRKN SSD SHOWS TOPS DOWN. MUDSTONE RIPUP CLASTS IN A LOWER SS BAND.
14	31.96	32.42	0.46	14		SILTSTONE	M. GY. LAM. VBRKN VERY BROKEN, VERY CONTORTED COASTER ZONE E. MUCH QTZ VEINING.
14	32.42	32.61	0.19	12		ROCK LOSS	
14	32.61	33.03	0.42	*10		SILTSTONE	M. GY. LAM. VBRKN BCA'S RANGE FROM 0 TO 20 DEGREES. ONE SM ALL FOLD AXIS. COASTER ZONE VERY CONTORTED. QTZ VEINING.
15	33.03	33.08	0.05	*01		SILTSTONE	M. GY. LAM. VBRKN COASTER ZONE AS ABOVE.
15	33.08	33.22	0.14	01		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: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.22	34.76	1.54	*01		SILTSTONE	M. GY. LAM. VBRKN AS ABOVE. BCA'S = 0 DEGREES OVER MOST OF INTERVAL, STEEPENING TO 30 DEGREE AT BASE.
16	34.76	35.11	0.35	*43		SILTSTONE	M. GY. LAM. VBRKN AS ABOVE. 7CM QTZ BRECCIA AT BASE. SHARP CONTACT WITH UNDERLYING SS.
16	35.11	36.43	1.32	41		SANDSTONE	MOD. M. GY. MAS. BRKN AS SANDSTONE ABOVE COASTERS. INTENSE QTZ VEINING.
17	36.43	36.63	0.20	38		SANDSTONE	MOD. M. GY. MAS. BRKN AS ABOVE.
17	36.63	36.99	0.36	37		SANDSTONE	MOD. M. GY. MAS. BRKN INTENSE QTZ VEINING. UPPER 12CM SOLID QTZ.
17	36.99	37.22	0.23	37		SILTSTONE	DK. GY. MAS. VBRKN CRUSHED CORE. SLUMP FROM UPHOLE (?).
17	37.22	37.81	0.59	35		ROCK LOSS	
17	37.81	38.12	0.31	34		SILTSTONE	DK. GY. MAS. VBRKN CRUSHED CORE. QTZ VEINS THROUGHOUT.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	38.12	38.56	0.44	*33			SILTSTONE	SSY, DK. GY. LAM. SSD. VBRKN INTERLAMINATED SILT AND SS. MOTTLED. SL UMP(?)
18	38.56	39.41	0.85	39			SANDSTONE	FG. MOD. LT. GY. MAS. VBRKN MOD. QTZ VEINING. FINES DOWNWARD TO SILT AT BASE.
18	39.41	39.99	0.58	45			ROCK LOSS	
19	39.99	40.50	0.51	*50			SILTSTONE	M. GY. LAM. VBRKN
19	40.50	40.66	0.16	52		K OVT	MUDSTONE	CARB. BLK. VBRKN MUDST MIXED WITH C-5 COAL.
19	40.66	40.91	0.25	53		K OVT	MUDSTONE	DK. GY. SHRD
19	40.91	41.47	0.56	*55		K OVT	MUDSTONE	DK. GY. LAM. VBRKN UPPER 18CM SHEARED & V POORLY CONSOLIDATED - LIKE PLASTICENE. MORE CARB DOWNWARD.
20	41.47	41.53	0.06	55		K OVT	COAL	C-2. VBRKN RUBBLE.

\* DENOTES MEASURED BCA

87/02/13

## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	41.53	42.81	1.28	55		K OVT	ROCK LOSS	PROBABLY MIXTURE OF CARB MUDST AND COAL.
20	42.81	43.11	0.30	55		K OVT	MUDSTONE	CARB. DK. GY. VBRKN
20	43.11	43.24	0.13	55		K OVT	COAL	C-3. PHRD
20	43.24	43.47	0.23	55		K OVT	MUDSTONE	M. GY. BRKN
20	43.47	44.50	1.03	*55		K OVT	MUDSTONE	M. GY. BRKN
21	44.50	45.10	0.60	37			MUDSTONE	CARB. DK. GY. VTHNB. VSHRD V POORLY CONSOLIDATED.
21	45.10	45.75	0.65	24			MUDSTONE	CARB. DK. GY. VTHNB. VSHRD AS ABOVE, BECOMING LESS CARB DOWNWARD.
22	45.75	47.01	1.26	*03			MUDSTONE	CARB. DK. GY. VTHNB. VBRKN FOLD AXIS IN LOWER HALF OF INTERVAL. POSSIBLE FRACTURE ZONE NEAR TOP & IN PREVIOUS BOX.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	47.01	47.84	0.83	19			ROCK LOSS	
22	47.84	48.07	0.23	28			MUDSTONE	CARB. DK. GY. VTHNB. VBRKN LITH AS ABOVE.
23	48.07	49.14	1.07	38			MUDSTONE	CARB. DK. GY. VTHNB. VBRKN LITH AS ABOVE. EXTREMELY VARIABLE BCA'S 0-70 DEGREES. LOCAL FOLD AXIS. FRAC. ZONE?
23	49.14	50.89	1.75	60			ROCK LOSS	
23	50.89	51.41	0.52	*78			SILTSTONE	SSY. DK. GY. LAM. VBRKN MANY LAYERS VERY POORLY CONSOLIDATED. SOME SLUMP FROM UPHOLE.
24	51.41	52.48	1.07	*60			SILTSTONE	SSY. DK. GY. VTHNB. VBRKN LAYERS RANGE FROM MUD. TO FG. SS. MUCH SLUMP FROM UPHOLE (?)
24	52.48	53.13	0.65	51			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: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	53.13	53.44	0.31	45			SILTSTONE	SSY. DK. GY. MAS. VBRKN BRECCIA OF SANDY MUDST PIECES IN A DARK CLY. POORLY CONSOLIDATED MATRIX. SLUMP FROM UPHOLE? OR FRAC. ZONE?
25	53.44	53.84	0.40	41		K/L OVT	MUDSTONE	CARB. BLK. PMRD EXTREMELY SHEARED. VITRINITE PIECES THROUGHOUT. ONE SOLID SILT LAYER 10CM WIDE WITH MUCH QTZ VEINING.
25	53.84	54.74	0.90	34		K/L OVT	COAL LOSS	
25	54.74	54.94	0.20	28		K/L OVT	ROCK LOSS	
25	54.94	55.19	0.25	26		K/L OVT	COAL LOSS	
25	55.19	56.31	1.12	*16			SILTSTONE	DK. GY. LAM. VBRKN POORLY CONSOLIDATED.
25	56.31	56.81	0.50	20			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	56.81	58.72	1.91	*24			SILTSTONE	SSY, DK. GY. LAM. SSD. BRKN FAINT LAMINAE RANGE FROM MUD TO FG SS. AMBIGUOUS TOPS.
27	58.72	59.68	0.96	*24			SILTSTONE	DK. GY. LAM. SSD. BRKN LITH AS ABOVE, FINELY LAM'D BUT WITH LE SS SAND, AMBIGUOUS TOPS.
27	59.68	59.94	0.26	23			ROCK LOSS	
27	59.94	60.64	0.70	23			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
28	60.64	62.49	1.85	22			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
29	62.49	62.68	0.19	21			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
29	62.68	62.99	0.31	21			ROCK LOSS	
29	62.99	64.77	1.78	*20			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE. ONE 4CM WIDE QTZ VEIN.
30	64.77	65.98	1.21	*01			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	65.98	66.81	0.83	*01			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
31	66.81	68.76	1.95	*25			SILTSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE. MINOR QTZ VEINING ASSOCIATED WITH POORLY CONSOLIDATED SANDY LAYERS.
32	68.76	70.75	1.99	*35			SILTSTONE	SSY. W. GY. LAM. XBDG. BRKN SLIGHTLY SANDIER THAN ABOVE. AMBIGUOUS TOPS AS ABOVE. XBDG APPEARS TO SHOW TOP S DOWN.
33	70.75	71.79	1.04	*35			SILTSTONE	SSY. DK. GY. LAM. XBDG. BRKN AS ABOVE. "FAIR" XBDG SHOWS TOPS DOWN. (BCA'S ARE TO LOW TO BE CERTAIN).
33	71.79	72.44	0.65	35			SILTSTONE	SSY. DK. GY. LAM. XBDG. BRKN AS ABOVE.
34	72.44	74.52	2.08	*35			SILTSTONE	SSY. DK. GY. LAM. XBDG. BRKN AS ABOVE.
35	74.52	74.64	0.12	33			SILTSTONE	SSY. DK. GY. LAM. XBDG. BRKN AS ABOVE.
35	74.64	76.45	1.81	32			SILTSTONE	SSY. DK. GY. LAM. XBDG. BRKN FAIR EXAMPLES OF XBDG & SSD SHOWS TOPS DOWN.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 13

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	76.45	77.51	1.06	*30			SILTSTONE	SSY, DK, GY, LAM, XBDG, BRKN AS ABOVE.
36	77.51	78.47	0.96	32			SILTSTONE	SSY, DK, GY, LAM, XBDG, BRKN AS ABOVE WITH ONE 4CM WIDE QTZ VEIN.
37	78.47	79.81	1.34	*35			SILTSTONE	SSY, M, GY, LAM, SSD, SLD SANDIER THAN ABOVE.
37	79.81	80.57	0.76	34			SANDSTONE	SLTY, FG, VPR, M, GY, VTHNB, SSD, SLD SAND LAYERS FINE UPWARDS FROM FG SS TO MUD. SSD ONCONTACTS BUT TOPS ARE AMBIGUOUS.
38	80.57	82.59	2.02	32			SANDSTONE	SLTY, FG, VPR, M, GY, VTHNB, SSD, SLD AS ABOVE.
39	82.59	83.59	1.00	*30			SANDSTONE	SLTY, FG, VPR, M, GY, VTHNB, SSD, SLD AS ABOVE.
39	83.59	84.55	0.96	31			SANDSTONE	SLTY, FG, VPR, M, GY, VTHNB, SSD, SLD AS ABOVE.
40	84.55	86.61	2.06	33			SANDSTONE	FG, MOD, LT, GY, LAM, XBDG, SLD FAINT WISPY DARK ORGANIC LAMINAE THROUGHOUT. ONE 3CM WIDE BAND OF MUDST RIPUP CLASTS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	86.61	88.60	1.99	*35			SANDSTONE	FG, MOD, LT, GY, LAM, XBDG, SLD XBDG SHOWS TOPS DOWN. LITH SAME AS ABOVE.
42	88.60	89.63	1.03	37			SANDSTONE	FG, MOD, LT, GY, LAM, XBDG, SLD LITH AS ABOVE. ORGANIC RICH WISPY LAMINAE SLIGHTLY MORE COMMON THAN ABOVE.
42	89.63	90.61	0.98	38			SANDSTONE	FG, MOD, LT, GY, LAM, XBDG, SLD AS ABOVE WITH RARE COAL RIPUP CLASTS 3-13MM IN DIA.
43	90.61	92.64	2.03	*40			SANDSTONE	FG, MOD, LT, GY, LAM, XBDG, BRKN FAINTER LAMINAE THAN ABOVE. 3 BANDS OF MUDST RIPUP CLASTS.
44	92.64	93.68	1.04	*35			SANDSTONE	FG, MOD, LT, GY, LAM, BRKN LITH AS ABOVE. SILTY LAMINAE AT BASE.
44	93.68	94.58	0.90	38			SILTSTONE	SSY, DK, GY, LAM, SSD, BRKN AMBIGUOUS TOPS. SANDY LAMINAE THROUGHOUT. FINE DARK SILTST.
45	94.58	95.61	1.03	41			SILTSTONE	SSY, DK, GY, LAM, SSD, BRKN LITH AS ABOVE.
45	95.61	96.41	0.80	45			SILTSTONE	SSY, DK, GY, LAM, SSD, VBRKN LITH AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DMH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	96.41	96.66	0.25		46		ROCK LOSS	
47	96.66	97.11	0.45		47		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. BRKN AMBIGUOUS TOPS.
47	97.11	97.22	0.11		48		CLAYSTONE	LT. GY. MAS. SLD LIGHT GREY, POORLY CONSOLIDATED.
47	97.22	98.05	0.83	*50			MUDSTONE	DK. GY. LAM. BRKN ONE COAL STRINGERS 2MM WIDE. FAINT BEDD. ING.
47	98.05	98.45	0.40		47		ROCK LOSS	
47	98.45	98.99	0.54		46		SILTSTONE	SSY. DK. GY. VTHNB. VBRKN GRADING DOWNWARD FROM FG SS TO MUD IN E ACH BAND.
48	98.99	99.15	0.16		44		MUDSTONE	DK. GY. MAS. SLD QTZ VEINS THROUGHOUT.
48	99.15	100.97	1.82	*40			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN LAYERS FINE DOWNWARD FROM FG SS TO MUD. FAIR SSD ON THIS MUD SHOWS TOPS DOWN. ONE CM WIDE COAL AND QTZ BAND.
49	100.97	101.99	1.02		40		MUDSTONE	DK. GY. LAM. BRKN WISPY SILT STRINGERS THROUGHOUT.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 16

PROJECT: KPN BLOCK: LR DATA SOURCE: DMH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	101.99	102.84	0.85	*40			MUDSTONE	DK. GY. LAM. BIOTR. BRKN AS ABOVE. MINOR MOTTLING - BIOTURBATION (?)
49	102.84	103.26	0.42		42		ROCK LOSS	
50	103.26	105.04	1.78	*45			MUDSTONE	DK. GY. LAM. BIOTR. VBRKN GRADING FROM MOTTLED SILTSTONE AT TOP O F INTERVAL DOWN TO CARB. MUDST. WITH COAL STRINGERS AT BASE.
51	105.04	105.10	0.06		45		COAL	C-3. SLD CM BANDS OF COAL & MUDST.
51	105.10	105.15	0.05		45		MUDSTONE	CARB. DK. GY. SLD
51	105.15	105.59	0.44		45 10017		MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS WITHIN. LOWER 25CM SAMP LED. BANDED.
51	105.59	105.99	0.40		45 10018 L OVT		COAL	C-3. BRKN
51	105.99	106.05	0.06		45 10018 L OVT		COAL	C-5. BRKN

\* 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: DDHB6014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	106.05	106.64	0.59	45 10018	L OVT	COAL	C-2.BRKN
52	106.64	106.79	0.15	45 10018	L OVT	COAL	C-2.SLD
52	106.79	106.83	0.04	45 10018	L OVT	MUDSTONE	CARB.DK.GY.BRKN COALY.
52	106.83	106.88	0.05	45 10019	L OVT	COAL	C-3.SLD
52	106.88	107.22	0.34	45 10019	L OVT	COAL	C-3.BRKN BANDED WITH THIN CONTORTED MUDDY BANDS.
52	107.22	107.31	0.09	45 10019	L OVT	MUDSTONE	CARB.DK.GY.BRKN
52	107.31	107.43	0.12	45 10019	L OVT	COAL	C-2.VBRKN
52	107.43	107.49	0.06	45 10019	L OVT	COAL	C-6.SLD BONE COAL.
52	107.49	107.98	0.49	45 10019	L OVT	COAL	C-3.SHRD VERY BROKEN.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 18

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	107.98	108.12	0.14	45 10019	L OVT	COAL LOSS	
52	108.12	108.25	0.13	45 10019	L OVT	MUDSTONE	CARB.DK.GY.BRKN POORLY CONSOLIDATED.
52	108.25	108.31	0.06	45 10020	L OVT	COAL	C-2.SHRD
53	108.31	108.81	0.50	45 10020	L OVT	COAL	C-2.VBRKN
53	108.81	108.89	0.08	45 10020	L OVT	COAL	C-6.SLD BONE COAL.
53	108.89	109.07	0.18	45 10020	L OVT	COAL	C-3.VBRKN
53	109.07	109.09	0.02	45 10020	L OVT	MUDSTONE	CARB.DK.GY.SHRD
53	109.09	109.15	0.06	45 10020	L OVT	ROCK LOSS	
53	109.15	109.25	0.10	45 10020	L OVT	COAL LOSS	
53	109.25	109.80	0.55	45 10020	L OVT	COAL	C-2.BRKN 15CM SOLID CHUNKS THROUGHOUT.
53	109.80	109.91	0.11	45 10020	L OVT	COAL LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	109.91	110.34	0.43	45	10021	MUDSTONE	CARB. DK. GY. BRKN COALY PLANT FRAGS WITHIN. BECOMES SILTY AT BASE. UPPER 25CM SAMPLED.
54	110.34	111.74	1.40	*45		SILTSTONE	DK. GY. LAM. SLD FINELY LAM SILTSTONE.
54	111.74	112.31	0.57	43		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. XBDG. SLD V. SMALL MUDST RIPUP CLASTS 1-3MM IN DI AMETER THROUGHOUT. FINE SILTY LAMINAE.
55	112.31	112.78	0.47	42		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD FINE SILT LAMINAE AS ABOVE.
55	112.78	114.18	1.40	*40		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. BRKN LITH. AS ABOVE. SILT LAYERS WIDER AT BOT TOM. SSD SHOWS TOPS DOWN.
55	114.18	114.25	0.07	36		ROCK LOSS	
56	114.25	115.86	1.61	31		SANDSTONE	MG. VPR. LT. GY. YTHNB. BRKN SILT BANDS 2-5CM WIDE. MUDST RIPUP CLAS T BANDS. FGSS AT TOP GRADING DOWN TO MG SAND AT BASE.
56	115.86	116.11	0.25	*25		SANDSTONE	MG. MOD. LT. GY. LAM. SLD V. FAINT BEDDING VISIBLE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	116.11	117.04	0.93	*35		SANDSTONE	MG. MOD. LT. GY. YTHNB. BRKN V. FAINT BEDDING VISIBLE.
57	117.04	118.11	1.07	33		SANDSTONE	FG. PR. LT. GY. YTHNB. XBDG. SLD SILT LAMINAE THROUGHOUT. FINE ORGANIC-R ICH WISPS AND RIPUP CLASTS. XBDG SHOWS TOPS DOWN.
58	118.11	118.84	0.73	31		SANDSTONE	FG. PR. LT. GY. LAM. BRKN WISPY ORGANIC-RICH LAMINAE AND BANDS OF MUDST RIPUP CLASTS.
58	118.84	120.09	1.25	28		SANDSTONE	FG. PR. LT. GY. LAM. BRKN AS ABOVE.
59	120.09	121.59	1.50	*25		SANDSTONE	FG. PR. LT. GY. LAM. VBRKN INTENSE QTZ VEINING. BRECCIATION NEAR B ASE.
60	121.59	122.68	1.09	*01		SANDSTONE	FG. PR. LT. GY. LAM. VBRKN AS ABOVE. 0 DEGREES BCA'S. INTENSE QTZ VEINING & BRECCIATION.
60	122.68	123.41	0.73	01		ROCK LOSS	
60	123.41	124.07	0.66	*01		SILTSTONE	SSY. DK. GY. LAM. XBDG. VBRKN FINELY LAM. 0 DEGREES BCA. 10CM WIDE. QT Z 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: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	124.07	125.74	1.67	*01			SILTSTONE	SSY, DK. GY. LAM. XBDG. YBRKN AS ABOVE. 0 DEGREES BCA'S.
61	125.74	125.85	0.11	05			ROCK LOSS	
61	125.85	126.08	0.23	05			SILTSTONE	DK. GY. LAM. YBRKN LESS SAND THAN ABOVE. INTENSE QTZ VEINING.
62	126.08	128.02	1.94	*10			SILTSTONE	DK. GY. LAM. BIOTR. YBRKN AS ABOVE. MINOR COALY STRINGERS AT TOP.
62	128.02	128.12	0.10	23			ROCK LOSS	
63	128.12	128.85	0.73	28			SILTSTONE	DK. GY. LAM. BRKN AS ABOVE.
63	128.85	128.97	0.12	33			SILTSTONE	M. GY. MAS. BIOTR. SLD LARGE SCALE FEEDING TRAILS SIMILAR TO TYNDALE STONE. SEE MARKER BELOW BOTH SEAM "L".
63	128.97	129.95	0.98	*40			SILTSTONE	M. GY. LAM. BIOTR. BRKN FINELY LAM. RARE IMM COALY STRINGERS. AMBIGUOUS TOPS.
64	129.95	131.59	1.64	*40			SILTSTONE	SSY. M. GY. LAM. SSD. YBRKN AMBIGUOUS TOPS. INTERLAMINATED MUD AND FG SSY SLTST. INTENSE QTZ VEINING.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	131.59	131.72	0.13	43			ROCK LOSS	
65	131.72	132.91	0.59	44			SILTSTONE	SSY. M. GY. LAM. YBRKN DISRUPTED BEDDING FROM BIOTR'S 'N' (?)
65	132.31	132.60	0.29	45			BRECCIA	HH. BRKN QTZ BRECCIA.
65	132.60	133.15	0.55	47			MUDSTONE	CARB. DK. GY. SHRD COALY STRINGERS THROUGHOUT.
65	133.15	133.22	0.07	48			COAL	C-4. SHRD VERY BROKEN.
66	133.22	133.28	0.06	48			COAL	C-4. SHRD
66	133.28	133.42	0.14	48			MUDSTONE	CARB. BRKN COALY STRINGERS WITHIN.
66	133.42	133.58	0.16	49			COAL	C-3. SHRD
66	133.58	134.56	0.98	51			ROCK LOSS	
66	134.56	134.60	0.04	52			COAL	C-3. BRKN

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	134.60	135.54	0.94	54		MUDSTONE	CARB. DK. GY. YBRKN LESS CARB THAN ABOVE. BUT WITH OCCASIONAL COALY STRINGERS NEAR TOP OF INTERVAL
66	135.54	135.75	0.21	56		ROCK LOSS	
66	135.75	135.89	0.14	56		SANDSTONE	FG. PR. M. GY. MAS. SLD SHARP CONTACT WITH MUDST.
67	135.89	135.98	0.09	57		SILTSTONE	VPR. DK. GY. LAM. SLD
67	135.98	137.82	1.84	*60		SILTSTONE	VPR. DK. GY. LAM. BIOTR. BRKN FG SS AND MUD LAMINAE THROUGHOUT. SLIGHTLY SANDIER DOWNWARD. BIOTURB DISRUPTS BEDDING IN PLACES.
67	137.82	137.92	0.10	69		ROCK LOSS	
68	137.92	139.08	1.16	*75		SILTSTONE	VPR. DK. GY. LAM. BIOTR. BRKN AS ABOVE.
68	139.08	139.82	0.74	76		SILTSTONE	VPR. DK. GY. LAM. BIOTR. 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: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	139.82	141.85	2.03	78		SILTSTONE	VPR. DK. GY. LAM. BIOTR. BRKN MINOR QTZ VEINING & VISIBLE FAULTS WITH 2-3CM DISPLACEMENT. LITH AS ABOVE.
70	141.85	142.17	0.32	79		SILTSTONE	SSY. VPR. M. GY. LAM. SSD. SLD WIDER & MORE NUMEROUS SAND LAYERS. "FAIR" SSD SHOWS TOPS UP (?)
70	142.17	143.79	1.62	*80		SILTSTONE	SSY. VPR. M. GY. LAM. SSD. SLD AS ABOVE. TOPS UP (?)
71	143.79	145.12	1.33	84		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SSD. SLD MORE SAND THAN ABOVE. BIOGENIC ACTIVITY AND SSD SHOW TOPS UP.
71	145.12	145.93	0.81	86		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. SSD. SLD WIDER SAND BANDS. INTERLAYERED FG SAND AND DARK MUD. LOADING SHOW TOPS UP.
72	145.93	147.97	2.04	*90		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. SSD. BRKN LITH AS ABOVE. TOPS UP.
73	147.97	148.25	0.28	87		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. SSD. SLD LITH AS ABOVE.
73	148.25	150.06	1.81	*85		SILTSTONE	VPR. DK. GY. LAM. SSD. SLD SAND CONTENT DECREASES DOWNWARD.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	150.06	151.18	1.12	82		SILTSTONE	VPR. DK. GY. LAM. SLD MORE UNIFORM LAYERS REPEATEDLY FINE UP HARD.
74	151.18	152.08	0.90	*80		SILTSTONE	VPR. DK. GY. LAM. SLD AS ABOVE.
75	152.08	154.08	2.00	*75		SILTSTONE	VPR. DK. GY. LAM. XBDG. SLD V. FINELY LAM. RARE BIOTURBATION. XBDG ALTHOUGH NO GOOD TOPS INDICATORS. FINES TO MUD AT BOTTOM OF BOX.
76	154.08	154.13	0.05	76 10022		MUDSTONE	CARB. DK. GY. SLD PLANT FRAGS WITHIN.
76	154.13	154.29	0.16	76 10022		MUDSTONE	CARB. DK. GY. SLD PLANT FRAGS WITHIN.
76	154.29	154.36	0.07	76 10023 K		COAL	C-4. SLD
76	154.36	154.38	0.02	76 10023 K		MUDSTONE	CARB. DK. GY. SLD
76	154.38	154.50	0.12	76 10023 K		COAL	C-4. BRKN
76	154.50	154.63	0.13	76 10023 K		COAL	C-2. 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: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	154.63	154.78	0.15	76 10023 K		ROCK LOSS	
76	154.78	154.82	0.04	77 10023 K		COAL	C-3. SLD
76	154.82	155.12	0.30	77 10023 K		COAL	C-2. BRKN
76	155.12	155.18	0.06	77 10023 K		COAL LOSS	
76	155.18	155.49	0.31	77 10023 K		COAL	C-2. BRKN
76	155.49	155.64	0.15	77 10023 K		MUDSTONE	CARB. DK. GY. BRKN VERY COALY.
76	155.64	155.72	0.08	77 10024 K		COAL	C-2. SLD
76	155.72	155.75	0.03	77 10024 K		COAL	C-6. SLD
76	155.75	156.04	0.29	77 10024 K		COAL	C-2. BRKN
77	156.04	156.49	0.45	78 10024 K		COAL	C-3. BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	156.49	156.55	0.06	78	10024	K	COAL	C-2.SLD
77	156.55	156.60	0.05	78	10024	K	COAL	C-6.SLD BONE COAL.
77	156.60	156.66	0.06	78	10024	K	COAL	C-2.BRKN
77	156.66	156.94	0.28	78	10024	K	COAL	C-5.BRKN
77	156.94	157.04	0.10	78	10025		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS WITHIN.
77	157.04	157.77	0.73	79	10025		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS WITHIN. UPPER 15CM SAMP LED.
78	157.77	159.72	1.95	*80			MUDSTONE	VPR.DK.GY.VTHNB.BIOTR.SHRD SOFT V. FINE MUD AT TOP COARSENING TO M OTTLED SILTST AT BASE. PYRITE BLSRS IN MOTTLED AREAS.
79	159.72	159.93	0.21	80			SILTSTONE	SSY.VPR.LI.GY.LAM.BIOTR.SLD MUCH SAND MIXED IN. BIOTURBATED MOTTLIN G WITH TINY PYRITE SPECKS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	159.93	161.59	1.66	80			SANDSTONE	SLTY.LI.GY.LAM.SSD.BRKN FINE MUD LAMINAE THROUGHOUT.
80	161.59	162.84	1.25	*80			SANDSTONE	SLTY.LI.GY.LAM.BRKN LITH AS ABOVE. T.D.=163.67. DRILLER'S W ARKER.

\* DENOTES MEASURED BCA  
NEHPAGE









GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86014

723

GEOLOGIST : BARKER

DATE : FEB 26/87

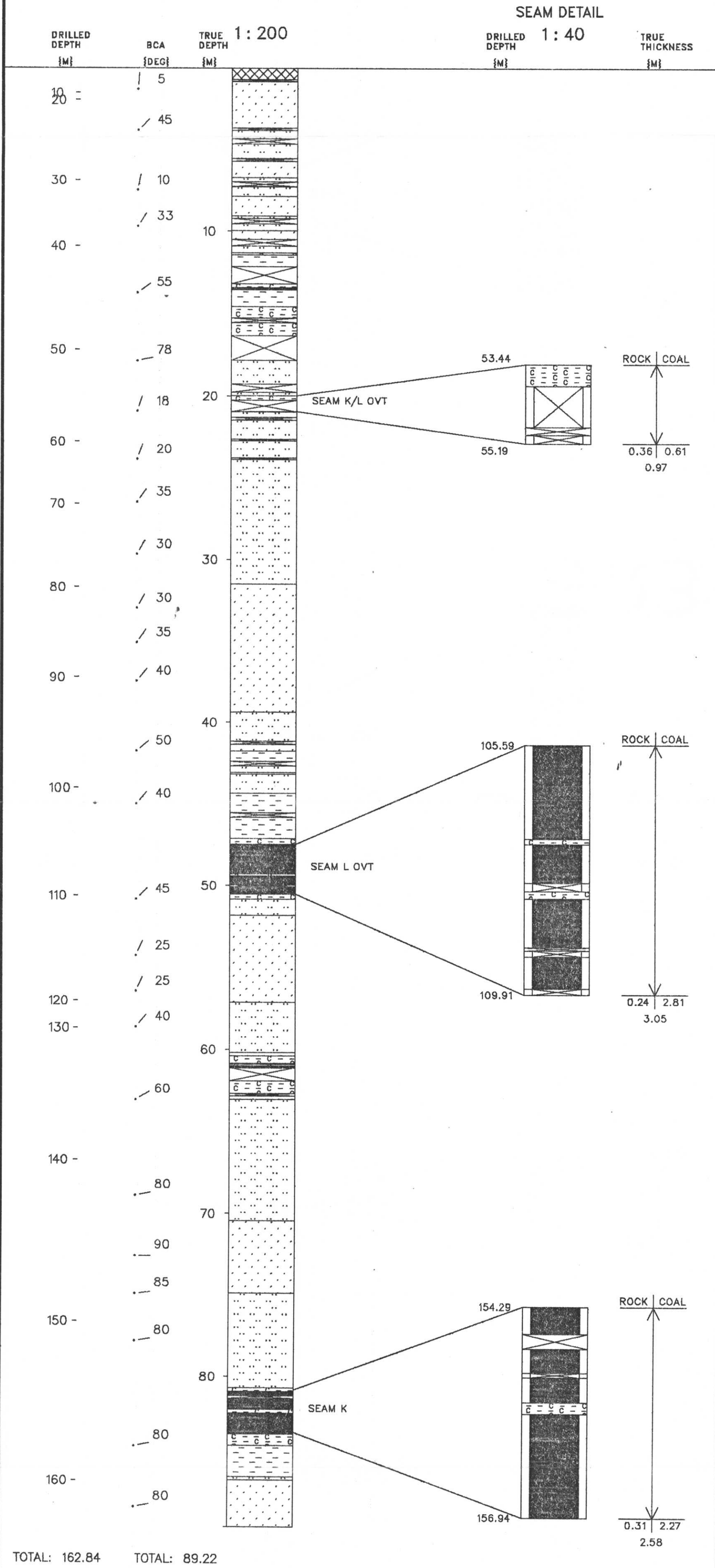
DRAWING NO. :

SCALE : 1:200 1:40

NORTHING: 6344042.0 N  
 EASTING: 506891.6 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



867

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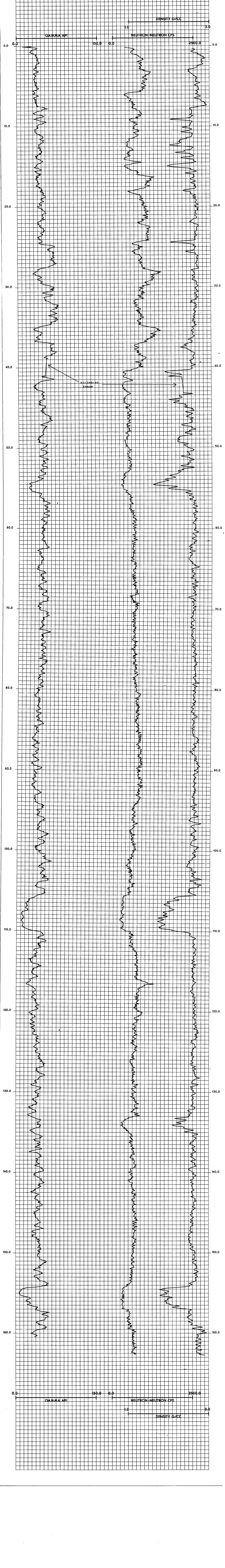


# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

Datasource: <b>KPNLRDDH86014</b> Log Date: 86-09-06 Company: CENTURY Geologist: BARKER	Province: BC Zone: 9 Measuring Point:	Northing: 6344040.00 Easting: 506892.00 Elevation: 1705.9			
Scale: 1 to 100.0 Depth Range: 0.0 to 167.0 True Thickness: NO	Comments: 1. LOGGED THROUGH THE RODS 2.				
Logs Plotted:					
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9030A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE





**KPNLRDDH86015**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH86015

DATE - 02/13/87

- HISTORY -

START DATE - 04/09/86

END DATE - 06/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LOVE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1562.52

ZONE - 9

NORTHING - 6344290.00

EASTING - 507601.81

LICENCE/LEASE NUMBER -

LATITUDE - 571437

LONGITUDE - 1285227

- ORIENTATION -

LENGTH - 105.92

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 10.67

AQUIFER DEPTHS (M) - 0.00

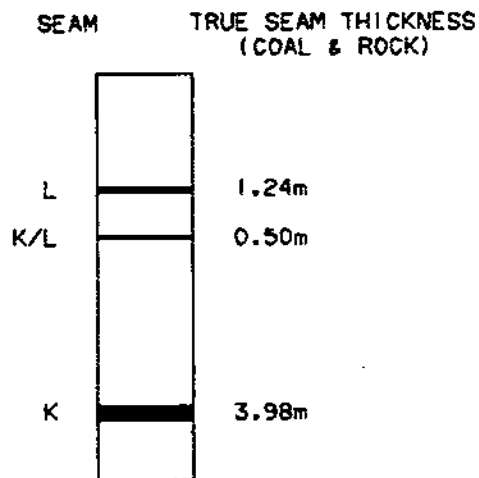
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86015

GULF CANADA CORPORATION  
11/03/87  
KLAP: [205057]B70063015.LOG



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	10.67	10.67	85			OVERBURDEN	CASING.
1	10.67	13.77	3.10	85			ROCK LOSS	
1	13.77	14.02	0.25	85			SILTSTONE	DK.GY.VBRKN VERY VERY BROKEN, MOSTLY GRAVEL.
1	14.02	14.18	0.16	85			ROCK LOSS	
1	14.18	15.58	1.40	*85			SILTSTONE	SSY.DK.GY.LAM.BIOTR.VBRKN LOCALLY MOTTLED AND BIOTURBATED.
2	15.58	16.80	1.22	84			SILTSTONE	SSY.M.GY.LAM.VBRKN
2	16.80	17.53	0.73	84			ROCK LOSS	
2	17.53	17.63	0.10	83			SILTSTONE	SSY.M.GY.LAM.VBRKN
3	17.63	19.53	1.90	83			SILTSTONE	SSY.M.GY.LAM.BRKN LOCALLY BIOTURBATED, 6CM BRECCIATED FAULT ZONE NEARBOTTOM OF INTERVAL.
4	19.53	20.15	0.62	*82			SANDSTONE	SLTY.VFG.M.GY.LAM.VBRKN GRADATIONAL FROM ROCK TYPE ABOVE.
4	20.15	20.58	0.43	83			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	20.58	21.54	0.96	83			SANDSTONE	SLTY.FG.M.GY.LAM.SSD.VBRKN TOPS UP.
5	21.54	23.16	1.62	*85			SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.SSD.BRKN TOPS UP.
5	23.16	23.63	0.47	84			ROCK LOSS	
5	23.63	23.94	0.31	84			SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.SSD.BRKN SAME AS ABOVE.
6	23.94	25.86	1.92	84			SANDSTONE	SLTY.FG.M.GY.LAM.SSD.VBRKN TOPS UP. V MINOR XBDG.
6	25.86	26.08	0.22	83			ROCK LOSS	
7	26.08	26.68	0.60	*83			SANDSTONE	SLTY.FG.M.GY.LAM.SSD.BRKN SAME ROCK TYPE AS ABOVE.
7	26.68	27.99	1.31	80			SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.SSD.BRKN FEW THIN SLTST BEDS IN MASSIVE SS. 5CM SOFT FAULT GOUGE NEAR BASE OF INTERVAL.
8	27.99	28.37	0.38	78			SANDSTONE	FG.M.GY.MAS.BRKN SOFT AND LOCALLY BRECCIATED.
8	28.37	28.77	0.40	76			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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	28.77	29.21	0.44	75	05162		MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN 5CM CLAY 10CM ABOVE BASE OF INTERVAL. L OVER 25CM SAMPLED.
8	29.21	29.55	0.34	74	05163	L	COAL LOSS	
8	29.55	29.59	0.04	74	05163	L	COAL	C-3. BRKN
8	29.59	29.61	0.02	73	05163	L	MUDSTONE	CARB. DK. GY. BRKN
8	29.61	29.97	0.36	73	05163	L	COAL	C-3. BRKN
8	29.97	30.03	0.06	72	05163	L	MUDSTONE	CARB. DK. GY. SLD
8	30.03	30.24	0.21	72	05163	L	COAL LOSS	
8	30.24	30.51	0.27	71	05163	L	COAL	C-3. BRKN QUITE BANDED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	30.51	30.99	0.48	*70	05164		MUDSTONE	CARB. M. BLK. LAM. VBRKN NUMEROUS COALY STRINGERS AND LENSES. MA NY PLANT FRAGMENTS. UPPER 25CM SAMPLED.
9	30.99	31.50	0.51	70			ROCK LOSS	
9	31.50	32.25	0.75	71			MUDSTONE	DK. GY. MAS. BRKN LOCALLY LAMINATED. MOSTLY MASSIVE.
9	32.25	32.66	0.41	72			MUDSTONE	DK. GY. MAS. BRKN SAME AS ABOVE.
10	32.66	33.01	0.35	72			MUDSTONE	DK. GY. MAS. BIOTR. VBRKN SIMILAR TO ABOVE ROCK TYPE. LOCALLY VER Y MOTTLED. 2CM CLAY 5CM FROM TOP. 5CM B RECCIA FAULT GOUGE 5CM FROM BASE.
10	33.01	33.62	0.61	72			ROCK LOSS	
10	33.62	33.99	0.37	73			MUDSTONE	DK. GY. MAS. BIOTR. VBRKN SAME ROCK TYPE AS ABOVE.
10	33.99	34.11	0.12	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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	34.11	35.04	0.93	74		SANDSTONE	SLTY. VFG. M. GY. LAM. WRMBU. BRKN TOPS UP.
11	35.04	35.42	0.38	74		SANDSTONE	SLTY. VFG. M. GY. LAM. BIOTR. BRKN TOPS UP. SSD.
11	35.42	36.94	1.52	*75		SANDSTONE	SLTY. FG. M. GY. LAM. SSD. BRKN COARSENING DOWN HOLE. MANY QTZ CARB VEI NS NEAR BOTTOM OF INTERVAL.
12	36.94	38.95	1.41	75		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD V. RARE RIPUP CLASTS. SALT AND PEPPER. VERY FAINTLY HISSY IN PLACES. QTZ CARB VEINING AT TOP OF INTERVAL.
12	38.95	38.89	0.54	75		SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN SAME AS ABOVE ROCK TYPE.
12	38.89	39.59	0.70	75		ROCK LOSS	
13	39.59	41.23	1.64	75		SANDSTONE	PBLY. MG. VPR. M. GY. MAS. VBRKN 20CM V. SOFT GOUGE AT BOTTOM OF INTERVAL
14	41.23	42.68	1.45	*75	05165	SANDSTONE	SLTY. MG. VPR. M. GY. LAM LOCALLY HISSY. FEW 2-4CM LAYERS WITH MA NY RIPUPS <2CM LONG. LOWER 25CM 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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	42.68	42.83	0.15	77	05166 K/L	COAL	C-4. BRKN
14	42.83	42.86	0.03	77	05166 K/L	COAL LOSS	
14	42.86	43.07	0.21	78	05166 K/L	COAL	C-3. SHRD
15	43.07	43.19	0.12	78	05166 K/L	COAL	C-3. BRKN QTZ STRINGERS WITHIN.
15	43.19	43.70	0.51	79	05167	MUDSTONE	M. BLK. MAS. SLD UPPER 25CM SAMPLED. MANY PLANT FRAGMENT S. V FEW COALY STRINGERS.
15	43.70	44.21	0.51	80		MUDSTONE	M. BLK. MAS. BRKN SAME AS ABOVE. FEWER PLANT FRAGMENTS.
15	44.21	44.85	0.64	*82		MUDSTONE	SLTY. DR. GY. LAM. WRMBU. SLD TOPS UP. BIOTR.
16	44.85	45.58	0.73	80		SILTSTONE	M. GY. LAM. WRMBU. SLD TOPS UP. GRADATIONAL FROM ABOVE. SSD.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	45.58	46.39	0.81	77			SANDSTONE	SLTY. LT-M. GY. VTHNB. BIOTR. VBRKN RARELY BIOTURBATED. TOPS UP. GRADATIONA L FROM ABOVE. SSD.
16	46.39	46.75	0.36	75			ROCK LOSS	
17	46.75	47.26	0.51	74			SANDSTONE	SLTY. LT-M. GY. VTHNB. BIOTR. VBRKN SAME AS ABOVE. SSD.
17	47.26	47.99	0.73	71			SANDSTONE	SLTY. FG. M-DK. GY. VTHNB. SLD VERY FAINTLY BEDDED.
17	47.99	48.73	0.74	69			SILTSTONE	DK. GY. LAM. SLD FAINTLY LAMINATED. V FEN VFG SANDY LENSE S.
18	48.73	49.47	0.74	66			SILTSTONE	DK. GY. VTHNB. BRKN V. FAINTLY BEDDED.
18	49.47	49.59	0.12	*65			SILTSTONE	M. GY. LAM. BRKN
18	49.59	49.80	0.21	65			ROCK LOSS	
18	49.80	50.68	0.88	67			SANDSTONE	SLTY. M-DK. GY. VTHNB. VBRKN FEN QTZ CARB VEINS. LOCALLY BRECCIATED.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	50.68	51.33	0.65	69			SANDSTONE	SLTY. MG. M. GY. LAM. VBRKN SIMILAR TO ROCK TYPE ABOVE.
19	51.33	52.25	0.92	71			SANDSTONE	PBLY. MG. M. GY. THNB. VBRKN THIN BEDS OF GRANULES IN MOSTLY MG SS.
19	52.25	52.85	0.60	73			ROCK LOSS	
19	52.85	52.96	0.11	74			SANDSTONE	PBLY. MG. M. GY. THNB. SLD SAME ROCK TYPE AS ABOVE.
20	52.96	53.03	0.07	74			SANDSTONE	GRAN. LT. GY. MAS. SLD
20	53.03	54.73	1.70	76			SANDSTONE	MG. LT-M. GY. MAS LOCALLY LAMINATED TO WISPY. MOSTLY MASSI VE.
21	54.73	55.69	0.96	80			SANDSTONE	MG. LT-M. GY. MAS. BRKN V. RARE SMALL RIPUP CLASTS (<2CH).
21	55.69	56.51	0.82	*82			SANDSTONE	MG. LT-M. GY. MAS. BRKN SAME AS ABOVE.
21	56.51	56.72	0.21	80			ROCK LOSS	
22	56.72	57.33	0.61	78			CONGLOMERATE	SSY. GRAN. M. GY. MAS. VBRKN HUDST AND RARE COALY RIPUP 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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	57.33	57.89	0.56	76		SANDSTONE	HG. LT-M. GY. MAS. YBRKN RARELY WISPY.
22	57.89	58.34	0.45	74		ROCK LOSS	
22	58.34	58.65	0.31	72		SANDSTONE	HG. LT-M. GY. MAS. YBRKN SAME AS ABOVE.
23	58.65	59.29	0.64	70		SANDSTONE	HG. LT-M. GY. MAS. YBRKN SIMILAR TO ABOVE ROCK TYPE. LOCALLY LAMINATED. LOCALLY WISPY.
23	59.29	59.56	0.27	69		ROCK LOSS	
23	59.56	59.79	0.23	67		SANDSTONE	HG. LT-M. GY. MAS. YBRKN SAME AS ABOVE.
23	59.79	60.79	1.00	*65		SANDSTONE	CG. M. GY. THNB. BRKN SEVERAL THIN GRANULE BEDS.
24	60.79	60.84	0.05	67		SANDSTONE	CG. M. GY. THNB. SLD SAME ROCK TYPE AS ABOVE.
24	60.84	61.14	0.30	68		MUDSTONE	SLTY. DK. GY. YSHRD
24	61.14	62.61	1.47	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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	62.61	64.01	1.40	77		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN TOPS UP. UNEVENLY LAMINATED. LOCALLY BIOTURBATED. SSD.
25	64.01	65.67	1.66	84		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN SAME AS ABOVE. SSD.
25	65.67	66.04	0.37	*88		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN SAME AS ABOVE. SSD.
26	66.04	66.52	0.48	89		MUDSTONE	SLTY. DK. GY. VTHNB. BIOTR. SLD QUITE MOTTLED.
26	66.52	66.89	0.37	*90		MUDSTONE	LT. GY. LAM. BRKN BANDED LT-M (5-15MM) AND LT GY (2-4MM). LT GY IS SHELLING CLAY BENTONITIC MARKER ABOVE I SEAM. SHARP LOWER CONTACT. GRADATIONAL INTERLAMINATED UPPER CONTACT
26	66.89	68.15	1.26	90		MUDSTONE	SLTY. DK. GY. VTHNB. BIOTR. BRKN LOCALLY BIOTURBATED. LOCALLY MASSIVE. LESS SILTY WITH DEPTH.
27	68.15	68.39	0.24	90		MUDSTONE	M. BLK. LAM. BRKN VERY FAINTLY LAMINATED.
27	68.39	68.72	0.33	89		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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	68.72	69.72	1.00	89			MUDSTONE	M. BLK. LAM. BRKN BECOMES VSHRD AT BASE OF INTERVAL.
27	69.72	70.13	0.41	89			SANDSTONE	SLTY. FG. M. GY. VTHNB. SLD 4CM MASSIVE PYRITE 8CM FROM TOP OF INTE RYAL.
27	70.13	70.30	0.17	89			SILTSTONE	M-DK. GY. LAM. BRKN
28	70.30	71.49	1.19	89			MUDSTONE	M. BLK. MAS. BRKN NUMEROUS PLANT FRAGMENTS.
28	71.49	71.77	0.28	89			ROCK LOSS	
28	71.77	72.51	0.74	88			MUDSTONE	M. BLK. MAS. BRKN SAME AS ABOVE.
29	72.51	74.17	1.66	88			MUDSTONE	M. BLK. MAS. BRKN SAME AS ABOVE.
30	74.17	74.36	0.19	88			MUDSTONE	M. BLK. MAS. BRKN SAME AS ABOVE. LOCALLY SHRD.
30	74.36	74.81	0.45	88			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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	74.81	76.70	1.89	87			MUDSTONE	M. BLK. VTHNB. BRKN VERY SIMILAR TO ROCK TYPE ABOVE. VERY F AINTLY VTHNB.
31	76.70	77.78	1.08	87			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN V MINOR SSD. TOPS UP SIMILAR TO ROCK TY PE ABOVE. VERY DARK GREY. ONLY SLIGHTLY SLTY.
31	77.78	78.30	0.52	87			MUDSTONE	DK. GY. VTHNB. BRKN VERY DARK GREY.
31	78.30	78.44	0.14	87			MUDSTONE	LT-M. GY. CONTAINS A 1CM SOFT CLAY LAYER.
31	78.44	78.68	0.24	86			MUDSTONE	DK. GY. MAS. SLD VERY DARK GREY.
32	78.68	80.75	2.07	86			MUDSTONE	DK. GY. MAS. BRKN NUMEROUS PLANT FRAGMENTS.
32	80.75	80.92	0.17	86			ROCK LOSS	
33	80.92	83.00	2.08	85			MUDSTONE	DK. GY. MAS. BRKN SAME AS ABOVE.
34	83.00	83.92	0.92	*85			MUDSTONE	DK. GY. LAM. BRKN VERY FAINTLY LAMINATED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	83.92	84.96	1.04	85			MUDSTONE	DK.GY.LAM.BRKN VERY FAINTLY LAMINATED SAME AS ABOVE. W ANY PLANT FRAGMENTS.
34	84.96	85.13	0.17	85			ROCK LOSS	
35	85.13	86.55	1.42	84	05168		MUDSTONE	DK.GY.LAM.BRKN SAME AS ABOVE. GETS COALY WITH DEPTH. C OAL STRINGERS AND LENSES. NEAR BASE. LOW ER 25CH SAMPLED.
35	86.55	86.76	0.21	84	05169	K?	COAL	C-3.BRKN
35	86.76	86.89	0.13	84	05169	K?	COAL	C-2.BRKN
35	86.89	87.16	0.27	84	05169	K?	COAL	C-2.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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	87.16	87.33	0.17	84	05169	K?	COAL	C-2.BRKN
36	87.33	87.50	0.17	84	05169	K?	COAL	C-3.SLD
36	87.50	87.57	0.07	84	05170	K?	COAL LOSS	
36	87.57	87.72	0.15	84	05170	K?	ROCK LOSS	
36	87.72	87.76	0.04	84	05170	K?	MUDSTONE	CARB.DK.GY.BRKN
36	87.76	88.08	0.32	84	05170	K?	COAL	C-2.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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	88.08	88.91	0.83	84	05170	K?	COAL	C-2.BRKN LOCALLY APPROACHING C-1.
36	88.91	88.96	0.05	84	05170	K?	COAL	C-4.SLD
36	88.96	89.31	0.35	83	05170	K?	COAL LOSS	
36	89.31	89.71	0.40	83	05170	K?	COAL	C-2.BRKN
37	89.71	90.04	0.33	83	05170	K?	COAL	C-2.BRKN
37	90.04	90.08	0.04	83	05171	K?	MUDSTONE	CARB.DK.GY.BRKN
37	90.08	90.16	0.08	83	05171	K?	COAL	C-3.SLD
37	90.16	90.19	0.03	83	05171	K?	MUDSTONE	CLYY.M.GY.SLD
37	90.19	90.55	0.36	83	05171	K?	COAL	C-3.BRKN
37	90.55	91.18	0.63	83	05172		MUDSTONE	CARB.DK.GY.BRKN MINOR COALY STRINGERS WITHIN. (UPPER 25 CM 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: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	91.18	91.38	0.20	83			MUDSTONE	CARB.DK.GY.BRKN ABUNDANT COALY BANDS & STRINGERS.
37	91.38	91.44	0.06	83			COAL	C-6.SLD BONE COAL.
37	91.44	91.47	0.03	83			MUDSTONE	CARB.DK.GY.SLD ABUNDANT COALY BANDS AND STRINGERS.
37	91.47	91.56	0.09	83			MUDSTONE	CARB.DK.GY.SLD
38	91.56	92.21	0.65	83			MUDSTONE	M.BLK.MAS.BIOTR.SLD MOTTLED, BIOTURBATED, AND PYRITIC AT BASE OF INTERVAL.
38	92.21	92.59	0.38	83			SANDSTONE	MG.LT-M.GY.MAS.SLD
38	92.59	93.19	0.60	82			SILTSTONE	M-DK.GY.MAS.BIOTR.SLD VERY BIOTURBATED THROUGHOUT.
38	93.19	93.61	0.42	82			SILTSTONE	M-DK.GY.MAS.BIOTR.SLD SAME AS ABOVE.
39	93.61	94.47	0.86	82			SANDSTONE	SLTY.VFG.M-DK.GY.MAS.BIOTR.SLD GRADATIONAL FROM ABOVE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	94.47	94.97	0.50	*82			SANDSTONE	SLTY.VFG.M-DK.GY.LAM.SLD
39	94.97	95.70	0.73	82			SILTSTONE	M-DK.GY.MAS.BIOTR.SLD
40	95.70	96.48	0.78	81			SANDSTONE	FG.M.GY.LAM.SLD RARE SLTY LAMINAE.
40	96.48	97.85	1.37	81			SANDSTONE	SLTY.FG.M.GY.LAM.SLD ABUNDANT LAMINAE.V. RARE BIOTURBATION.
41	97.85	98.25	0.40	80			SANDSTONE	SLTY.YFG.M.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE.
41	98.25	98.66	0.41	80			SANDSTONE	FG.M.GY.MAS.SLD FEW OPEN FRACTURES WITH QTZ CARB FILLIN G.
41	98.66	99.22	0.56	*80			SANDSTONE	SLTY.FG.M.GY.LAM.SLD FEW SLTY LAMINAE. MOSTLY FG SS.
41	99.22	99.46	0.24	78			SANDSTONE	SLTY.FG.M.GY.LAM.SLD SAME AS ABOVE.
41	99.46	99.77	0.31	77			SANDSTONE	SLTY.FG.M-DK.GY.LAM.BIOTR.SLD FEW LISTRIC SURFACES.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	99.77	100.53	0.76	*75			SANDSTONE	SLTY.FG.M-DK.GY.LAM.BIOTR.SLD SAME AS ABOVE.
42	100.53	101.63	1.10	78			SANDSTONE	MG.LT-M.GY.MAS.SLD V. RARE SLTY LAMINAE.
42	101.63	101.85	0.22	80			SANDSTONE	SLTY.MG.M.GY.LAM.SLD LAMINAE RARE AT TOP, BECOMING COMMON IN DEPTH.
43	101.85	102.25	0.40	81			SANDSTONE	SLTY.MG.LT-M.GY.LAM.SLD V SLIGHTLY SILTY. RARE SLTY LAMINAE.
43	102.25	103.91	1.66	*84			SILTSTONE	SSY.M-DK.GY.LAM.SLD MOSTLY CLOSELY SPACED EVEN LAMINAE.
44	103.91	105.26	1.35	84			SILTSTONE	SSY.M-DK.GY.LAM.XBDG.SLD SAME AS ABOVE. TOPS UP. SSD.
44	105.26	105.38	0.12	84			SILTSTONE	SSY.M-DK.GY.LAM.XBDG.SLD TOTAL DEPTH = 105.92 M. SAME AS ABOVE. SSD.

\* DENOTES MEASURED BCA  
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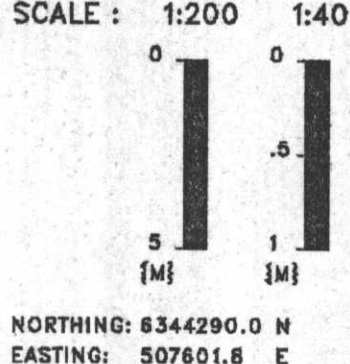
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 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86015

723

GEOLOGIST : LOVE

DATE : FEB 26/87

DRAWING NO. :

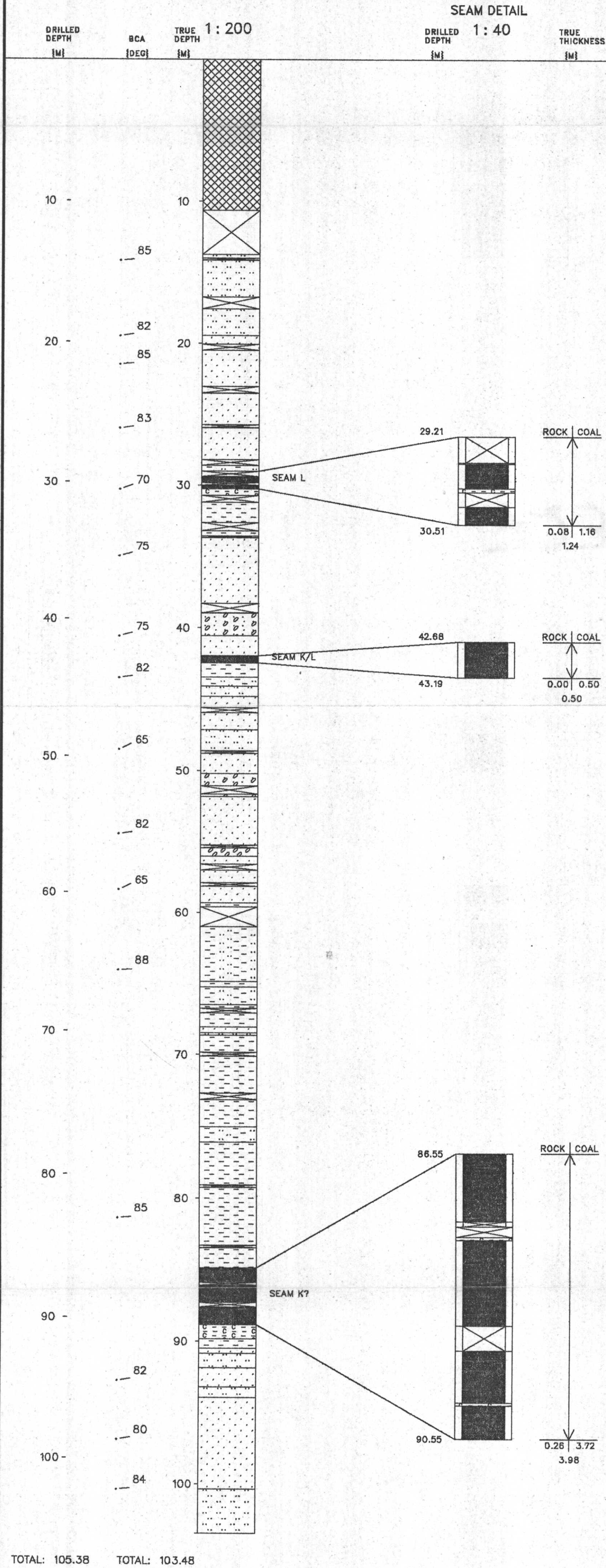


NORTHING: 6344290.0 N  
 EASTING: 507601.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

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





# Gulf Canada Corporation Coal Division

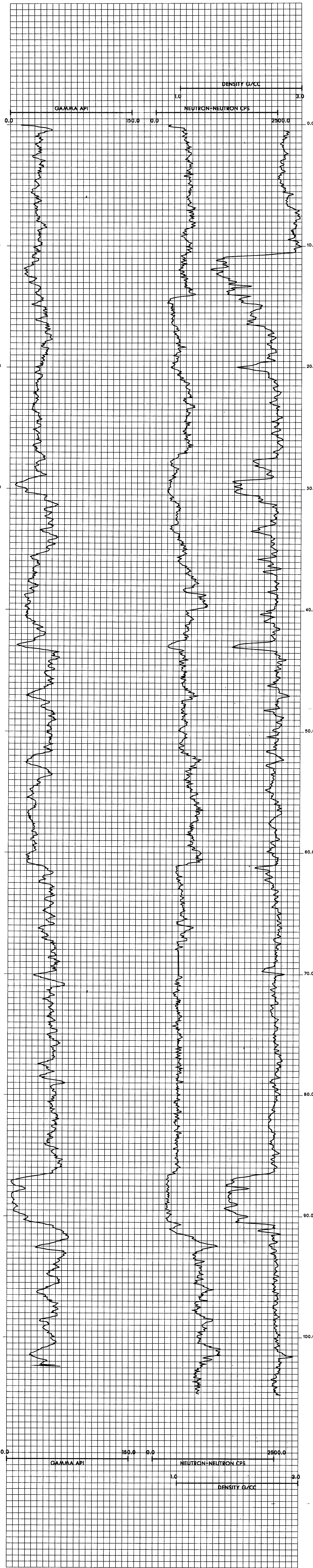
# 723

## Geophysical Log

Datsource: <b>KPNLRDDH86015</b>	Province: BC	Northing: 6344290.00	Lat: 571437
Log Date: 86-09-06	Zone: 9	Easting: 507602.00	Long: 1285227
Company: CENTURY	Measuring Point:		Elevation: 1562.5
Geologist: LOVE			

Scale: 1 to 100.0	Comments: 1. LOGGED THROUGH THE RODS 2.
Depth Range: 0.0 to 109.0	
True Thickness: NO	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9030A	1IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	1IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	1IN PIPE



KPNLRDDH86016

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86016

DATE - 02/13/87

- HISTORY -

START DATE - 06/09/86  
END DATE - 09/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - LOVE

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE. &y

- LOCATION -

PROVINCE - BC  
ELEVATION - 1647.09

ZONE - 9  
NORTHING - 6343292.00  
EASTING - 506636.25

LICENCE/LEASE NUMBER -

LATITUDE - 571405  
LONGITUDE - 1285324

- ORIENTATION -

LENGTH - 189.46  
CORE SIZE - 0.0

INCLINATION - 90.0  
AZIMUTH - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

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

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05		30		OVERBURDEN	CASING
1	3.05	3.25	0.20		30		ROCK LOSS	
1	3.25	3.38	0.13	*30			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN CASING TO 10 FEET.
1	3.38	3.92	0.54		29		MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE. VERY VERY BROKEN.
1	3.92	4.91	0.99		27		ROCK LOSS	
1	4.91	5.05	0.14		26		MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
1	5.05	5.52	0.47		25		ROCK LOSS	
1	5.52	5.91	0.39		24		MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
1	5.91	6.01	0.10		23		ROCK LOSS	
2	6.01	6.13	0.12		23		MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
2	6.13	6.45	0.32		22		SILTSTONE	M. GY. LAM. VBRKN FAIRLY REGULARLY LAMINATED.
2	6.45	6.98	0.53		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: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	6.98	7.37	0.39	*20			SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN FAIRLY REGULARLY LAMINATED.
2	7.37	7.60	0.23		21		SILTSTONE	M. GY. LAM. VBRKN FAINTLY LAMINATED.
2	7.60	7.80	0.20		21		ROCK LOSS	
2	7.80	8.15	0.35		21		SANDSTONE	SLTY. FG. M. GY. LAM. VBRKN
3	8.15	8.42	0.27		22		SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN
3	8.42	9.05	0.63		23		ROCK LOSS	
3	9.05	9.28	0.23		24		SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE. QTZ CARB VEINI NG NEAR TOPOF. INTERVAL.
3	9.28	9.68	0.40		24		ROCK LOSS	
3	9.68	10.26	0.58	*25			SANDSTONE	SLTY. VFG. M. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE.
3	10.26	10.47	0.21		25		SILTSTONE	M-DK. GY. LAM. BRKN

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	10.47	10.75	0.28	25			SILTSTONE	M.GY.LAM.VBRKN SANDY SLTST WITH LAM OF VFG SAND.
4	10.75	11.21	0.46	25			ROCK LOSS	
4	11.21	11.81	0.60	*25			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
4	11.81	12.15	0.34	26			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
5	12.15	12.44	0.29	27			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
5	12.44	13.34	0.90	28			ROCK LOSS	
5	13.34	14.14	0.80	*30			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
5	14.14	14.87	0.73	29			ROCK LOSS	
5	14.87	15.00	0.13	29			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
6	15.00	15.71	0.71	29			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE. SOME SANDY BEDS ARE WISP Y.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	15.71	16.11	0.40	28			ROCK LOSS	
6	16.11	16.63	0.52	*28			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
6	16.63	17.33	0.70	28			ROCK LOSS	
7	17.33	18.03	0.70	28			SANDSTONE	SLTY.FG.LT-M.GY.LAM.VBRKN WISPY. V. SLIGHTLY SILTY.
7	18.03	18.18	0.15	28			ROCK LOSS	
7	18.18	18.74	0.56	*28			SANDSTONE	SLTY.FG.LT-M.GY.LAM.VBRKN SAME AS ABOVE. QTZ CARB VEINING AT BOTT OM OF INTERVAL.
7	18.74	18.96	0.22	28			ROCK LOSS	
8	18.96	19.09	0.13	28			SANDSTONE	SLTY.FG.LT-M.GY.LAM.VBRKN SAME AS ABOVE.
8	19.09	19.60	0.51	27			SANDSTONE	SLTY.FG.LT-M.GY.LAM.VBRKN SAME AS ABOVE.
8	19.60	19.92	0.32	*27			SILTSTONE	M-DK.GY.LAM.VBRKN FAINTLY LAMINATED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	19.92	20.80	0.88	26			ROCK LOSS	
8	20.80	20.92	0.12	25			SANDSTONE	FG.LT-M.GY.MAS.SLD V. SLIGHTLY MISPY.
8	20.92	21.23	0.31	24			SANDSTONE	FG.LT-M.GY.MAS.SLD SAME AS ABOVE.
9	21.23	22.53	1.30	23			SANDSTONE	FG.LT-M.GY.MAS.SLD SAME AS ABOVE BECOMING VBRKN FOR LAST 4 OCH.
9	22.53	22.65	0.12	21			SANDSTONE	FG.LT-M.GY.MAS.SLD SAME AS ABOVE ROCK TYPE.
10	22.65	23.00	0.35	21			SANDSTONE	FG.LT-M.GY.MAS.VBRKN SAME ROCK TYPE AS ABOVE. QTZ CARB VEINI NG AT BASE OF INTERVAL.
10	23.00	23.41	0.41	20			ROCK LOSS	
10	23.41	24.38	0.97	18			SANDSTONE	FG.LT-M.GY.MAS.VBRKN SAME AS ABOVE.
11	24.38	24.45	0.07	17			SILTSTONE	DK.GY.LAM.VBRKN HUDDY SLST.
11	24.45	25.16	0.71	17			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: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	25.16	25.97	0.81	*15			SANDSTONE	SLTY.FG.M-DK.GY.LAM.VBRKN V. SLIGHTLY SILTY.
11	25.97	26.43	0.46	15			SANDSTONE	SLTY.FG.M-DK.GY.LAM.VBRKN SAME AS ABOVE.
11	26.43	26.93	0.50	15			ROCK LOSS	
12	26.93	26.98	0.05	15			SANDSTONE	SLTY.FG.M-DK.GY.LAM.VBRKN SAME AS ABOVE.
12	26.98	27.52	0.54	15			SANDSTONE	SLTY.VFG.M.GY.LAM.VBRKN QUITE SILTY.
12	27.52	27.91	0.39	15			ROCK LOSS	
12	27.91	28.39	0.48	*15			SANDSTONE	SLTY.VFG.M.GY.LAM.VBRKN SAME AS ABOVE.
13	28.39	28.44	0.05	18			SILTSTONE	DK.GY.LAM.VBRKN
13	28.44	28.66	0.22	20			SILTSTONE	DK.GY.LAM.VBRKN QTZ CARB VEINING.
13	28.66	32.18	3.52	42			ROCK LOSS	
13	32.18	32.58	0.40	65			SILTSTONE	M-DK.GY.LAM SANDY SLTST WITH VFG SAND.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	32.58	32.96	0.38	*70			SANDSTONE	SLTY. FG. LT-M. GY. LAM. VBRKN SLIGHTLY SILTY.
13	32.96	33.40	0.44	70			ROCK LOSS	
13	33.40	33.51	0.11	69			SANDSTONE	SLTY. FG. LT-M. GY. LAM. VBRKN SLIGHTLY SILTY, SAME AS ABOVE.
13	33.51	33.88	0.37	69			ROCK LOSS	
14	33.88	35.07	1.19	68			SANDSTONE	FG. LT-M. GY. MAS. VBRKN OCCASIONAL QTZ-CARB VEINS.
14	35.07	35.90	0.83	67			ROCK LOSS	
14	35.90	36.22	0.32	67			SANDSTONE	FG. LT-M. GY. MAS. VBRKN SAME AS ABOVE.
15	36.22	37.05	0.83	66			SANDSTONE	FG. LT-M. GY. MAS. VBRKN SAME AS ABOVE.
15	37.05	37.55	0.50	65			ROCK LOSS	
15	37.55	37.61	0.06	65			SANDSTONE	FG. LT-M. GY. MAS. VBRKN SAME AS ABOVE.
15	37.61	37.91	0.30	*65			MUDSTONE	SLTY. DK. GY. LAM. 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: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	37.91	38.11	0.20	65			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE.
16	38.11	38.86	0.75	66			SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN VARIES FROM ALMOST REGULARLY LAMINATED TO ALMOST HISPY.
16	38.86	39.43	0.57	68			ROCK LOSS	
16	39.43	39.95	0.50	69			SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN SAME AS ABOVE. SEVERAL IRREGULAR QTZ CA RB VEINS.
17	39.93	41.00	1.07	*70			SANDSTONE	SLTY. VFG. M. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE. FEWER VEINS.
17	41.00	41.87	0.87	68			ROCK LOSS	
17	41.87	42.57	0.70	66			SILTSTONE	SSY. M-DK. GY. LAM. BRKN GRADATIONAL FROM ABOVE. FAIRLY REGULARL Y LAMINATED. START OF COASTER ZONE.
18	42.57	43.24	0.67	65			SILTSTONE	M-DK. GY. LAM. BRKN SAME AS ABOVE. COASTERS.
18	43.24	43.79	0.55	63			SILTSTONE	M-DK. GY. LAM. VBRKN VERY VERY BROKEN. V. FISSILE MUDDY SLTS. T. COASTERS.

\* DENOTES MEASURED BCA



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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	43.79	44.92	1.13	62			ROCK LOSS	
18	44.92	45.17	0.25	60			SILTSTONE	M-DK.GY.LAM.VBRKN SAME AS ABOVE.
18	45.17	46.12	0.95	59			ROCK LOSS	
19	46.12	46.42	0.30	57			SILTSTONE	M-DK.GY.LAM.VBRKN SAME AS ABOVE.
19	46.42	47.85	1.43	55			ROCK LOSS	
19	47.85	48.20	0.35	54	J		SILTSTONE	M-DK.GY.LAM.VBRKN SAME AS ABOVE. SLIGHTLY COALY IN PLACES . PMRD COALIN BOTTOM OF BOX.
19	48.20	49.40	1.20	52			ROCK LOSS	
19	49.40	49.90	0.50	*50			SILTSTONE	M-DK.GY.LAM.BRKN NOT AS FISSILE AS COASTER ZONE.
20	49.90	49.93	0.03	50			SILTSTONE	M-DK.GY.LAM.BRKN SAME AS ABOVE.
20	49.93	49.97	0.04	50			BENTONITE	DK.MH.MAS.SLD SOFT. VERY LY.GY. FLAKEY.

\* DENOTES MEASURED BCA

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## GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	49.97	51.37	1.40	51			MUDSTONE	DK.GY.LAM.BIOTR.BRKN VERY FAINTLY LAMINATED. LOCALLY FAINTLY BIOTURBATED.
20	51.37	51.53	0.16	51			ROCK LOSS	
20	51.53	51.73	0.20	51			MUDSTONE	DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE.
21	51.73	52.18	0.45	51			MUDSTONE	DK.GY.LAM.BIOTR.VBRKN SAME AS ABOVE.
21	52.18	53.06	0.88	52			ROCK LOSS	
21	53.06	53.60	0.54	52			MUDSTONE	DK.GY.LAM.BIOTR.VBRKN SAME AS ABOVE.
21	53.60	53.95	0.35	52			ROCK LOSS	
21	53.95	54.10	0.15	53			MUDSTONE	DK.GY.LAM.BIOTR.VBRKN SAME AS ABOVE.
22	54.10	54.60	0.50	53			MUDSTONE	DK.GY.MAS.BIOTR.SLD
22	54.60	55.24	0.64	53			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.VBRKN TOPS UP.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	55.24	55.47	0.23	53			ROCK LOSS	
22	55.47	55.67	0.20	53			SILTSTONE	SSY.VFG.M-DK.GY.LAM.SLD
23	55.67	57.34	1.67	54			SILTSTONE	SSY.VFG.M-DK.GY.LAM.BIOTR.BRKN TOPS UP, LOCALLY VBRKN, SSD.
24	57.34	57.57	0.23	55			SILTSTONE	SSY.VFG.M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE, SSD.
24	57.57	58.65	1.08	*55			MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN GRADATIONAL FROM ABOVE, LOCALLY BRECCIA TED. SSD.
24	58.65	59.30	0.65	54			ROCK LOSS	
25	59.30	59.54	0.24	53			MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN GRADATIONAL FROM ABOVE, SSD.
25	59.54	60.05	0.51	52			ROCK LOSS	
25	60.05	60.80	0.75	52			MUDSTONE	M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE, SSD.
25	60.80	61.00	0.20	51			SILTSTONE	M.GY.LAM.BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	61.00	62.45	1.45	50			SILTSTONE	M.GY.LAM.BIOTR.BRKN TOPS UP, LOCALLY BRECCIATED, BOTTOM 30C M IS VERY BROKEN AND BRECCIATED, SSD.
26	62.45	63.02	0.57	48			ROCK LOSS	
27	63.02	63.24	0.22	47			SILTSTONE	M.GY.LAM.BIOTR.VBRKN MOSTLY BRECCIATED, SSD.
27	63.24	64.01	0.77	47			ROCK LOSS	
27	64.01	65.45	1.44	*45			SILTSTONE	M.GY.LAM.BIOTR.VBRKN SAME AS ABOVE, MOSTLY BRECCIATED, SSD.
28	65.45	65.99	0.54	53			SILTSTONE	M.GY.LAM.BIOTR.BRKN SAME AS ABOVE, LOCALLY BRECCIATED, SSD.
28	65.99	67.27	1.28	*60			SILTSTONE	M.GY.LAM.BIOTR.BRKN SAME AS ABOVE, LOCALLY BRECCIATED, SSD.
29	67.27	68.48	1.21	60			SILTSTONE	M.GY.LAM.BIOTR.VBRKN SAME AS ABOVE, LOCALLY BRECCIATED, SSD.
29	68.48	69.19	0.71	60			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	69.19	69.56	0.37	60			SILTSTONE	M.GY.LAM.BIOTR.VBRKN PROBABLY SAME AS ABOVE. ALL BRECCIATED. SMALL FRAGMENTS IN SOFTER ROCK POWDER MATRIX. SSD.
30	69.56	71.16	1.60	60			SILTSTONE	M.GY.LAM.BIOTR.VBRKN PROBABLY SAME ROCK TYPE AS ABOVE. ALMOS T ALL BRECCIATED. SSD.
30	71.16	71.96	0.80	60			ROCK LOSS	
30	71.96	72.07	0.11	60			SILTSTONE	M.GY.LAM.BIOTR.VBRKN SAME ROCK TYPE AS ABOVE. ALL BRECCIATED . SSD.
31	72.07	73.21	1.14	60			SILTSTONE	M.GY.LAM.VBRKN VERY VERY BROKEN. LOCALLY BRECCIATED.
31	73.21	74.10	0.89	60			ROCK LOSS	
31	74.10	74.22	0.12	60			SILTSTONE	M.GY.LAM.BRKN SAME AS ABOVE.
32	74.22	74.73	0.51	60			SILTSTONE	M.GY.LAM.VBRKN SAME AS ABOVE.
32	74.73	75.13	0.40	60			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	75.13	75.66	0.53	60	10026		SILTSTONE	M.GY.LAM.BRKN ALL BRECCIATED BUT LITTLE MATRIX. COAL IN REMAINDER OF BOX 32 AND ALL OF BOX 3 3. LOWER 25CM SAMPLED.
32	75.66	75.93	0.27	60	10027	L	COAL LOSS	
32	75.93	76.71	0.78	60	10027	L	COAL	C-3.SHRD HIGHLY SHEARED MIXTURE OF COAL & MUDST. UNABLE TO DISTINGUISH BANDS.
33	76.71	78.14	1.43	60	10027	L	COAL	C-3.SHRD HIGHLY SHEARED MIXTURE OF COAL & MUDST. UNABLE TO DISTINGUISH BANDS.
33	78.14	78.30	0.16	60	10027	L	COAL	C-3.SHRD HIGHLY SHEARED MIXTURE OF COAL & MUDST. UNABLE TO DISTINGUISH BANDS.
33	78.30	78.42	0.12	60	10028		MUDSTONE	CARB.DK.GY.SLD
34	78.42	79.20	0.78	60	10028		SILTSTONE	M-DK.GY.BRKN VERY BRECCIATED WITH ROCK POWDER MATRIX UPPER 13 CM SAMPLED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	79.20	80.07	0.87	60			SILTSTONE	M. GY. LAM. SSD. BRKN SEVERAL QTZ CARB VEINLETS/ LITRIC SURF ACES COMMON. MINOR FOLD AXIS IN BOTTOM PIECE. MOSTLY TOPS UP.
35	80.07	80.64	0.57	60			SILTSTONE	M. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. BRECCIATED. MIT H LITTLE ROCK POWDER MATRIX.
35	80.64	82.49	1.85	*60			SILTSTONE	M. GY. LAM. BRKN SAME AS ABOVE. SEVERAL FRACTURES WITH 5 OFT TALC-LIKE MINERAL UP TO 5MM THICK. CORE ANGLES IN UNBRECCIATED PARTS ARE 6 0.
36	82.49	84.00	1.51	42			SILTSTONE	M. GY. LAM. BRKN SAME AS ABOVE. QUITE BRECCIATED.
36	84.00	84.24	0.24	32			SILTSTONE	M. GY. LAM. BRKN SAME AS ABOVE.
37	84.24	84.48	0.24	30			SANDSTONE	FG. M. GY. BRKN FINELY BRECCIATED WITH MUCH ROCK POWDER MATRIX.
37	84.48	86.03	1.55	*20			SANDSTONE	SLTY. FG. M. GY. LAM. BRKN WISPY, UNDULOSE BEDDING AND IRREGULAR L AMINATIONS. VBRKN AT BASE OF INTERVAL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	86.03	86.59	0.56	*22			SANDSTONE	SLTY. VFG. M. GY. LAM. XBDG. BRKN TOPS UP. LOCALLY BRECCIATED.
38	86.59	87.29	0.70	23			ROCK LOSS	
38	87.29	88.38	1.09	25			SANDSTONE	SLTY. VFG. M. GY. LAM. XBDG. BRKN SAME AS ABOVE.
39	88.38	89.73	1.35	28			SANDSTONE	SLTY. VFG. M. GY. LAM. BRKN SAME AS ABOVE.
39	89.73	90.34	0.61	30			ROCK LOSS	
39	90.34	90.60	0.26	31			SANDSTONE	SLTY. VFG. M. GY. LAM. BRKN SAME AS ABOVE.
40	90.60	91.42	0.82	*32			SILTSTONE	SSY. M. GY. LAM. BRKN VFG SS LAMINAE IN SLTST. LOCALLY FRACTUR ED. AND BRECCIATED.
40	91.42	92.65	1.23	*01			SILTSTONE	SSY. M. GY. LAM. BRKN SAME AS ABOVE.
41	92.65	93.09	0.44	*01			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. BRKN
41	93.09	93.38	0.29	01			ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	93.38	94.88	1.50	*01			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. BRKN SAME AS ABOVE.
42	94.88	95.31	0.43	*01			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. BRKN SAME AS ABOVE.
42	95.31	95.52	0.21	01			ROCK LOSS	
42	95.52	96.93	1.41	*01			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. VBRKN SAME AS ABOVE. LOCALLY BRECCIATED.
43	96.93	98.33	1.40	*01			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. BRKN SAME AS ABOVE.
43	98.33	98.57	0.24	05			ROCK LOSS	
43	98.57	98.67	0.10	06			SANDSTONE	SLTY. VFG. LT-M. GY. LAM. VBRKN SAME AS ABOVE.
44	98.67	99.40	0.73	*08			SILTSTONE	SSY. M. GY. LAM. BRKN SIMILAR TO ROCK TYPE ABOVE.
44	99.40	100.62	1.22	*12			SILTSTONE	SSY. M. GY. LAM. BRKN SAME AS ABOVE.
45	100.62	102.06	1.44	*18			SILTSTONE	SSY. M. GY. LAM. BRKN SAME AS ABOVE.
45	102.06	102.45	0.39	20			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: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	102.45	102.88	0.43	21			SILTSTONE	SSY. M. GY. LAM. BRKN SAME AS ABOVE.
46	102.88	104.77	1.89	24			SILTSTONE	SSY. M. GY. LAM. XBDG. BRKN TOPS UP. LOCALLY BRECCIATED. SAME ROCK TYPE AS ABOVE.
47	104.77	105.12	0.35	27			SILTSTONE	SSY. M. GY. LAM. VBRKN SAME AS ABOVE.
47	105.12	105.50	0.38	28			ROCK LOSS	
47	105.50	106.91	1.41	*30			SILTSTONE	SSY. M. GY. LAM. XBDG. BRKN TOPS UP. SAME ROCK TYPE AS ABOVE. LOCALLY BRECCIATED. COALY BITS IN BOTTOM PIECE.
48	106.91	107.12	0.21	30			SILTSTONE	CARB. M-DK. GY. LAM. VBRKN BRECCIATED. QTZ CARB. VEINED. COALY STRINGS AND FRAGMENTS.
48	107.12	107.44	0.32	29			ROCK LOSS	
48	107.44	108.55	1.11	29			SILTSTONE	SSY. M. GY. LAM. BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	108.55	108.88	0.33	29			SILTSTONE	SSY.M.GY.LAM.BRKN
49	108.88	110.71	1.83	*28			SILTSTONE	M-DK.GY.LAM.BRKN ONE QTZ CARB VEIN 7MM ACROSS.
49	110.71	110.99	0.28	26			ROCK LOSS	
50	110.99	111.22	0.23	25			SILTSTONE	M-DK.GY.LAM.VBRKN SAME AS ABOVE.
50	111.22	111.88	0.66	24			ROCK LOSS	
50	111.88	113.49	1.61	22			SILTSTONE	M-DK.GY.LAM.XBDG.BRKN TOPS UP, SAME AS ABOVE.
51	113.49	114.54	1.05	19			SILTSTONE	M-DK.GY.LAM.BRKN UNDULOSE BEDDING, SAME ROCK TYPE AS ABO VE. LOCALLY SLIGHTLY BRECCIATED.
51	114.54	115.19	0.65	*17			SILTSTONE	M-DK.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE.
52	115.19	115.84	0.65	16			SILTSTONE	M.GY.BRKN VERY BRECCIATED WITH ROCK POWDER MATRIX

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	115.84	116.29	0.45	15			SANDSTONE	MG.LT.GY.LAM BANDED QTZ BIOTITE GNEISS.V. HARD. BRIT TLE, RECRYSTALIZED, PERHAPS METAMORPHOSE D.
52	116.29	116.64	0.35	14			ROCK LOSS	
52	116.64	117.29	0.65	13			SILTSTONE	M-DK.GY.VBRKN MANY QTZ CARB VEINS.
52	117.29	117.94	0.65	12			ROCK LOSS	
53	117.94	119.68	1.74	*10			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN LOCALLY BRECCIATED WITHOUT ANY DISLOCAT ION.
54	119.68	120.58	0.90	26			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN MOSTLY BIOTRB. LOCALLY LAMINATED.
54	120.58	120.98	0.40	33			ROCK LOSS	
54	120.98	121.72	0.74	*40			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	121.72	123.15	1.43	28			MUDSTONE	SLTY. DK. GY. LAM. BRKN MANY COALY PLANT FRAGMENTS ON BEDDING SURFACES. WITH DEPTH BECOMES VBRKN AND BRECCIATED WITH QTZ CARB MATRIX.
55	123.15	123.41	0.26	19			ROCK LOSS	
56	123.41	125.28	1.87	*08			MUDSTONE	SLTY. DK. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. LOCALLY QUITE BRECCIATED. ROCK POWDER MATRIX.
57	125.28	126.05	0.77	*28			MUDSTONE	SLTY. DK. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. LOCALLY QUITE BRECCIATED.
57	126.05	126.55	0.50	40			ROCK LOSS	
57	126.55	127.11	0.56	50			MUDSTONE	SLTY. DK. GY. LAM. BRKN SAME AS ABOVE WITH MANY QTZ CARB VEINS.
57	127.11	127.36	0.25	58			MUDSTONE	DK. GY. MAS. BRKN MANY COALY PLANT FRAGMENTS.
58	127.36	128.02	0.66	67			MUDSTONE	DK. GY. MAS. BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	128.02	128.08	0.06	74			BENTONITE	SLTY. M. GY. MAS. SLD FLAKEY. SLIGHTLY GRITTY. SOFT.
58	128.08	128.46	0.38	*78			MUDSTONE	DK. GY. LAM. BRKN MANY CARB PLANT FRAGMENTS.
58	128.46	129.26	0.80	76			ROCK LOSS	
58	129.26	129.61	0.35	75			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN COALY STRINGERS UP TO 6MM. ACROSS. PYRITIC IN ONE PLACE.
58	129.61	129.83	0.22	74			ROCK LOSS	
59	129.83	130.47	0.64	73			MUDSTONE	DK. GY. MAS. SLD COALY PLANT FRAGMENTS. BRECCIATED WITH ROCK POWDER MATRIX.
59	130.47	131.69	1.22	*70			SILTSTONE	H. GY. LAM. BRKN BRECCIATED WITH ROCK POWDER MATRIX. FEW QTZ CARB VEINS.
60	131.69	132.43	0.74	76			SILTSTONE	H. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	132.43	133.20	0.77	*80			SILTSTONE	M.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE. GETTING SANDY WITH DEPTH.
61	133.20	135.14	1.94	*75			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN HISPY. FEW DISCONTINUOUS QTZ-CARB VEINS
61	135.14	135.78	0.64	80			ROCK LOSS	
62	135.78	135.83	0.05	81			SANDSTONE	SLTY.FG.LT-M.GY.LAM.VBRKN SAME AS ABOVE.
62	135.83	135.98	0.15	81			ROCK LOSS	
62	135.98	137.82	1.84	85			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE. NO VEINS.
63	137.82	138.72	0.90	*90			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN SAME AS ABOVE.
63	138.72	139.56	0.84	89			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN SAME AS ABOVE.
64	139.56	141.64	2.08	87			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	141.64	143.01	1.37	85			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN SAME AS ABOVE.
65	143.01	143.24	0.23	85			ROCK LOSS	
65	143.24	143.81	0.57	84			SILTSTONE	M.GY.LAM.BRKN FEW QTZ VEINS. BOXES 66 AND 67 CONTAINS COAL AND PYRITIC MUDSTONE. PROBABLY H SEAM.
66	143.81	144.00	0.19	84	10029		MUDSTONE	SLTY.W-DK.GY.BRKN CARB AT BASE.
66	144.00	144.14	0.14	83	10030	K/L	COAL	C-3.BRKN
66	144.14	144.53	0.39	83	10030	K/L	COAL LOSS	
66	144.53	144.58	0.05	83	10030	K/L	MUDSTONE	CLYY.M.GY.SLD
66	144.58	144.87	0.29	83	10030	K/L	COAL LOSS	
66	144.87	144.95	0.08	83	10030	K/L	COAL	C-3.SLD PYRITE WITHIN.
66	144.95	145.03	0.08	82	10030	K/L	COAL	C-2.BRKN

\* DENOTES MEASURED BCA



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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	145.03	145.24	0.21	82	10030	K/L	COAL	C-3.BRKN
66	145.24	145.47	0.23	82	10030	K/L	COAL	C-2.VBRKN PARTIALLY POWDERED.
66	145.47	145.53	0.06	82	10031	K/L	MUDSTONE	CARB.M-DK.GY.SLD COALY PLANT FRAGS THROUGHOUT.
66	145.53	145.61	0.08	82	10031	K/L	COAL	C-4.VBRKN
66	145.61	145.66	0.05	82	10031	K/L	MUDSTONE	CARB.M-DK.GY.SLD
66	145.66	145.76	0.10	82	10031	K/L	COAL LOSS	
66	145.76	146.02	0.26	81	10031	K/L	COAL	C-3.BRKN
66	146.02	146.06	0.04	81	10031	K/L	MUDSTONE	CARB.DK.GY.SLD
66	146.06	146.27	0.21	81	10031	K/L	COAL	C-3.BRKN
67	146.27	146.40	0.13	81	10031	K/L	MUDSTONE	CARB.DK.GY.BRKN VERY COALY.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	146.40	146.77	0.37	81	10031	K/L	COAL	C-3.PHRD HIGHLY SHEARED.
67	146.77	148.18	1.41	80	10032		MUDSTONE	CARB.DK.GY.BRKN BECOMES SILTY WITH DEPTH. LOCALLY SHEAR ED AND HIGHLY CARBONACEOUS. UPPER 25CM SAMPLED.
68	148.18	150.10	1.92	78			MUDSTONE	SLTY.DK.GY.MAS.VBRKN BRECCIATED WITH ROCK POWDER MATRIX. FEW PLANT FRAGMENTS.
68	150.10	150.23	0.13	77			ROCK LOSS	
69	150.23	151.15	0.92	76			MUDSTONE	SLTY.DK.GY.LAM.SSD.VBRKN TOPS UP. LOCALLY BRECCIATED.
69	151.15	152.05	0.90	*75			MUDSTONE	SLTY.DK.GY.LAM.SSD.VBRKN SAME AS ABOVE.
69	152.05	152.17	0.12	75			ROCK LOSS	
70	152.17	154.02	1.85	76			SILTSTONE	DK.GY.LAM.SSD.VBRKN SAME AS ABOVE. TOPS UP.
71	154.02	154.32	0.30	77			SILTSTONE	SSY.VFG.M-DK.GY.LAM.BIOTR.SLD TOPS UP. SSD. XBDG.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	154.32	155.25	0.93	*77			SILTSTONE	SSY. VFG. M-DK. GY. LAM. BIOTR. BRKN SAME ROCK TYPE AS ABOVE.
71	155.25	156.00	0.75	77			SILTSTONE	SSY. VFG. M-DK. GY. SLD LOCALLY VERY BRECCIATED WITH ROCK POWDER R MATRIX.
72	156.00	157.12	1.12	77	10033		MUDSTONE	SLTY. M-DK. GY. SLD BRECCIATED WITH ROCK POWDER MATRIX. CARB AT BASE. LOWER 25CM. SAMPLED.
72	157.12	157.22	0.10	77	10034	K	COAL	C-2. SLD
72	157.22	157.24	0.02	77	10034	K	MUDSTONE	SLTY. M. GY. SLD
72	157.24	157.78	0.54	77	10034	K	COAL LOSS	
72	157.78	157.84	0.06	77	10034	K	COAL	C-4. SHRD
72	157.84	158.53	0.69	78	10034	K	COAL	C-3. SHRD SHEARED & POWDERED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	158.53	158.56	0.03	78	10034	K	COAL	C-5. SLD
73	158.56	158.65	0.09	78	10034	K	COAL	C-3. BRKN
73	158.65	158.80	0.15	78	10035	K	MUDSTONE	CARB. DK. GY. BRKN
73	158.80	159.17	0.37	78	10035	K	COAL	C-3. PHRD POWDERED & SHEARED. DIFFICULT TO DETERM INE GRADE.
73	159.17	159.31	0.14	78	10035	K	MUDSTONE	CARB. DK. GY. SLD
73	159.31	159.56	0.25	78	10035	K	COAL	C-3. SHRD SHEARED & POWDERED.
73	159.56	159.62	0.06	78	10035	K	COAL	C-6. SLD
73	159.62	159.73	0.11	78	10035	K	COAL LOSS	
73	159.73	159.80	0.07	78	10035	K	COAL	C-3 SHEARED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	159.80	160.44	0.64	78	10036		MUDSTONE	CARB. DK. GY. SHRD UPPER 25CM SAMPLED.
73	160.44	160.48	0.04	78			COAL	C-3. SLD
73	160.48	160.97	0.49	78			MUDSTONE	SLTY. M-DK. GY. SLD COALY STRINGERS AND CARB NEAR TOP.
73	160.97	161.04	0.07	78			MUDSTONE	SLTY. M-DK. GY. SLD
74	161.04	162.02	0.98	*78			MUDSTONE	DK. GY. MAS. BRKN V. RARE SILTY LAMINAE. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.
74	162.02	162.63	0.61	78			MUDSTONE	M-DK. GY. LAM. VBRKN V. RARELY BIOTURBATED. MOSTLY LAMINATED. VERY VERY BROKEN. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.
75	162.63	163.23	0.60	78			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN VERY VERY BROKEN. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.
75	163.23	163.93	0.70	79			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN SAME 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: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	163.93	164.93	1.00	79			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN SAME AS ABOVE.
76	164.93	165.24	0.31	79			SANDSTONE	FG. LT-M. GY. MAS. VBRKN
77	165.24	165.29	0.05	79			SANDSTONE	FG. LT-M. GY. MAS. SLD SAME AS ABOVE.
77	165.29	166.04	0.75	79			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN VERY VERY BROKEN. ONE THIN SANDY BED.
77	166.04	166.69	0.65	80			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN FISSILE AND CLOSELY JOINTED. LITTLE REC TANGULAR PIECES. NOT AS EVENLY LAMINATED AS COASTER ZONE. VERY VERY BROKEN.
78	166.69	167.29	0.60	80			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
78	167.29	167.79	0.50	80			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
79	167.79	168.04	0.25	*80			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
79	168.04	169.14	1.10	79			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	169.14	170.64	1.50	77			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SIMILAR TO ROCK TYPE ABOVE. PLANT FRAGMENTS AND FEW COAL STRINGERS. BECOMES LESS FISSILE AND JOINTED.
81	170.64	172.30	1.66	75			MUDSTONE	SLTY. DK. GY. LAM. VBRKN VERY VERY BROKEN. BRECCIATED WITH ROCK POWDER MATRIX. NOT COALY.
82	172.30	172.81	0.51	73	J		MUDSTONE	SLTY. DK. GY. LAM. VBRKN SAME AS ABOVE.
82	172.81	173.74	0.93	72			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SAME AS ABOVE.
82	173.74	173.82	0.08	72			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SAME AS ABOVE.
83	173.82	174.38	0.56	71			SILTSTONE	M-DK. GY. LAM. VBRKN SIMILAR TO ROCK TYPE ABOVE, BUT SILTIER.
83	174.38	175.59	1.21	*70			SANDSTONE	SLTY. FG. M. GY. LAM. VBRKN LOCALLY BRECCIATED, LOCALLY ABUNDANT QTZ CARR. VEINLETS.
84	175.59	176.42	0.83	70			SILTSTONE	M-DK. GY. LAM. VBRKN VERY VERY BROKEN AT BASE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	176.42	177.22	0.80	70			SILTSTONE	M-DK. GY. LAM. VBRKN SAME ROCK TYPE AS ABOVE. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.
85	177.22	177.72	0.50	70			SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ABOVE.
85	177.72	178.86	1.14	70			SILTSTONE	M-DK. GY. LAM. SSD. VBRKN SAME AS ABOVE. TOPS UP.
86	178.86	180.02	1.16	70			SILTSTONE	M-DK. GY. LAM. BIOTR. VBRKN SAME ROCK TYPE AS ABOVE. TOPS UP. SSD.
87	180.02	181.42	1.40	70			SILTSTONE	SSY. FG. M. GY. LAM. BIOTR. VBRKN VERY VERY BROKEN. END OF HOLE. T.D. = 188.06 DRILLER'S MARKER. TOTAL DEPTH = 189.46M.

\* DENOTES MEASURED BCA  
NEWPAGE









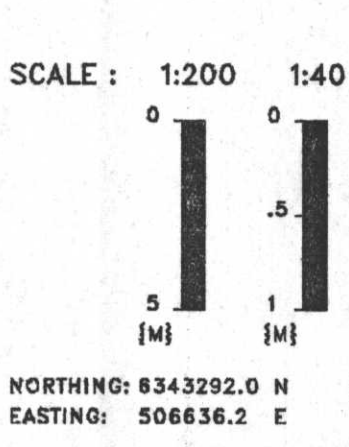
GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86016

723

GEOLOGIST : LOVE

DATE : FEB 26/87

DRAWING NO. :



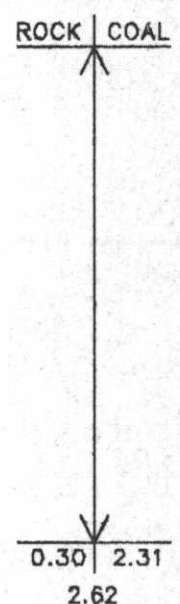
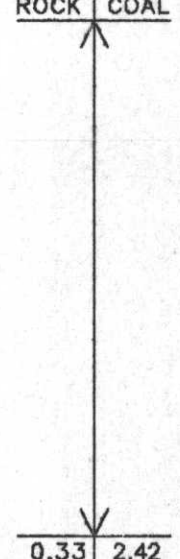
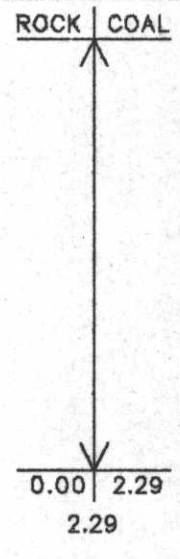
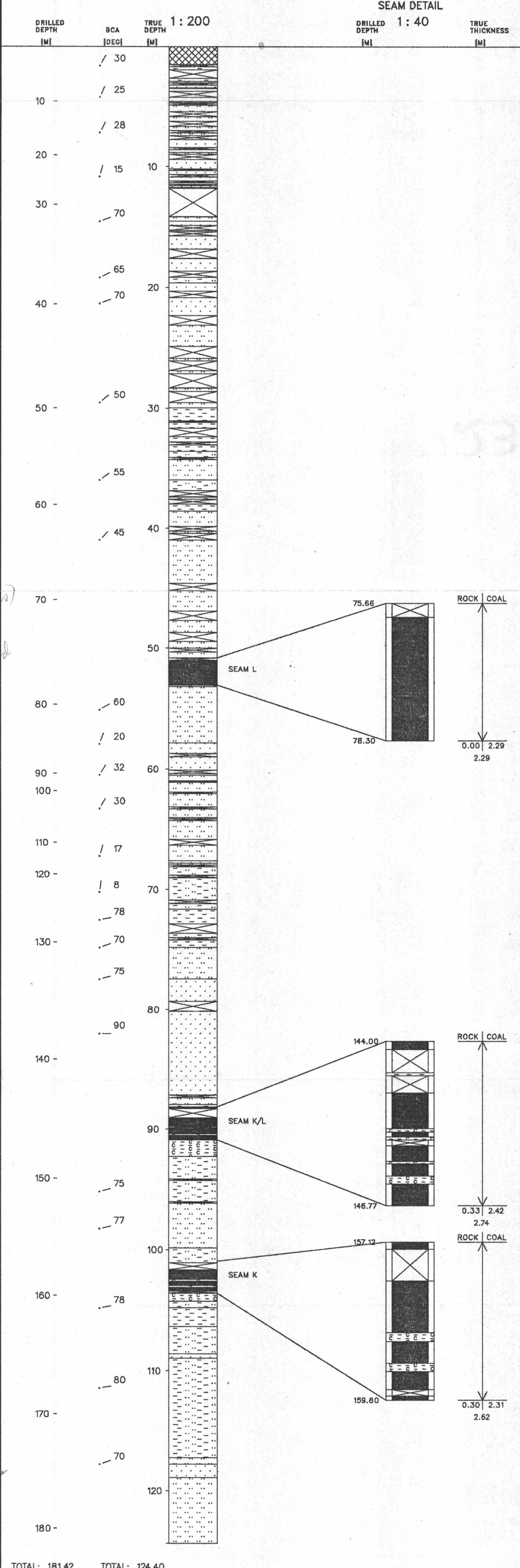
NORTHING: 8343292.0 N  
 EASTING: 506636.2 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

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

*Handwritten notes:*  
 FS  
 BU Mkn  
 FS/SST  
 FS  
 alt (no seams)  
 FS/SST  
 Shear  
 Meta bit  
 BU many  
 FS  
 FS low  
 FS low  
 Shear  
 FS  
 FS low  
 FS low  
 FS low





# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

Datasource: **KPNLRDDH86016**

Province: BC

Northing: 6343290.00

Lat: 571405

Log Date: 86-09-09

Zone: 9

Easting: 506636.00

Long: 1285324

Company: CENTURY

Measuring Point:

Elevation: 1647.0

Geologist: LOVE

Scale: 1 to 100.0

Comments:

Depth Range: 0.0 to \* 192.0

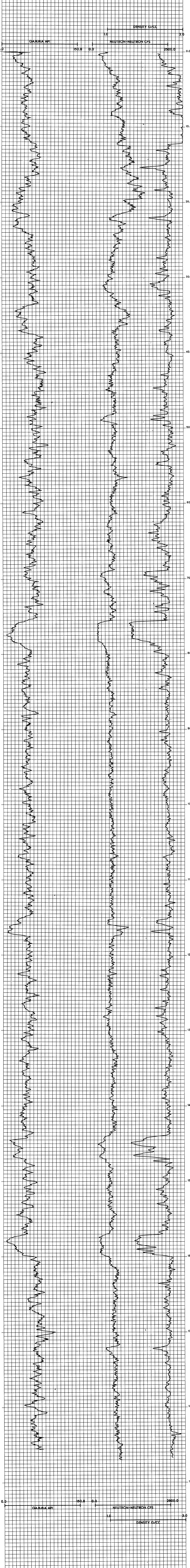
1. LOGGED THROUGH THE RODS

2.

True Thickness: NO

### Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



KPNLRDDH86017

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86017

DATE - 02/13/87

- HISTORY -

START DATE - 06/09/86  
END DATE - 08/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - BARKER

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE. STAND PIPE (1")  
AT 100 M.

- LOCATION -

PROVINCE - BC  
ELEVATION - 1702.67

ZONE - 9  
NORTHING - 6343722.00  
EASTING - 506526.62

LICENCE/LEASE NUMBER -

LATITUDE - 571418  
LONGITUDE - 1285331

- ORIENTATION -

LENGTH - 126.79

INCLINATION - 90.0  
AZIMUTH - 0.0

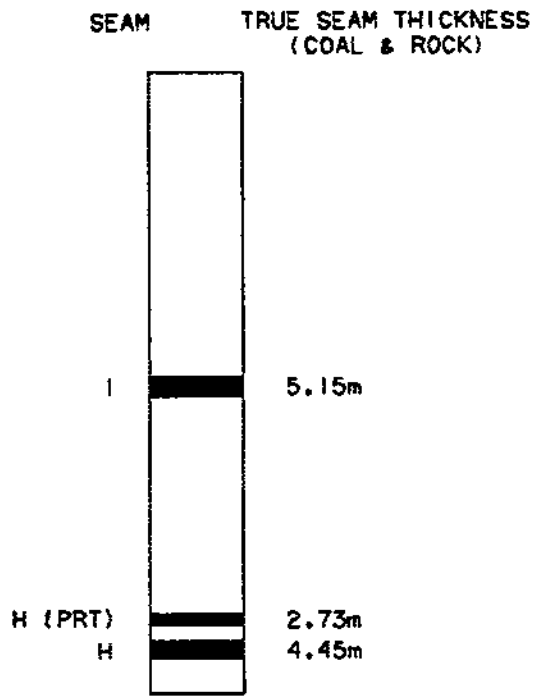
CORE SIZE - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

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

=====



NOTE:  
 SCHEMATIC PROFILE.  
 NO THICKNESSES SHOWN  
 FOR SEAMS CONTAINING  
 LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE  
**MOUNT KLAPPAN ANTHRACITE PROJECT**  
 1986 DIAMOND DRILL HOLES  
 DDH86017

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	6.10	6.10	60			OVERBURDEN	CASING.
1	6.10	7.38	1.28	60			SANDSTONE	FG. WELL. LT. GY. MAS. YBRKN TYPICAL MASSIVE SAND. BELOW K. MUCH CORE LOSS.
1	7.38	8.23	0.85	60			ROCK LOSS	
2	8.23	10.33	2.10	60			SANDSTONE	FG. WELL. LT. GY. MAS. YBRKN AS ABOVE.
3	10.33	10.56	0.23	60			SANDSTONE	FG. WELL. LT. GY. MAS. YBRKN AS ABOVE.
3	10.56	10.82	0.26	60			SILTSTONE	DK. GY. MAS. YBRKN PYRITE BLEBS 1-2CM IN DIAMETER. LARGE P LANT FOSSILS.
3	10.82	11.25	0.43	60			ROCK LOSS	
3	11.25	11.82	0.57	60			MUDSTONE	CARB. BLK. MAS. PWRD V. SOFT AND MUSHY. COAL SPECKS THROUGHOUT UT MORE SOLID PIECES. RUBBLE FROM UPHOL E MIXED IN? J SEAM? COASTERS FAULTED OUT?

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	11.82	12.16	0.34	60			ROCK LOSS	
4	12.16	12.97	0.81	60			SILTSTONE	DK. GY. LAM. YBRKN CRUSHED CORE, SOLID CORE IS HIGHLY BRECCIA TIATED BUT IN PLACE. V FINE LAMINAE THROUGHOUT.
4	12.97	13.99	1.02	60			ROCK LOSS	
4	13.99	14.36	0.37	60			BRECCIA	DK. GY. LAM. YBRKN FINELY LAM SILTST PIECES (ABOVE LITHOLOGY). QTZ AND CLAY FRACTURE FILL IS THE MATRIX.
5	14.36	15.50	1.14	60			BRECCIA	DK. GY. MAS. YBRKN CONTINUATION OF ABOVE SILTST BRECCIA BUT NOT AS WELL CONSOLIDATED. RARE QTZ VEINING. CRUSHED CORE.
6	15.50	15.64	0.14	60			BRECCIA	DK. GY. MAS. YBRKN RUBBLE. CONTINUATION OF ABOVE SILTST BRECCIA?

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	15.64	16.43	0.79	60		ROCK LOSS	
6	16.43	16.78	0.35	60		BRECCIA	DK.GY.LAM.VBRKN TOTALLY CRUSHED CORE. CONTINUATION OF A BOVE BRECCIATION? SOME SLUMP FROM UPHOL E. MUCH CORE LOSS.
6	16.78	19.17	2.39	60		ROCK LOSS	
6	19.17	19.47	0.30	60		BRECCIA	DK.GY.LAM.VBRKN LITH AS ABOVE. CONTINUATION OF ABOVE SL TST.V FINE LAMINAE THROUGHOUT. CRUSHED CORE.
7	19.47	19.61	0.14	60		SILTSTONE	DK.GY.LAM.VBRKN 2 SMALL PIECES AT BASE OF ABOVE SLTST B RECCIA. RYTHMTIC, FISSILE. REMNANT OF T HE GROUND OUT COASTER ZONE.
7	19.61	20.18	0.57	60		ROCK LOSS	
7	20.18	20.39	0.21	60		MUDSTONE	DK.GY.MAS.VBRKN V. SOFT, POORLY CONSOLIDATED. 2 SMALL L T GY CLAY BANDS WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	20.39	20.82	0.43	60		BRECCIA	M.GY.LAM.SLD SLTST BRECCIA AS ABOVE. DISRUPTED BEDDI NG FROM MUCH IRREGULAR QTZ VEINING.
7	20.82	21.08	0.26	*60		SILTSTONE	DK.GY.LAM.VBRKN RHYTHMITIC. COASTERS. FISSILE. SHARP UPP ER AND LOWER CONTACTS WITH SILTST BRECC IA ZONES. SLIPPAGE PLANES?
7	21.08	21.43	0.35	57		BRECCIA	SSY.M.GY.LAM.SLD SILTST BRECCIA WITH IRREGULAR QTZ VEININ G AS ABOVE.
7	21.43	21.49	0.06	*55		SILTSTONE	DK.GY.LAM.BRKN COASTERS AS ABOVE WITH ONE 15MM WIDE CL AY BAND. SHARP POLISHED CONTACTS WITH B RECCIA ABOVE & BELOW.
7	21.49	21.61	0.12	55		BRECCIA	SSY.M.GY.LAM.BRKN SILTST BRECCIA AS ABOVE.
8	21.61	21.88	0.27	56		MUDSTONE	DK.GY.LAM.BRKN FAINT UNIFORM LAMINAE ARE FISSILE BUT N OT EXACTLY COASTERS.
8	21.88	22.08	0.20	56		ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	22.08	22.66	0.58	*57			MUDSTONE	DK. GY. LAM. VBRKN AS ABOVE. SEVERAL V. MUSHY LAYERS. SLUM P FROM UPHOLE?
8	22.66	22.83	0.17	65			CLAYSTONE	H. GY. MAS. BRKN V. POORLY CONSOLIDATED. SOFT SHARP UPPER & LOWER CONTACTS. 5CM BAND OF HARD DARK MUDSTONE IN THE MIDDLE. CLAY BELOW J SEAM?
8	22.83	23.08	0.25	69			MUDSTONE	DK. GY. MAS. BRKN MASSIVE DARK HARD MUDST.
9	23.08	24.34	1.26	*85			MUDSTONE	DK. GY. LAM V. FAINT UNIFORM BEDDING. PARTS ALONG BEDDING. NOT FISSILE.
9	24.34	24.37	0.03	86			BENTONITE	DK. WH. MAS. SLD SECOND BENTONITE CLAY BAND. BELOW J AS SEEN IN TRIAL CARGO PIT.
9	24.37	24.51	0.14	86			MUDSTONE	DK. GY. LAM. BRKN FAINTLY LAM MUDST AS ABOVE CLAY BAND.
9	24.51	25.13	0.62	86			MUDSTONE	DK. GY. LAM. VBRKN LITH AS ABOVE.
9	25.13	25.75	0.62	87			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	25.75	27.64	1.89	89			MUDSTONE	DK. GY. LAM. VBRKN AS ABOVE. 3 CM OF CARB MUDST WITH COALY PLANT HASHAT 0.59M. BREAKS ALONG BEDDING.
11	27.64	28.22	0.58	*90			SILTSTONE	SSY. M. GY. LAM. SSD. SLD FG SSY. LAYERS THROUGHOUT. SSD SHOWS TOP 5 UP.
11	28.22	29.27	1.05	90			SILTSTONE	SSY. M. GY. LAM. SSD. VBRKN AS ABOVE.
11	29.27	29.52	0.25	90			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE. CORE TWIST OFF AT TOP.
12	29.52	31.61	2.09	90			SILTSTONE	SSY. DK. GY. LAM. SSD. BRKN AS ABOVE. ABUNDANT SSD AND WRMBURS 5-10 MM ACROSS.
13	31.61	32.23	0.62	90			SILTSTONE	DK. GY. LAM. SLD LESS SAND THAN ABOVE. V. FAINT RARE BEDDING.
13	32.23	33.58	1.35	*90			SILTSTONE	DK. GY. LAM. SLD AS ABOVE WITH SANDY LAMINAE BECOMING MORE COMMON AT BASE.

\* DENOTES MEASURED BCA

FORM 4001

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	33.58	35.56	1.98	89			SILTSTONE	SSY, DK. GY. LAM. XBDG. BRKN AS ABOVE. OCCASIONAL SANDY LAYERS WITH SSD. XBDG INDICATES TOPS UP.
15	35.56	37.57	2.01	87			MUDSTONE	SLTY, DK. GY. MAS. SLD PREDOMINANTLY MASSIVE. MUCH BIT WEAR. NO PLANTS. NO BIVALVES.
16	37.57	39.61	2.04	*85			MUDSTONE	SLTY, DK. GY. LAM. BRKN FAINT LAMINAE BECOMING MORE EVIDENT AT BASE.
17	39.61	41.28	1.67	87			SILTSTONE	DK. GY. LAM. BRKN COARSER THAN ABOVE. 2 RIPPED UP (?) COALY LENSES 1-2CM WIDE.
17	41.28	41.45	0.17	89			SILTSTONE	DK. GY. LAM. SLD
18	41.45	43.50	2.05	*90			SILTSTONE	SSY, M. GY. LAM. SSD. SLD NUMEROUS SANDY LAYERS THROUGHOUT. HORIZ HRMBURS 3-5MM WIDE. XBDG AND SSD SHOWS TOPS UP.
19	43.50	44.26	0.76	90			SANDSTONE	FG. MOD. M. GY. VTHNB. XBDG. SLD INTERBEDDED SAND AND SILTST.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	44.26	45.49	1.23	90			SANDSTONE	FG. MOD. M. GY. VTHNB. XBDG. SLD AS ABOVE.
20	45.49	47.01	1.52	90			SANDSTONE	FG. PR. M. GY. LAM. BIOTR. VBRKN AS ABOVE. BUT WITH FINER LAYERING. SOME BIOTURBATED LAYERS. SILTIER DOWNWARD.
20	47.01	47.41	0.40	90			ROCK LOSS	
21	47.41	48.91	1.50	*90			SILTSTONE	DK. GY. LAM. VBRKN V. FAINT LAYERING. MUCH FINER THAN ABOVE
22	48.91	50.27	1.36	*90			MUDSTONE	SLTY, DK. GY. VTHNB. VBRKN BANDS OF DARK MUDST AND LIGHTER SILTIER MUDST. LIGHTER DOWNWARD.
22	50.27	50.71	0.44	88			MUDSTONE	SLTY, DK. GY. VTHNB. VBRKN AS ABOVE.
22	50.71	51.02	0.31	87			ROCK LOSS	
23	51.02	52.74	1.72	84			SILTSTONE	SSY, LT. GY. LAM. XBDG. VBRKN TUFFITE ABOVE. 1 SEAM. EXCELLENT XBDG EX AMPLES.

\* DENOTES MEASURED BCA

FORM  
4001



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	52.74	53.45	0.71	81			SILTSTONE	LT.GY.LAM.VBRKN TUFFITE ABOVE BENTONITE.H GY COLOUR BAN DS THROUGHOUT.
24	53.45	53.65	0.20	79			ROCK LOSS	
24	53.65	54.79	1.14	78			SILTSTONE	LT.GY.LAM.VBRKN TUFFITE AS ABOVE.
25	54.79	56.49	1.70	74			CLAYSTONE	LT.GY.LAM.BRKN FINER GRAINED THAN ABOVE TUFFITE. GRADA TIONAL CONTACT INTO BENTONITE BELOW.
25	56.49	56.68	0.19	71			BENTONITE	DK.WH.MAS.VBRKN CLAY MARKER ABOVE I SEAM.
26	56.68	58.14	1.46	*69			MUDSTONE	DK.GY.VTMNB.VBRKN V. FAINT BEDDING, SHARP UPPER CONTACT.
26	58.14	58.51	0.37	71			ROCK LOSS	
27	58.51	60.30	1.79	*74			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE. FINER LAMINAE.
28	60.30	60.71	0.41	75	10006		MUDSTONE	CARB.DK.GY.SLD COALY PLANT FRAGS WITHIN. LOWER 25CM SA MPLED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	60.71	60.97	0.26	76	10007	I	COAL	C-1 FRIABLE.
28	60.97	61.01	0.04	76	10007	I	MUDSTONE	CARB.DK.GY.BRKN SOFT.
28	61.01	61.27	0.26	76	10007	I	COAL LOSS	
28	61.27	61.36	0.09	76	10007	I	COAL	C-2.SLD
28	61.36	61.41	0.05	76	10007	I	COAL	C-3.PHRD
28	61.41	61.49	0.08	77	10007	I	COAL	C-2.SLD
28	61.49	61.57	0.08	77	10007	I	MUDSTONE	CLYY.H.GY.SLD SOFT.
28	61.57	62.28	0.71	77	10007	I	COAL	C-2.BRKN C-1 & C-2.
28	62.28	62.33	0.05	78	10008	I	MUDSTONE	CARB.DK.GY.SLD
28	62.33	62.45	0.12	78	10008	I	COAL	C-2.SLD

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	62.45	62.51	0.06	78	10008	I	COAL	C-2.BRKN
29	62.51	62.55	0.04	78	10008	I	COAL	C-4.SLD
29	62.55	62.59	0.04	78	10008	I	MUDSTONE	SLTY.M.GY.SLD
29	62.59	63.09	0.50	78	10008	I	COAL	C-2.BRKN
29	63.09	63.11	0.02	79	10008	I	MUDSTONE	CARB.DK.GY.SLD
29	63.11	63.43	0.32	79	10008	I	COAL	C-2.SLD
29	63.43	63.44	0.01	79	10008	I	MUDSTONE	CARB.DK.GY.SLD
29	63.44	63.52	0.08	79	10008	I	COAL	C-2.SLD
29	63.52	63.54	0.02	79	10008	I	MUDSTONE	CARB.DK.GY.SLD
29	63.54	63.57	0.03	79	10008	I	ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	63.57	63.64	0.07	79	10009	I	COAL LOSS	
29	63.64	64.44	0.80	80	10009	I	COAL	C-1.BRKN C-1 & C-2
30	64.44	64.53	0.09	80	10009	I	COAL	C-2.SHRD
30	64.53	65.55	1.02	81	10009	I	COAL	C-1.BRKN
30	65.55	65.97	0.42	82	10009	I	COAL	C-1.BRKN
30	65.97	66.39	0.42	82	10010		MUDSTONE	CARB.DK.GY.BRKN UPPER 25CM. SAMPLED. COALY STRINGERS THRO UGHOUT.
31	66.39	67.07	0.68	*83			MUDSTONE	DK.GY.LAM.SLD PLANT HASH.
31	67.07	68.47	1.40	84			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.SLD SILT LAMINAE THROUGHOUT. SILT DECREASIN G DOWNWARD.
32	68.47	68.66	0.19	85			SANDSTONE	FG.WELL.LY.GY.MAS.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	68.66	70.30	1.64	86			SANDSTONE	FG.WELL.LT.GY.YTHNE.BRKN OCCASIONAL SILT BANDS. FRACTURING AT BA SE ALMDST PARALLEL TO CORE.
33	70.30	71.84	1.54	88			SANDSTONE	MG.WELL.LT.GY.MAS.VBRKN MUDST RIPUP CLASTS.NUMEROUS FRACTURES P ARALLEL TO CORE.
33	71.84	71.99	0.15	88			ROCK LOSS	
33	71.99	72.36	0.37	89			SANDSTONE	MG.WELL.LT.GY.MAS.VBRKN AS ABOVE.
34	72.36	74.38	2.02	*90			SANDSTONE	FG.MOD.M.GY.LAM.WRMBU.SLD SILT BANDS NUMEROUS WITH BIVALVE ESCAPE BURROWS. OCCASIONAL SMALL RIPUP CLASTS
35	74.38	75.03	0.65	*80			SILTSTONE	SSY.M.GY.LAM.WRMBU.SLD NUMEROUS WRMBURS, 5MM WIDE.
35	75.03	76.47	1.44	81			MUDSTONE	M.GY.LAM.WRMBU.SLD LESS SAND THAN ABOVE. ABUNDANT HELMINTH OPIS. PYRITE BLEBS.
36	76.47	77.37	0.90	83			MUDSTONE	DK.GY.MAS.SLD AS ABOVE. GRADATIONAL LOWER CONTACT. HE LMINTHOPIS.PYRITE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.37	78.13	0.76	84			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.SLD SILT LAMINAE THROUGHOUT. VERT. WRMBURS THROUGHOUT.
36	78.13	78.34	0.21	*85			SANDSTONE	FG.MOD.M.GY.LAM.VBRKN INTERLAMINATED MUDST & SAND.
37	78.34	80.18	1.84	86			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.BRKN AS ABOVE. MORE SILT THAN ABOVE.
37	80.18	80.27	0.09	87			ROCK LOSS	
38	80.27	80.72	0.45	87			SANDSTONE	MG.MOD.LT.GY.MAS.VBRKN
38	80.72	82.21	1.49	88			SANDSTONE	SLTY.FG.PR.M.GY.LAM.WRMBU.SLD "SILTY BANDED SS" -INTER LAYERED SAND & MUD BANDS.TYPICAL H-I INTERSEAM.
39	82.21	83.79	1.58	*90			SANDSTONE	SLTY.FG.PR.M.GY.LAM.BRKN V. FINELY LAMINATED. LESS SAND THAN ABO VE.
39	83.79	84.23	0.44	89			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD AS ABOVE.
40	84.23	86.41	2.18	88			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD AS ABOVE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 15

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	86.41	86.87	0.46	86		SANDSTONE	SLTY. FG. PR. M. GY. LAM. SLD AS ABOVE.
41	86.87	87.31	0.44	86		SANDSTONE	SLTY. FG. PR. M. GY. LAM. SLD AS ABOVE.
41	87.31	88.47	1.16	85		MUDSTONE	DK. GY. MAS. BRKN MASSIVE. HELMINTHOPSIS ABUNDANT. ONE 50 M WIDE CLAYAND QTZ BAND. BIVALVE PIECES ARE RARE.
42	88.47	89.98	1.51	83		MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. MORE SAND. EVENLY MIXED IN DOWNWARD. ONE COAL STRINGER 3MM WIDE.
42	89.98	90.54	0.56	82		MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. LESS SAND.
43	90.54	91.97	1.43	81		MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. GRADATIONAL LOWER CONTACT TO SS BELOW. HELMINTHOPSIS. RARE BEDDING.
43	91.97	92.69	0.72	*80		SANDSTONE	SLTY. M. GY. LAM. WRMBU. SLD BIVALVE ESCAPE STRUCTURES. INTERLAYERED SAND & MUD.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 16

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	92.69	92.78	0.09	81		MUDSTONE	SLTY. M-DK. GY. SLD MODERATELY BIOTURBATED. INTERBEDDED WITH VFG-FG LTGY SS. MINOR HORIZ BURROWS (3-5MM DIAMETER). MINORSSD. SCOURED BASAL CONTACT.
44	92.78	92.93	0.15	81		SANDSTONE	VFG-M. GY. SLD FINING UPWARDS. SUBPARALLEL IRREGULAR BEDDING CONTACTS. MINOR CARBONACEOUS BEDS WITH CALCITE CEMENT. CONFORMABLE BASAL CONTACTS. FG-VFG.
44	92.93	93.61	0.68	82		SANDSTONE	VFG-M-DK. GY. SLD FREQUENT INTERBEDS OF DK GREY MUDST. MINOR HORIZONTAL BURROWS (2MM DIAMETER).
44	93.61	93.62	0.01	82		SANDSTONE	VBRKN 1.0CM OF CORE INCORPORATED IN 30CM OF CORE HAVE FALLEN FROM UPHOLE.
44	93.62	93.84	0.22	82		ROCK LOSS	
44	93.84	94.23	0.39	83		SANDSTONE	VFG-.PR. M-DK. GY. SLD FINING UPWARDS SEQUENCE OF INTERBEDDED LT GY VFG-MG SS. SCOURED BASAL CONTACT. MINOR BIOTRB. HORIZONTAL BURROWS 1-3MM DIAMETER. 1.5 CM WIDE RHIZOCORALLIUM (PROTRUSIVE FORM). FG-VFG.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 17

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	94.23	94.47	0.24		84		SANDSTONE	FG-M.GY.SLD INTERBEDDED WITH FINE DK GY MDSY BEDS. MNR HORIZ. BURROWS. POSSIBLE MNR SHOALIN G SEQUENCE.
44	94.47	94.91	0.44		84		MUDSTONE	DK.GY ISOLATED RIPPLES (LT GY VFG-FG.SS) INDICATING UPRIGHT ORIENTATION.
45	94.91	95.43	0.52		*85		MUDSTONE	M-DK.GY.SLD BASE OF ABOVE. FINING UPWARDS SEQUENCE LT GY FG SSAT BASE. BASAL CONTACT SCOUR ED.
45	95.43	95.48	0.05		85		MUDSTONE	CARB. M.GY.BRKN PLANT FRAGMENTS AND ASSOCIATED CALCITE CEMENT LYING IN BEDDING PLANE.
45	95.48	96.76	1.28		85		SANDSTONE	VFG-M.GY.SLD COARSENING UPWARDS SEQUENCE WITH DK GY MUDST AT BASE CONTINUING UPWARDS INTO A M INTERBEDDED SILTY MUDST AND VFG SS UNIT AND FINALLY INTO A FG SS UNIT. MNR HORIZ BURROWING IN THE MIDDLE (INTERBEDDED) UNIT. FG-VFG.
46	96.76	97.34	0.58		85		MUDSTONE	M.GY.BRKN SEVERAL PYRITE BLEBS UP TO 3CM WIDE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 18

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	97.34	97.97	0.63		85		MUDSTONE	DK.GY.BRKN DISCONTINUOUS INTERBEDS OF LT GY SS. MNR LISTRIC SURFACES SUBPARALLEL TO CORE AXIS.
46	97.97	98.68	0.71		84		MUDSTONE	DK.GY.BRKN MNR SILTY MUDST BEDS.
47	98.68	99.44	0.76		84		MUDSTONE	DK.GY.BRKN MINOR LISTRIC SURFACES. MNR COAL FRAGMENTS.
47	99.44	100.35	0.91		84		MUDSTONE	DK.GY.YBRKN MUDSTONE FRAGMENTS IN UNCONSOLIDATED CLAY. CORE FRAGMENTS SPINDLED. MNR LISTRIC SURFACES.
47	100.35	100.50	0.15		84		ROCK LOSS	
48	100.50	102.28	1.78		*84		MUDSTONE	DK.GY.BRKN MNR SILTY MUDST BEDS. MNR LISTRIC SURFACES.
49	102.28	102.62	0.34		82		MUDSTONE	SILTY.M.GY.BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	102.62	103.33	0.71	81			MUDSTONE	M.GY.BRKN MNR LISTRIC SURFACES AND SHEARING AT BASE.
49	103.33	103.41	0.08	81			MUDSTONE	PYR.M.GY.BRKN PYRITE BLEBS WITH ASSOCIATED CALCITE.
49	103.41	104.15	0.74	80			MUDSTONE	SLTY.M.GY.BRKN MNR PYRITE BLEBS.
50	104.15	105.31	1.16	78			MUDSTONE	MNR DISSEMINATED PYRITE. INTERBEDDED WITH SILTY MUDST. PYRITE BLEBS.
50	105.31	105.96	0.65	77			MUDSTONE	M.GY.BRKN INTERBEDDED WITH SILTY MUDSTONE.
51	105.96	107.72	1.76	*75			MUDSTONE	SLTY.DK.GY.BRKN VERY MINOR HORIZONTAL BURROWING. MINOR PYRITE.
51	107.72	107.96	0.24	73			MUDSTONE	SLTY.DK.GY.BRKN VERY MINOR HORIZONTAL BURROWING. MINOR PYRITE.
52	107.96	108.35	0.39	72			MUDSTONE	DK.GY.BRKN MNR SILTY MUDST INTERBEDS.
52	108.35	108.40	0.05	72			MUDSTONE	M.GY.BRKN SOFT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	108.40	109.39	0.99	71			MUDSTONE	DK.GY.BRKN
52	109.39	110.00	0.61	69			MUDSTONE	CARB.DK.GY.SLD CARBONACEOUS FRAGMENTS LYING IN BEDDING PLANE WITH ASSOCIATED CALCAREOUS CEMENT PYRITE BLEBS.
53	110.00	110.29	0.29	68	10011 H PART		COAL	C-3.BRKN QTZ AND PYRITE THROUGHOUT.
53	110.29	110.59	0.30	68	10011 H PART		MUDSTONE	CARB.DK.GY.BRKN
53	110.59	111.31	0.72	67	10011 H PART		COAL LOSS	
53	111.31	111.34	0.03	66	10011 H PART		COAL	C-2.SLD
53	111.34	111.61	0.27	66	10011 H PART		COAL	C-2.BRKN MM MUDDY BANDS WITHIN.
53	111.61	111.85	0.24	65	10011 H PART		COAL	C-4.BRKN
53	111.85	112.16	0.31	64	10011 H PART		MUDSTONE	SLTY.M.GY.BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	112.16	112.40	0.24	64	10011	H PART	COAL	C-2.BRKN
53	112.40	112.47	0.07	64	10011	H PART	MUDSTONE	CARB.DK.GY.SLD SOFT.
53	112.47	112.63	0.16	63	10011	H PART	COAL	C-3.BRKN QTZ THROUGHOUT.
54	112.63	112.82	0.19	63	10011	H PART	MUDSTONE	CARB.DK.GY.BRKN QTZ THROUGHOUT.
54	112.82	113.00	0.18	63	10011	H PART	COAL	C-3.SLD QTZ THROUGHOUT.
54	113.00	113.87	0.87	62			MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
54	113.87	114.28	0.41	60	10012		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT. LOWER 25CM SAMPLED.
54	114.28	114.35	0.07	60	10112		ROCK LOSS	
54	114.35	114.64	0.29	59	10013	H	COAL	C-2.BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	114.64	115.10	0.46	59	10013	H	COAL	C-2.SLD C-1 OR C-2. MINOR MM MUD BANDS WITHIN.
55	115.10	115.36	0.26	58	10013	H	COAL	C-3.SLD
55	115.36	115.45	0.09	57	10013	H	COAL	C-1.SLD
55	115.45	115.49	0.04	57	10013	H	COAL	C-2.SLD
55	115.49	115.97	0.48	57	10013	H	COAL	C-2.BRKN
55	115.97	116.19	0.22	56	10014	H	MUDSTONE	CARB.DK.GY.VBRKN SILTY.
55	116.19	116.56	0.37	56	10014	H	COAL	C-3.VBRKN
55	116.56	117.02	0.46	55	10014	H	COAL LOSS	
56	117.02	117.06	0.04	54	10014	H	MUDSTONE	CARB.DK.GY.BRKN COALY SPOIL APPEARANCE.
56	117.06	117.10	0.04	54	10014	H	MUDSTONE	M-DK.GY.SLD QTZ THROUGHOUT.

\* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	117.10	117.12	0.02	54	10014	H	COAL	C-3.SLD
56	117.12	117.16	0.04	54	10014	H	COAL	C-3.SLD
56	117.16	117.19	0.03	54	10014	H	MUDSTONE	CARB.DK.GY.BRKN
56	117.19	117.43	0.24	54	10015	H	COAL	C-3.BRKN BANDED C-1 WITHIN.
56	117.43	117.57	0.14	53	10015	H	COAL	C-3.VBRKN
56	117.57	117.97	0.40	53	10015	H	COAL	C-3.BRKN BANDS OF C-1 AND MINOR MUDST WITHIN.
56	117.97	118.07	0.10	52	10015	H	COAL LOSS	
56	118.07	118.25	0.18	52	10015	H	ROCK LOSS	
56	118.25	118.79	0.54	51	10015	H	COAL	C-3.SHRD SHEARED MIXTURE OF COAL & MINOR MUDST F LECKS.
56	118.79	118.87	0.08	50	10015	H	ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	118.87	119.00	0.13	50	10015	H	COAL	C-2.BRKN
56	119.00	119.08	0.08	50	10015	H	COAL	C-3.SLD MINOR MUDDY BANDS THROUGHOUT.
57	119.08	119.18	0.10	50	10015	H	COAL	C-2.SLD QTZ THROUGHOUT.
57	119.18	119.28	0.10	50	10015	H	COAL	C-3.BRKN CONTORTED FOLD AREA.COMBINATION OF MUDS I AND C-3 COAL.
57	119.28	119.30	0.02	50	10015	H	MUDSTONE	SLTY.M-DK.GY.SLD
57	119.30	119.45	0.15	49	10015	H	COAL	C-2.SHRD
57	119.45	119.50	0.05	49	10015	H	COAL	C-3.SLD
57	119.50	119.60	0.10	49	10015	H	COAL	C-2.SLD QTZ THROUGHOUT, THIN C-6 BANDS WITHIN.

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	119.60	119.69	0.09	49	10015	H	MUDSTONE	CARB. DK. GY. SLD MINOR COALY STRINGERS THROUGHOUT.
57	119.69	119.76	0.07	49	10015	H	COAL	C-2. SLD BANDED WITH C-4.
57	119.76	119.86	0.10	48	10015	H	COAL	C-1. PHRD
57	119.86	120.91	1.05	47	10016		MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT. UPPER 25CM S AMPLED.
59	120.91	122.12	1.21	*45			MUDSTONE	SILTY. M-DK. GY. SLD MNR BIOTURBATION. INTERBEDDED WITH LT G Y VFG-FG SS. FORMS AN OVERALL FINING UPH ARDS SEQUENCE. MNR DIAG BURRONS 2-3CM D IAM.
59	122.12	122.91	0.79	45			SANDSTONE	VFG. LT-M. GY. SLD FINING UPWARDS SEQUENCE FROM VFG TO MUD STONE INTERBEDDED WITH SILTY MUDST.
59	122.91	123.02	0.11	45			SANDSTONE	VFG. LT. GY. SLD BASE OF ABOVE SEQUENCE.
59	123.02	123.19	0.17	45			CONGLOMERATE	LAG DEPOSIT? CLASTS RANGE FROM SAND SIZ ED TO 3 CM DIAMETER. CLASTS ARE SPHERIC AL TO SUB ANGULAR MUDSTONE, AND ROUNDED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	123.19	123.86	0.67	45			SANDSTONE	MG. LT. GY. BRKN FRACTURED. QTZ CARBONATE IN FILLING 0.5 CM WIDE. FG. END OF HOLE. T.D. = 126.79 M. DRILLER'S MARKER.

\* DENOTES MEASURED BCA  
NEWPAGE







GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86017

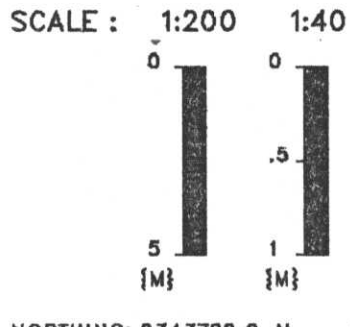
723

GEOLOGIST : BARKER

DATE : FEB 26/87

DRAWING NO. :

LITHOLOGIC SYMBOLS



NORTHING: 6343722.0 N  
 EASTING: 506526.6 E  
 INCLINATION: 90.0°

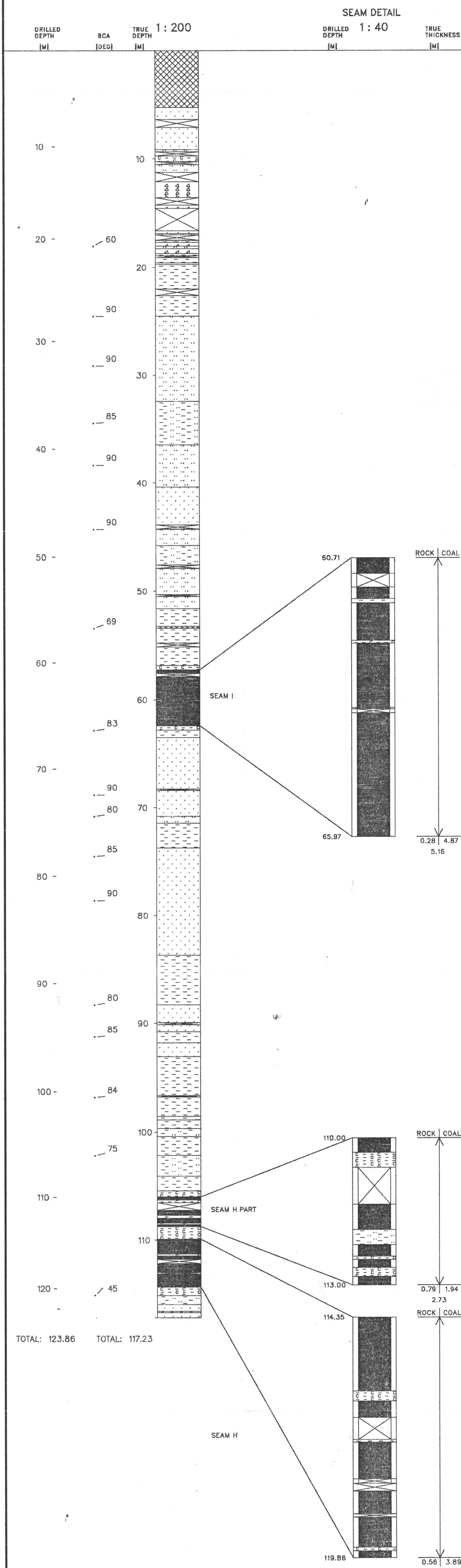
	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

Py  
8  
Bet

D  
PY  
D

PY  
PY  
80

channel  
logs





# Gulf Canada Corporation Coal Division

Geophysical Log

# 723

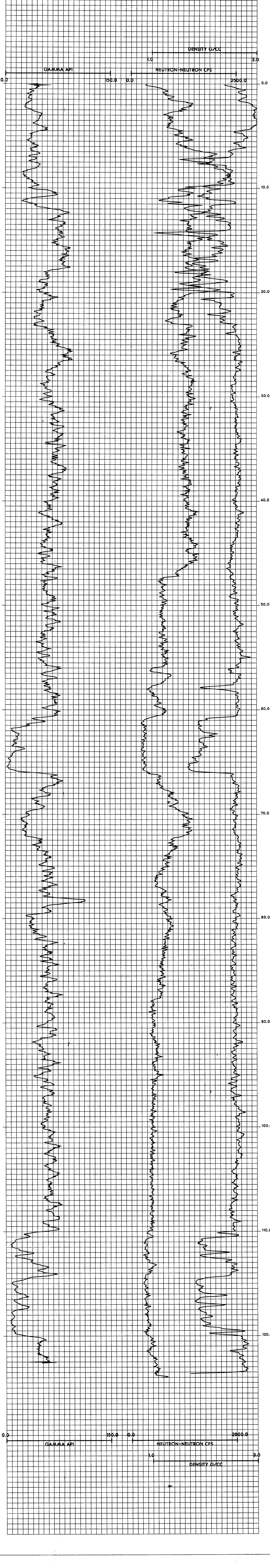
Datasource: **KPNLRDDH86017**  
 Log Date: 86-09-08  
 Company: CENTURY  
 Geologist: BARKER

Province: BC    Northing: 6343720.00    Lat: 571418  
 Zone: 9    Easting: 506527.00    Long: 1285331  
 Measuring Point:    Elevation: 1702.6

Scale: 1 to 100.0  
 Depth Range: 0.0 to 129.0  
 True Thickness: NO

Comments:  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	1N PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	1N PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	1N PIPE



**KPNLRDDH86018**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86G18

DATE - 02/13/87

- HISTORY -

START DATE - 09/09/86

END DATE - 10/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - SITE T, SEAMS I, H, PH? STAND PIPE (1") AT 75 M, P  
IEZ AT 40 M. COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1696.27

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343398.00

EASTING - 506220.25

LATITUDE - 571408

LONGITUDE - 1285349

- ORIENTATION -

LENGTH - 127.10

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - Y

CASING DEPTH (M) - 6.10

AQUIFER DEPTHS (M) - 0.00

0.00

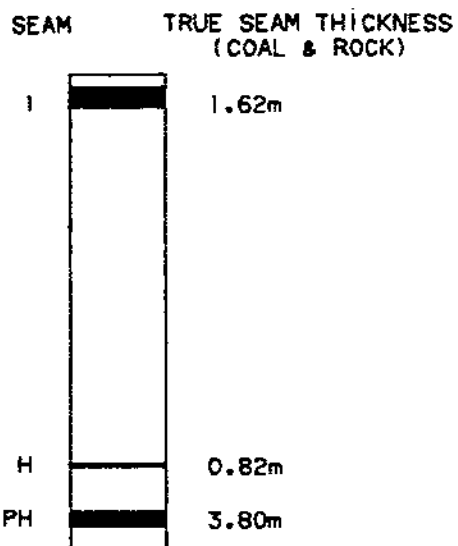
LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====





**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86018

GULF CANADA CORPORATION  
11/03/87  
KLAP:(205057)1870063018.L00



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	2.44	2.44	15			OVERBURDEN	CASING.
	2.44	6.10	3.66	15		I	COAL LOSS	CASING (LOST COAL).
1	6.10	6.12	0.02	15		I	COAL	C-1.VBRKN
1	6.12	6.14	0.02	15		I	MUDSTONE	CARB.DK.GY.SLD
1	6.14	7.66	1.52	15		I	COAL LOSS	
1	7.66	8.12	0.46	15		I	COAL	C-1.BRKN
1	8.12	8.60	0.48	15		I	COAL	C-1.BRKN POWDERED IN PLACES.
1	8.60	8.72	0.12	15		I	COAL	C-2.BRKN
1	8.72	9.35	0.63	*15			MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS THROUGHOUT. DISTURBED & EDDING. POSSIBLE MINOR FOLD.
2	9.35	9.53	0.18	15			MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS MIXED WITH A CARBONATE MINERAL.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	9.53	11.47	1.94	16			ROCK LOSS	
2	11.47	12.40	0.93	17			MUDSTONE	CARB.DK.GY.BRKN AS ABOVE.
2	12.40	13.00	0.60	18			MUDSTONE	SLTY.M-DK.GY.BRKN MINOR COALY STRINGERS.
3	13.00	13.61	0.61	19			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.BRKN INTERLAMINATED SLTST. DEFORMED SEDIMENT . TOPS UP.
3	13.61	14.21	0.60	19			ROCK LOSS	
3	14.21	15.50	1.29	*20			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.BRKN PARASITIC FOLD. AS ABOVE.
4	15.50	16.06	0.56	*27			SILTSTONE	M.GY.LAM.BRKN INTERLAMINATED MUDST.
4	16.06	16.59	0.53	25			SILTSTONE	SSY.M.GY.SSD.VBRKN MINOR INTERBEDDED FG SS AND LAM MUDST.
4	16.59	17.20	0.61	23			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	17.20	17.47	0.27	21			SANDSTONE	SLTY. FG. M. GY. MAS. BRKN MINOR MUDST BAND. GRADATIONAL UPPER CON TACT.
4	17.47	17.79	0.32	20			SANDSTONE	SLTY. FG. M. GY. MAS. SSD. BRKN INDISTINCT DEFORMED MUDST BANDS.
5	17.79	18.59	0.80	*18			SANDSTONE	SLTY. FG. M. GY. LAM. SSD. YBRKN MUDST/SLTST LAMINAE. TOPS UP.
5	18.59	19.32	0.73	*34			SANDSTONE	MG. VPR. M. GY. MAS. SSD. BRKN MINOR MUDST BANDS (1-3CM). MINOR DISPLA CEMENT ALONG HAIRLINE FRACTURES. TWO 2C M ZONES OF QTZ VEINING. MUDST RIPUP CLA STS AT BASE (ANGULAR).
5	19.32	19.39	0.07	35			SANDSTONE	MG. VPR. M. GY. MAS. BRKN IRREGULAR QTZ VEINING.
6	19.39	21.17	1.78	38			SANDSTONE	MG. VPR. M. GY. MAS. BRKN ABUNDANT QTZ VEINING. MUDST/SLTST RIPUP CLASTS AT BASE. MORE ROUNDED TOWARD BA SE.
7	21.17	22.12	0.95	42			SANDSTONE	CG. VPR. M. GY. MAS. BRKN WELL ROUNDED MUDST/SLTST. RIPUP CLASTS (LGST = 5CM) WITHIN THE TOP .50M OF THI S INTERVAL. MINOR QTZ VEINING.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	22.12	22.95	0.83	45			SANDSTONE	CG. VPR. M. GY. MAS. SLD MINOR QTZ VEINING.
8	22.95	24.15	1.20	48			SANDSTONE	CG. VPR. M. GY. MAS. BRKN AS ABOVE. 3 SLTST ANGULAR RIPUP CLASTS.
8	24.15	24.40	0.25	50			BRECCIA	M. GY. SLD QTZ ENCLOSED SLTST BRECCIA. 3-4CM DISPL ACEMENT ALONG FRACTURES.
8	24.40	24.75	0.35	51			SANDSTONE	MG. PR. M. GY. MAS. BRKN MINOR SLTST RIPUP CLASTS. (<2CM, ELONGA TED SHAPES). MINOR QTZ AND LITRIC SURFA CES.
9	24.75	25.05	0.30	52			SANDSTONE	MG. PR. M. GY. MAS. YBRKN AS ABOVE.
9	25.05	25.85	0.80	53			SANDSTONE	MG. PR. M. GY. MAS. YBRKN AS ABOVE. <1CM DISPLACEMENT ALONG HAIRL INE FRACTURES.
9	25.85	26.30	0.45	55			SILTSTONE	M. GY. MAS. YSHRD MINOR MUDST AND SS BANDS. 10CM OF VERY REGULAR QTZ STRINGERS AT TOP OF INTERVA L.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	26.30	27.21	0.91	*57			SANDSTONE	MG. PR. M. GY. MAS. SSD. VBRKN MINOR SLTST/MUDST LAMINAE. VERY MINOR S SD.
10	27.21	27.56	0.35	61			SANDSTONE	MG. VPR. M. GY. MAS. BRKN ABUNDANT MOD ROUNDED SLTST CLASTS. DIST URBED SLTST/MUDST BAND AT BASE OF INTER VAL.
10	27.56	27.99	0.43	*64			SANDSTONE	SLTY. FG. VPR. M. GY. MAS. BRKN MINOR MUDST LAMINAE. SILTIER TOWARD BAS E. MINOR DISCONTINUOUS QZ STRINGERS AT BASE.
11	27.99	28.71	0.72	62			SANDSTONE	MG. VPR. M. GY. MAS. SSD. VBRKN MINOR INTERBEDDED AND INTERLAMINATED SL TST.
11	28.71	29.05	0.34	61			ROCK LOSS	
11	29.05	29.90	0.85	*59			SANDSTONE	FG. VPR. M. GY. MAS. BRKN MINOR MUDST/SLTST BANDS. SILTIER TOWARD BASE.
12	29.90	30.01	0.11	59			SILTSTONE	M. GY. LAM. BRKN INTERLAMINATED MUDST WITH MINOR AMOUNTS OF FG. 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: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	30.01	31.43	1.42	58			MUDSTONE	M-DK. GY. MAS. VBRKN SPARSE INTERLAMINATED SLTST. 5CM BAND O F HEAVY QZ VEINING.
13	31.43	32.58	1.15	58			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN ONE PYRITE BLEB. DISTINCT FRACTURE AT 7 5 DEGREES TO CORE ANGLE. MINOR HELMINTH OPSIS.
13	32.58	33.03	0.45	58			SILTSTONE	SSY. M-DK. GY. MAS. BRKN SANDIER TOWARD BASE, GRADATIONAL Contac TS.
14	33.03	34.86	1.83	*57			SANDSTONE	SLTY. FG. M. GY. MAS. BRKN THNB AND INTERLAMINATED MUDST/SLTST. 3C M. DISPLACEMENT ALONG QZ FILLED FRACTUR E.
15	34.86	35.59	0.73	60			SANDSTONE	SLTY. FG. PR. M. GY. LAM. VBRKN INTERLAMINATED MUDST.
15	35.59	35.68	0.09	61			SANDSTONE	FG. PR. M. GY. MAS. SLD
15	35.68	35.75	0.07	61			BRECCIA	WH. SLD CHUNKS OF ANGULAR SS ENCASED IN QZ.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.75	36.63	0.88	62		SANDSTONE	MG. PR. M. GY. LAM. BIOTR. SLD INTERLAMINATED MUDST/SLTST. NUMEROUS LO AD CAST, TOPS UP.
16	36.63	37.50	0.87	*64		SANDSTONE	FG. PR. M. GY. LAM. BIOTR. SLD AS ABOVE.
16	37.50	38.46	0.96	64		SANDSTONE	FG. PR. M. GY. MAS. SLD VERY SPARSE WISPS OF MUD.
17	38.46	38.58	0.12	65		SANDSTONE	FG. PR. M. GY. MAS. SLD
17	38.58	39.83	1.25	*65		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD INTERLAMINATED MUDST AND SLTST.
17	39.83	40.13	0.30	65		SILTSTONE	SSY. M-DK. GY. LAM. VBRKN INTERLAMINATED MUDST. NUMEROUS LISTRIC SURFACES.
18	40.13	41.93	1.80	65		SILTSTONE	M-DK. GY. LAM. BIOTR. SLD INTERLAMINATED MUDST. 12CM VERTICAL BUR ROW (<1CM WIDE). TOPS UP.
19	41.93	42.17	0.24	65		SILTSTONE	M-DK. GY. LAM. BIOTR. SLD INTERLAMINATED MUDST.
19	42.17	43.40	1.23	65		MUDSTONE	M-DK. GY. MAS. BRKN VERY SOFT. SOME COALY FRAGMENTS.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	43.40	43.49	0.09	65		SILTSTONE	M-DK. GY. MAS. SLD INTERLAMINATED MUDST.
19	43.49	43.62	0.13	65		MUDSTONE	M-DK. GY. MAS. BRKN VERY SOFT.
19	43.62	43.82	0.20	65		ROCK LOSS	
20	43.82	44.12	0.30	65		SILTSTONE	M-DK. GY. LAM. VBRKN INTERLAMINATED MUDST.
20	44.12	45.56	1.44	*65		SILTSTONE	SSY. M-DK. GY. LAM. SSD. SLD AS ABOVE. LOW ANGLE SHEAR SURFACES.
21	45.56	46.04	0.48	70		SILTSTONE	SSY. M-DK. GY. LAM. SSD. SLD INTERLAMINATED MUDST.
21	46.04	46.21	0.17	71		SANDSTONE	VFG. M. GY. MAS. SLD
21	46.21	47.43	1.22	*75		SILTSTONE	CLYY. M-DK. GY. SLD ABUNDANT. HELMINTHOPSIS BURROWS.
22	47.43	48.15	0.72	74		SILTSTONE	M-DK. GY. MAS. SLD
22	48.15	48.26	0.11	74		MUDSTONE	M-DK. GY. MAS. BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	48.26	48.60	0.34	73		ROCK LOSS	
22	48.60	49.02	0.42	73		MUDSTONE	DK. GY. MAS. SLD DISENTEGRATES RAPIDLY.
22	49.02	49.12	0.10	73		BRECCIA	WH. VBRKN SLTST FRAGMENTS ENCASED IN QTZ (<1CM).
22	49.12	49.22	0.10	72		ROCK LOSS	
22	49.22	49.62	0.40	72		MUDSTONE	SLTY. DK. GY. MAS. BRKN MINOR QTZ VEINING AT BASE.
23	49.62	51.43	1.81	*71		MUDSTONE	SLTY. DK. GY. MAS. BRKN SPARSE SLTY LAMINAE. DISENTEGRATES RAPI DLY. SAMPLE C8601803. (HARDY).
24	51.43	51.65	0.22	67		SILTSTONE	M. GY. MAS. SLD MINOR QTZ VEIN AT BASE. LISTRIC SURFACE
24	51.65	53.33	1.68	62		SILTSTONE	M. GY. MAS SMALL ZONES OF INTERLAMINATED MUDST. CO ALY FRAGMENT (<1CM). ONE 1CM QTZ VEIN. SANDY TOWARD BASE. GRADATIONAL CONTACT.
24	53.33	53.69	0.36	58		ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	53.69	54.75	1.06	*55		SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD INDISTINCT MUDST/SLTST LAMINAE. GRAINS APPEARED SHEARED.
25	54.75	55.45	0.70	*53		SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD DISTINCT MUDST/SLTST LAMINAE. ONE COAL FRAGMENT. SLTST DEVELOPS GRADUALLY TOWA RD BASE.
26	55.45	57.30	1.85	51		SILTSTONE	M-DK. GY. MAS. VBRKN ONE PYRITE BLEB (<1CM). INDISTINCT WISP S OF MUDST.
26	57.30	57.64	0.34	50		ROCK LOSS	
27	57.64	57.85	0.21	49		SILTSTONE	SSY. M. GY. MAS. BRKN WISPS OF MUDST.
27	57.85	59.48	1.63	48		MUDSTONE	SLTY. M-DK. GY. MAS. SLD ONE PYRITE BLEB AND COAL FRAGMENT. CORE IS CLEAVED AT A 44 DEGREE ANGLE TO CORE AT APPROX 1-2 CM INTERVALS.
28	59.48	60.85	1.37	46		MUDSTONE	SLTY. M-DK. GY. MAS. BRKN ABUNDANT LISTRIC SURFACES.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	60.85	60.89	0.04	45			MUDSTONE	M-DK. GY. MAS. DRILLING MUD(?) WITH QTZ FRAGMENTS IMBEDDED IN IT.
28	60.89	61.32	0.43	45			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN CORE BREAKS AT 44 DEGREE ANGLE AT A 1-2 CM INTERVAL. LISTRIC SURFACES ALONG SOME BREAKS.
29	61.32	63.17	1.85	44			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN AS ABOVE.
30	63.17	63.50	0.33	42			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN AS ABOVE. PYRITE BLEB.
30	63.50	63.90	0.40	42			ROCK LOSS	
30	63.90	65.45	1.55	40			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN AS ABOVE. MONOTONOUS.
31	65.45	65.68	0.23	39			MUDSTONE	SLTY. M-DK. GY. MAS. VBRKN ABUNDANT LISTRIC SURFACES.
31	65.68	65.73	0.05	39			MUDSTONE	SLTY. M-DK. GY. MAS. VSHRD MUD WITH ABUNDANT QTZ VEIN FRAGMENTS ENCLOSED.
31	65.73	66.14	0.41	39			MUDSTONE	SLTY. M-DK. GY. MAS. VSHRD 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: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	66.14	66.34	0.20	38			ROCK LOSS	
31	66.34	67.32	0.98	37			MUDSTONE	SLTY. M-DK. GY. MAS. SLD ONE 3CM PYRITE BLEB.
32	67.32	68.89	1.57	36			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN BREAKS AT 44 DEGREE ANGLE AT 1-2CM INTERVAL. < 0.5CM BAND OF QTZ NEAR BASE.
32	68.89	69.10	0.21	35			ROCK LOSS	
32	69.10	69.26	0.16	34			MUDSTONE	SLTY. M-DK. GY. MAS. SLD.
33	69.26	70.46	1.20	33			MUDSTONE	SLTY. DK. GY. MAS. BRKN LISTRIC SURFACES. MINOR QTZ NEAR BASE OF INTERVAL.
33	70.46	70.72	0.26	32			MUDSTONE	SLTY. DK. GY. MAS. VSHRD QTZ FRAGMENTS ENCASED IN MUD. VERY SHEARED.
33	70.72	71.18	0.46	32			MUDSTONE	SLTY. DK. GY. MAS. BRKN LISTRIC SURFACES.
34	71.18	72.04	0.86	31			MUDSTONE	SLTY. DK. GY. MAS. BRKN AS ABOVE. ONE < 1CM QTZ 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: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	72.04	72.90	0.86	30			MUDSTONE	SLTY.DK.GY.MAS.BRKN MINOR LISTRIC SURFACES.
34	72.90	73.01	0.11	29			ROCK LOSS	
35	73.01	74.91	1.90	28			MUDSTONE	SLTY.DK.GY.MAS.VBRKN ABUNDANT LISTRIC SURFACES. ONE 3CM QTZ VEIN.
36	74.91	75.02	0.11	27			MUDSTONE	SLTY.DK.GY.MAS.BRKN
36	75.02	75.20	0.18	26			ROCK LOSS	
36	75.20	76.90	1.70	25			MUDSTONE	SLTY.DK.GY.MAS.VBRKN ABUNDANT LISTRIC SURFACES. (70 DEGREE A NGLE TO CORE).
37	76.90	78.06	1.16	23			SILTSTONE	DK.GY.MAS.SLD
37	78.06	78.73	0.67	22			MUDSTONE	SLTY.DK.GY.MAS.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: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	78.73	78.92	0.19	22			ROCK LOSS	
38	78.92	80.52	1.60	20			MUDSTONE	SLTY.M.GY.MAS.BRKN CORE DISETEGRATING QUICKLY. ABUNDANT L ISTRIC SURFACES.
38	80.52	80.70	0.18	19			SILTSTONE	M.GY.MAS.SLD GRADATIONAL CONTACT.
38	80.70	80.85	0.15	19			MUDSTONE	SLTY.M.GY.MAS.BRKN LISTRIC SURFACES.
39	80.85	81.13	0.28	19			MUDSTONE	SLTY.M.GY.MAS.BRKN
39	81.13	81.30	0.17	18			ROCK LOSS	
39	81.30	81.68	0.38	*18			SILTSTONE	M.GY.MAS.SLD MINOR INDISTINCT MUDST LAMINAE. LISTRIC SURFACES. CORE BREAKS AT 55 DEGREE TO CORE ANGLE.
39	81.68	82.82	1.14	18			MUDSTONE	SLTY.M.GY.MAS.BRKN A FEW LISTRIC SURFACES.
40	82.82	84.15	1.33	18			MUDSTONE	SLTY.M.GY.MAS.SLD

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	84.15	84.85	0.70	18			MUDSTONE	SLTY. M. GY. MAS. SLD
41	84.85	86.98	2.13	18			MUDSTONE	SLTY. M. GY. MAS. SLD
41	86.98	87.22	0.24	17			MUDSTONE	SLTY. M. GY. MAS. BRKN APPEARANCE OF ELONGATED QTZ LINED COAL FRAGMENTS.
42	87.22	88.64	1.42	17			MUDSTONE	SLTY. M. GY. MAS. BRKN ABUNDANT COAL FRAGMENTS (LGST 4CM). PYR ITE BLEB SEVERAL LISTRIC SURFACES.
42	88.64	88.73	0.09	17			MUDSTONE	SLTY. M. GY. MAS. SLD
43	88.73	90.27	1.54	17			MUDSTONE	SLTY. M. GY. MAS. BRKN ABUNDANT LISTRIC SURFACES.
43	90.27	90.44	0.17	17			BRECCIA	HH. BRKN ANGULAR SLTY MUDST FRAGMENTS ENCASED IN VUGGY QTZ.
43	90.44	90.51	0.07	17			MUDSTONE	SLTY. M. GY. MAS. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	90.51	92.62	2.11	*17			MUDSTONE	SLTY. M. GY. MAS. SLD CORE FRACTURES AT 55 DEGREES FROM CORE ANGLE.
45	92.62	93.05	0.43	26			MUDSTONE	SLTY. M. GY. MAS. SLD AS ABOVE.
45	93.05	94.50	1.45	33			MUDSTONE	SLTY. M. GY. MAS. BRKN ABUNDANT LISTRIC SURFACES.
46	94.50	95.90	1.40	*44			MUDSTONE	SLTY. M. GY. MAS. SLD SPARSE SLTST LAMINAE. HELMINTHOPSIS. 1C M QTZ VEIN AT TOP OF INTERVAL. LISTRIC SURFACES AT BASE.
46	95.90	96.40	0.50	46			MUDSTONE	SLTY. M. GY. MAS. SLD
47	96.40	98.48	2.08	49			MUDSTONE	SLTY. M. GY. MAS. SLD 3 LISTRIC SURFACES.
48	98.48	98.70	0.22	52			MUDSTONE	SLTY. M. GY. MAS. BRKN
48	98.70	100.40	1.70	55			MUDSTONE	M. GY. MAS. BRKN LISTRIC SURFACES.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	100.40	101.44	1.04	*58		MUDSTONE	M.GY.MAS.SHRD SMALL PYRITE BLEB. RUBBLE PILE OF CORE. BCA IS APPROX.
49	101.44	101.64	0.20	56		ROCK LOSS	
49	101.64	102.10	0.46	54		MUDSTONE	M.GY.MAS.SLD 2 SMALL DISCONTINUOUS QTZ VEINS (<.3CM) COAL FRAGMENTS.
50	102.10	103.00	0.90	52	05277	MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS AND PYRITE NODULES AT B. ASE. LOWER 25CM SAMPLED.
50	103.00	103.49	0.49	49	05278 H	COAL	C-2.VBRKN MUSHY IN PLACES.
50	103.49	103.59	0.10	48	05278 H	MUDSTONE	CARB.DK.GY.SHRD COALY IN PLACES.
50	103.59	103.66	0.07	45	05278 H	MUDSTONE	SLTY.M.GY.SLD
50	103.66	103.72	0.06	47	05278 H	MUDSTONE	SLTY.M.GY.SLD
50	103.72	103.76	0.04	47	05278 H	MUDSTONE	CARB.DK.GY.SLD

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	103.76	103.85	0.09	47	05278 H	COAL	C-2.BRKN
50	103.85	103.88	0.03	47	05278 H	MUDSTONE	CARB.DK.GY.SLD
50	103.88	104.02	0.14	46	05278 H	COAL	C-3.SHRD LISTRIC SURFACES.
51	104.02	104.06	0.04	46	05278 H	MUDSTONE	CARB.DK.GY.SLD
51	104.06	104.11	0.05	46	05278 H	COAL	C-3.BRKN
51	104.11	105.47	1.36	43	05279	MUDSTONE	CARB.M-DK.GY.BRKN CARB AND LISTRIC NEAR TOP BECOMING SILTY TOWARDS BASE. QTZ AT BASE. PARASITIC FOLDING. UPPER 25 CM SAMPLED.
51	105.47	105.95	0.48	40		SANDSTONE	SLTY.PR.LT-M.GY.SLD GRADATIONAL FROM ABOVE.
52	105.95	108.04	2.09	35		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD MINOR INDISTINCT LAMINAE.
53	108.04	108.54	0.50	*30		SANDSTONE	FG.PR.LT-M.GY.MAS.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: DDHB6018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	108.54	108.60	0.06	*53			SILTSTONE	SSY. M. GY. LAM. SLD INTERLAMINATED MUDST. SHARP UPPER EROSIONAL CONTACT. QTZ VEIN (<.3CM).
53	108.60	108.80	0.20	53			SANDSTONE	HG. PR. LT. GY. MAS. SLD
53	108.80	109.63	0.83	55			MUDSTONE	M-DK. GY. VSHRD ZONE OF INTENSE SHEARING AND GENERAL MATRYEM. SPORADIC FRAGMENTS OF QTZ. POSSIBLE CORE LOSS.
53	109.63	109.88	0.25	57			ROCK LOSS	
53	109.88	109.91	0.03	57			BRECCIA	LT. GY. BRKN ANGULAR SS FRAGMENTS COMPACTED TOGETHER
53	109.91	109.96	0.05	57			SILTSTONE	LT-M. GY. SLD
53	109.96	110.04	0.08	58			MUDSTONE	M-DK. GY. VSHRD VERY SHEARED. POSSIBLE CORE LOSS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	110.04	111.51	1.47	*60			SILTSTONE	SSY. LT-DK. GY. LAM. BIOTR. SLD IRREGULAR QTZ VEINING IN TOP 40CM. LISTRIC SURFACES. INTERLAMINATED MUDST. TOP S. UP. (LOAD CASTS).
54	111.51	111.93	0.42	55			SILTSTONE	SSY. LT-DK. GY. LAM. BIOTR. BRKN INTERLAMINATED MUDST/SLTST. <1CM DISPLACEMENT ALONG FRACTURES. IRREGULAR QTZ VEINING. LISTRIC SURFACES.
54	111.93	112.00	0.07	54			ROCK LOSS	
55	112.00	112.45	0.45	*53			SILTSTONE	SSY. LT-DK. GY. LAM. SSD. VBRKN INTERLAM MUDST. TOPS UP (LOAD CASTS). A BUNDANT LISTRIC SURFACES.
55	112.45	113.80	1.35	53			SANDSTONE	FG. PR. LT-DK. GY. LAM. BIOTR. SLD AS ABOVE. NUMEROUS ESCAPE BURROWS. SSD.
56	113.80	114.54	0.74	53			SANDSTONE	SLTY. M-DK. GY. BIOTR. BRKN INTERMIXED SILTY SS AND MUDST.
56	114.54	115.37	0.83	53			SANDSTONE	SLTY. M-DK. GY. BIOTR. BRKN INTERMIXED SILTY SS AND MUDST.
56	115.37	115.50	0.13	53			MUDSTONE	SLTY. M-DK. GY. SLD CARBONACEOUS AND LISTRIC.

\* DENOTES MEASURED BCA

FORM  
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	115.50	115.55	0.05	53	PH	COAL	C-2.BRKN
56	115.55	115.80	0.25	53	PH	COAL LOSS	
56	115.80	115.85	0.05	53	PH	MUDSTONE	CARB.DK.GY.SLD COALY BANDS AND PYRITE THROUGHOUT.
57	115.85	116.69	0.84	53	PH	MUDSTONE	CARB.DK.GY.SLD VERY CARB WITH COALY STRINGERS THROUGHOUT.
57	116.69	116.93	0.24	54	PH	COAL	C-4.SLD
57	116.93	117.04	0.11	54	PH	COAL	C-6.BRKN
57	117.04	117.67	0.63	54	PH	MUDSTONE	CARB.DK.GY.VBRKN LITRICK WITH MINOR COALY STRINGERS.
58	117.67	118.86	1.19	54	PH	MUDSTONE	CARB.DK.GY.SLD ABUNDANT COALY LENSES AND STRINGERS THROUGHOUT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	118.86	119.10	0.24	54	PH	COAL	C-2.SLD
58	119.10	119.52	0.42	54	PH	MUDSTONE	CARB.DK.GY.SLD ABUNDANT COALY STRINGERS AND LENSES THROUGHOUT.
58	119.52	119.79	0.27	54	PH	COAL LOSS	
58	119.79	119.96	0.19	54	PH	COAL	C-3.SLD
59	119.96	120.03	0.05	54	PH	COAL	C-3.SLD
59	120.03	120.20	0.17	54	PH	MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
59	120.20	120.22	0.02	54	PH	COAL	C-3.SLD
59	120.22	120.86	0.64	54		MUDSTONE	CARB.DK.GY.SLD ABUNDANT COALY LENSES AND STRINGERS THROUGHOUT UPPER HALF OF UNIT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	120.86	121.91	1.05	*54		MUDSTONE	CARB. M-DK. GY. SLD MINOR COALY STRINGERS AT TOP. SILTY AT BASE.
60	121.91	122.22	0.31	54		MUDSTONE	CARB. M-DK. GY. MAS. BRKN COALY PLANT REMAINS ON BDG SURFACE. COAL FRAGMENTS.
60	122.22	122.39	0.17	54		SILTSTONE	M. GY. MAS. SLD 1 CM QTZ VEIN PASSING DIAGONALLY THROUGH INTERVAL.
60	122.39	122.53	0.14	54		SILTSTONE	CLY. M. GY. MAS. SLD COALY PLANT REMAINS. COAL STRINGERS.
60	122.53	123.09	0.56	54		MUDSTONE	SLTY. M. GY. MAS. BRKN MINOR COALY FRAGMENTS.
60	123.09	123.27	0.18	54		SILTSTONE	M. GY. MAS. SLD ABUNDANT QTZ SURROUNDED MICRO COAL STRINGERS.
60	123.27	123.68	0.41	54		MUDSTONE	SLTY. M. GY. MAS. BRKN
60	123.68	123.84	0.16	54		MUDSTONE	SLTY. M. GY. MAS. BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	123.84	124.34	0.50	54		SILTSTONE	M. GY. MAS. BRKN LITRIFIC SURFACES.
61	124.34	125.71	1.37	54		SILTSTONE	SSY. M. GY. MAS. SSD. SLD INTERMIXED WITH MUD.
61	125.71	126.04	0.33	54		SANDSTONE	VEG. LT-M. GY. MAS. SLD MINOR MUDST STRINGERS. DISCONTINUOUS QTZ VEINING PARALLEL TO CORE (<.5CM).
61	126.04	126.30	0.26	54		SILTSTONE	M. GY. MAS. SLD T.D. = 127.10 M.

\* DENOTES MEASURED BCA  
NEWPAGE









# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

Datasource: **KPNLRDDH86019**

Province: BC

Northing: 6343220.00

Lat: 57402

Log Date: 86-09-11

Zone: 9

Easting: 506835.00

Long: 1285312

Company: CENTURY

Measuring Point:

Elevation: 1622.1

Geologist: LOVE

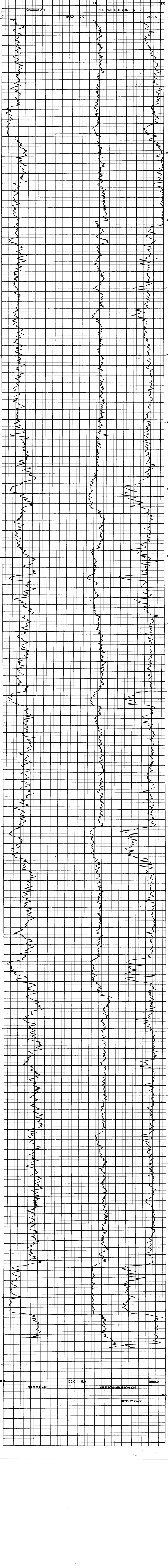
Scale: 1 to 100.0  
Depth Range: 0.0 to 202.0

Comments:

1. LOGGED THROUGH THE RODS
- 2.

**Logs Plotted:**

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



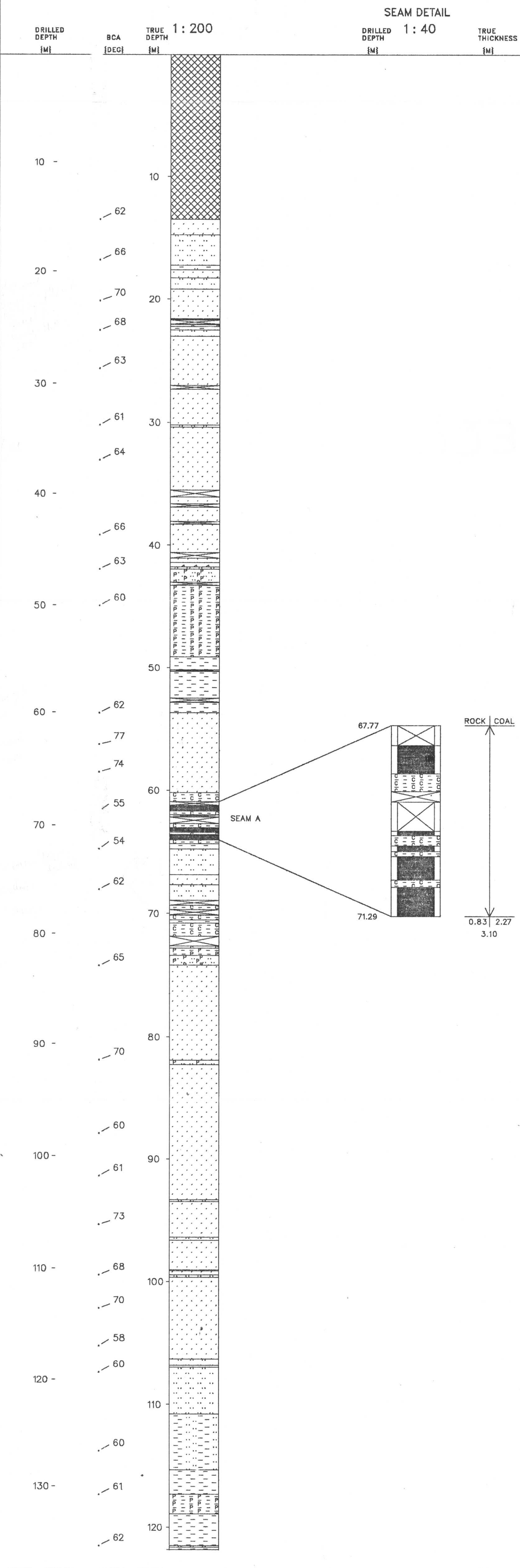
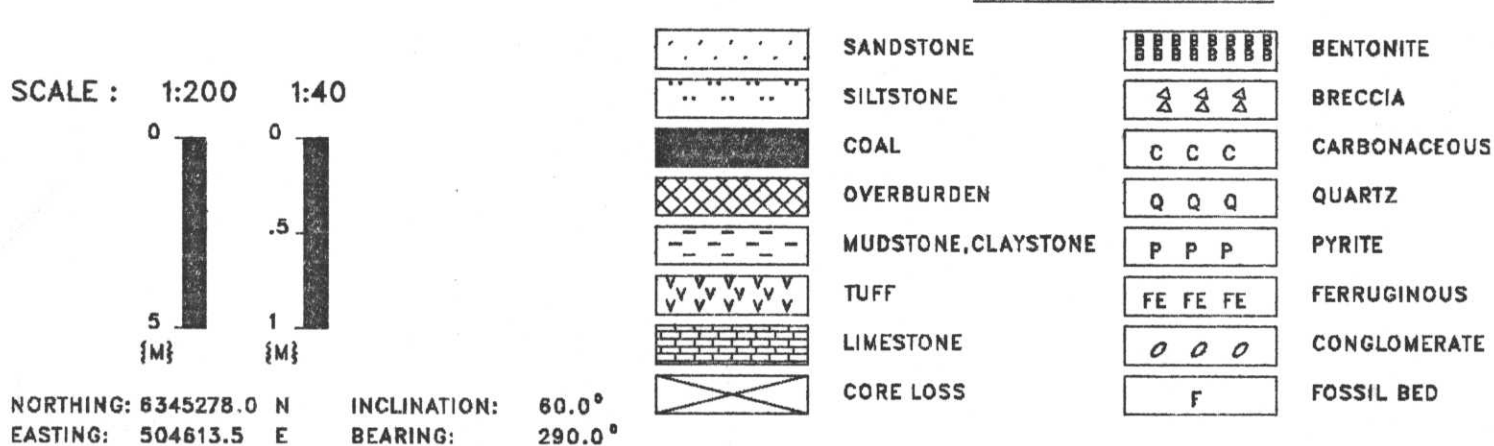
GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86020

723

GEOLOGIST : SAVOIE

DATE : FEB 26/87

DRAWING NO. :





KPNLRDDH86019

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86019

DATE - 02/13/87

- HISTORY -

START DATE - 09/09/86

END DATE - 11/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LOVE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE. STAND PIPE (1")  
AT 150 M, PIEZ AT 80 M.

- LOCATION -

PROVINCE - BC

ELEVATION - 1622.17

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343215.00

EASTING - 506835.25

LATITUDE - 571402

LONGITUDE - 1285312

- ORIENTATION -

LENGTH - 199.93

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - Y

CASING DEPTH (M) - 15.24

AQUIFER DEPTHS (M) - 0.00

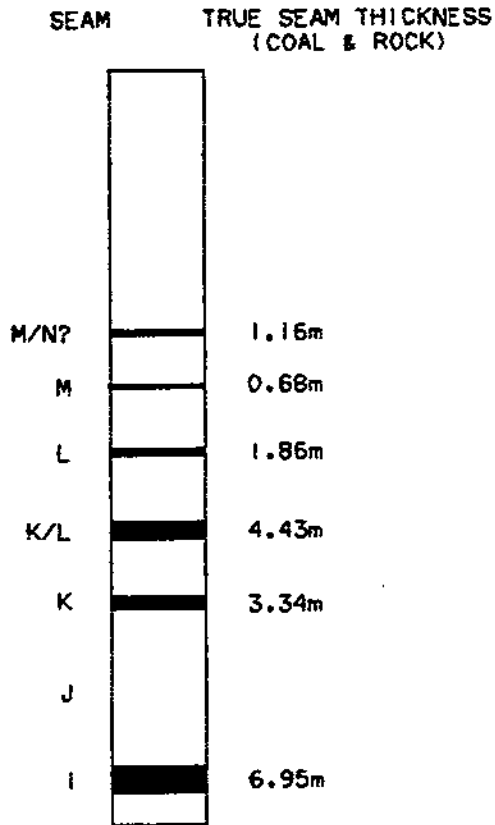
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00


\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



NOTE:  
 SCHEMATIC PROFILE.  
 NO THICKNESSES SHOWN  
 FOR SEAMS CONTAINING  
 LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

<p>FIGURE</p> <p><b>MOUNT KLAPPAN ANTHRACITE PROJECT</b></p> <p>1986 DIAMOND DRILL HOLES          DDH86019</p>
<p>GULF CANADA CORPORATION          11/03/87          KLAP: [205057]@70063019.L00</p> 

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	15.24	15.24	33			OVERBURDEN	CASING.
1	15.24	20.17	4.93	33			ROCK LOSS	
1	20.17	20.42	0.25	33			SILTSTONE	M-DK.GY.VBRKN GRAVEL GRADING DOWN TO VBRKN CORE.
1	20.42	21.20	0.78	*33			MUDSTONE	SLTY.DK.GY.LAM.VBRKN FAINTLY LAMINATED. MOSTLY BRECCIATED WI TH ROCK POWDER MATRIX.
2	21.20	21.39	0.19	33			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SAME AS ABOVE.
2	21.39	23.47	2.08	34			ROCK LOSS	
2	23.47	24.44	0.97	34			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SAME AS ABOVE, NOT AS BRECCIATED.
3	24.44	24.51	0.07	34			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SAME AS ABOVE.
3	24.51	25.60	1.09	34			ROCK LOSS	
3	25.60	27.37	1.77	*35			SANDSTONE	MG.PR.LT-M.GY.MAS.SLD LOCALLY WISPY. NOT AS WELL CEMENTED.
4	27.37	28.45	1.08	34			SANDSTONE	MG.PR.LT-M.GY.MAS.SLD SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	28.45	29.25	0.80	34			SANDSTONE	MG.LT-M.GY.MAS.SLD SAME AS ABOVE.
5	29.25	31.10	1.85	33			SANDSTONE	MG.LT-M.GY.MAS.SLD LOCALLY LAMINATED OR WISPY. MOSTLY MASSI VE, SAME AS ABOVE.
6	31.10	31.26	0.16	33			SANDSTONE	MG.M.GY.LAM.BRKN WISPY. SIMILAR TO ABOVE.
6	31.26	32.00	0.74	33			ROCK LOSS	
6	32.00	33.32	1.32	*32			SANDSTONE	SLTY.MG.M.GY.VTHNB.BRKN THIN MUDDY BEDS OF MANY SMALL (<1CM) WI SPS. FEW MUD BEDS WITH UNDULOSE LAM. SO ME MUD BEDS ARE DISCONTINUOUS.
7	33.32	33.53	0.21	34			SANDSTONE	SLTY.MG.M.GY.VTHNB.VBRKN SAME ROCK TYPE AS ABOVE.
7	33.53	34.35	0.82	36			ROCK LOSS	
7	34.35	35.60	1.25	39			SANDSTONE	SLTY.MG.M.GY.VTHNB.VBRKN SAME AS ABOVE.
7	35.60	36.50	0.90	42			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	36.50	38.01	1.51	*45			SANDSTONE	SLTY. MG. M. GY. LAM. BRKN SIMILAR TO ROCK TYPE ABOVE. LOCALLY LAM WITH FINE WISPY MUD.
8	38.01	38.24	0.23	43			SANDSTONE	MG. M. GY. MAS. SLD
9	38.24	39.63	1.39	42			SANDSTONE	MG. M. GY. MAS. SLD
9	39.63	40.08	0.45	*40			SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. VBRKN MANY SMALL MUD WISPS AND DISCONTINUOUS M UDST LAMINAE.
9	40.08	40.37	0.29	40			ROCK LOSS	
10	40.37	40.54	0.17	40			SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. VBRKN SAME AS ABOVE.
10	40.54	40.75	0.21	41			SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. QTZ CARB VEINS , ALL BRECCIATED.
10	40.75	41.69	0.94	41			SANDSTONE	MG. PR. M. GY. YTHNB. BRKN RARE YTHIN BED OF SMALL BITS OF WISPY M UDST. MOSTLY MASSIVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	41.69	41.97	0.28	42			ROCK LOSS	
10	41.97	42.39	0.42	42			SANDSTONE	MG. PR. M. GY. MAS. BRKN
11	42.39	42.91	0.52	42			SANDSTONE	MG. PR. M. GY. MAS. BRKN
11	42.91	42.96	0.05	42			MUDSTONE	SSY. MG. M-DK. GY. LAM. BIOTR. BRKN WISPY MUDST. WITH MG. SAND.
11	42.96	43.78	0.82	43			SANDSTONE	MG. PR. M. GY. MAS. BRKN YUGGY QTZ CARB VEIN AT 58CM.
11	43.78	44.32	0.54	43			SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. VBRKN WISPY MUD LAMINAE AND V. THIN BEDS. BREC CIATED IN MIDDLE WITH QTZ CARB MATRIX.
11	44.32	45.14	0.82	44			ROCK LOSS	
12	45.14	45.54	0.40	44			SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. VBRKN VERY VERY BROKEN. SAME ROCK TYPE AS ABO VE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	45.54	46.77	1.23	*45		SANDSTONE	MG. PR. M. GY. MAS. BRKN V RARE FINELY WISPY MUDST BED, MOSTLY V ERY SLIGHTLY WISPY.
13	46.77	48.18	1.41	47		SANDSTONE	SLTY. MG. VPR. M. GY. LAM. SLD SLIGHTLY SILTY, MOSTLY WISPY. FEW LAMIN AE. OF FINELY WISPY MUDST.
13	48.18	48.77	0.59	48		SANDSTONE	SLTY. MG. VPR. M. GY. LAM. SLD SAME AS ABOVE.
14	48.77	50.71	1.94	*50		SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. BRKN COMMON LAMINAE OF FINELY WISPY MUD. FEW SMALL (1 CM) ROUNDED MUDST RIPUP CLAST S.
14	50.71	51.50	0.79	53		ROCK LOSS	
15	51.50	51.67	0.17	54		SANDSTONE	SLTY. MG. VPR. M-DK. GY. LAM. BRKN SAME AS ABOVE.
15	51.67	53.41	1.74	56		SANDSTONE	SLTY. MG. VPR. M. GY. YTHNB. BRKN V. SLIGHTLY MUDDY, RARE WISPY MUDST. LAM INAE. MOSTLY YTHNB SS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	53.41	53.78	0.37	*58		SANDSTONE	SLTY. MG. VPR. M. GY. LAM. BRKN COMMON LAMINAE OF FINELY WISPY MUD. SMA LL SUBANGULAR MUDST AND COAL RIPUP CLAS TS.
16	53.78	54.28	0.50	58		ROCK LOSS	
16	54.28	55.65	1.37	59		SANDSTONE	SLTY. MG. VPR. M. GY. LAM. BRKN SAME AS ABOVE.
17	55.65	57.11	1.46	*60		SANDSTONE	SLTY. MG. VPR. M. GY. YTHNB. BIOTR. BRKN SEVERAL YTHIN BEDS OF FINELY WISPY MUDS T THAT IS BIOTURBATED. ONE IS PYRITIC.
17	57.11	57.39	0.28	58		SANDSTONE	SLTY. MG. VPR. M. GY. YTHNB. BIOTR. BRKN SAME AS ABOVE.
18	57.39	59.42	2.03	56		SANDSTONE	MG. VPR. M. GY. YTHNB. SLD V RARE YTHIN BED OF FINELY WISPY MUDST, SOME DISCONTINUOUS.
19	59.42	60.47	1.05	*53		SANDSTONE	MG. VPR. M. GY. YTHNB. BRKN SAME AS ABOVE. YBRKN. .45 TO .55 M.

\* DENOTES MEASURED BCA



87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	60.47	61.16	0.69	57		SANDSTONE	SLTY. MG. VPR. M. GY. THNB. BRKN THIN (5-10CM) SLTST BEDS SEPARATED BY G REATER THICKNESSES OF WISPY SS WITH MUD ST. RIPUP CLASTS.
20	61.16	62.71	1.55	61		SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. BRKN THIN BEDS TO LAMINAE OF SLTST. IN. WISPY SS. RARE RIPUP CLASTS.
20	62.71	62.97	0.26	*65		SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. BRKN SAME AS ABOVE.
21	62.97	64.94	1.97	*01		SANDSTONE	SLTY. FG. VPR. M-DK. GY. LAM. BRKN MANY SILTY LAMINAE IN SS. MOSTLY TOPS U P. 2MM FOLDAXIS. MUDST AND COAL RIPUP C LASTS. BIOTRR. SSD.
22	64.94	65.55	0.61	25		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN COALY STRINGERS AND LENSES AND RIPUP CL ASTS. LOCALLY VBRKN PLANT FRAGMENTS. LOC ALLY BRECCIATED WITH ROCK POWDER MATRIX TOPS UP. SSD.
22	65.55	66.57	1.02	*40		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN SAME AS ABOVE. SSD.
23	66.57	67.91	1.34	43		SILTSTONE	M-DK. GY. LAM. BIOTR. VBRKN SAME AS ABOVE. SSD.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	67.91	68.65	0.74	45		ROCK LOSS	
23	68.65	68.86	0.21	47		MUDSTONE	DK. GY. LAM. VBRKN MANY COALY STRINGERS AND LAMINAE.
24	68.86	69.31	0.45	47	05191	MUDSTONE	CARB. DK. GY. VBRKN COALY BANDS THROUGHOUT. LOWER 25CM SAMP LED.
24	69.31	69.40	0.09	48	05192 M/N?	COAL LOSS	
24	69.40	70.13	0.73	49	05192 M/N?	COAL	C-3. BRKN SHEARED IN PLACES.
24	70.13	70.15	0.02	50	05192 M/N?	MUDSTONE	CARB. DK. GY. SLD
24	70.15	70.18	0.03	50	05192 M/N?	COAL	C-3. SLD
24	70.18	70.23	0.05	50	05192 M/N?	MUDSTONE	CARB. DK. GY. BRKN COALY.
24	70.23	70.58	0.35	51	05192 M/N?	COAL LOSS	
24	70.58	70.84	0.26	51	05192 M/N?	COAL	C-3. BRKN SHEARED IN PLACES.

\* DENOTES MEASURED BCA

FORM  
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	70.84	71.05	0.21	52	05193	MUDSTONE	CARB. DK. GY. BRKN MINOR COALY STRINGERS THROUGHOUT.
25	71.05	72.25	1.20	54		MUDSTONE	CARB. DK. GY. BRKN MIXTURE OF CONTORTED MUDST, QTZ AND COAL LENSES.
25	72.25	72.30	0.05	55		ROCK LOSS	
25	72.30	72.85	0.55	56		MUDSTONE	CARB. DK. GY. BRKN AS ABOVE WITH LESS COAL TOWARDS BASE.
26	72.85	74.83	1.98	59		SANDSTONE	FG. PR. LT. GY. MAS. SLD BRECCIATED WITH WHITE TALC-LIKE, SLIGHTLY SHELLING, SOFT CLAY MATRIX.
27	74.83	75.00	0.17	62		SANDSTONE	FG. PR. LT. GY. MAS. SLD SAME AS ABOVE.
27	75.00	76.83	1.83	64		SANDSTONE	FG. PR. LT. GY. MAS. SLD SAME AS ABOVE.
28	76.83	77.80	0.97	67		SANDSTONE	FG. PR. LT. GY. MAS. SLD SAME AS ABOVE.
28	77.80	77.93	0.13	69		SILTSTONE	CARB. PR. DK. GY. MAS. SLD VERY BRECCIATED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	77.93	78.61	0.68	70		SANDSTONE	FG. PR. LT. GY. MAS. SLD MUDST RIPUP CLASTS, SUBROUNDED, ELLIPTICAL (1-2CM). VERY BRECCIATED WITH WHITE CLAY MATRIX.
28	78.61	78.76	0.15	71		ROCK LOSS	
29	78.76	80.46	1.70	*73		MUDSTONE	CARB. M. BLK. LAM. VBRKN COALY WITH COAL LENSES. UNDULOSE LAM. F LAKEY.
29	80.46	80.65	0.19	74		MUDSTONE	M. GY. MAS. BIOTR. SLD
30	80.65	80.85	0.20	74		MUDSTONE	CARB. M. BLK. LAM. VBRKN COALY WITH COAL LENSES. MANY LISTRIC SURFACES.
30	80.85	81.10	0.25	74		ROCK LOSS	
30	81.10	82.70	1.60	74	05194	MUDSTONE	CARB. DK. GY. LAM. BIOTR. VBRKN SIMILAR TO ROCK TYPE ABOVE. FEW SILTY & DISTURBED V. THIN BEDS. BOTTOM 10CM IN BOX 30 AND TOP 65CM IN BOX 31. LOWER 25CM 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: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	82.70	82.80	0.10	75	05195	M	COAL	C-3.PWRD
31	82.80	82.91	0.11	75	05195	M	MUDSTONE	CARB.DK.GY.SLD
31	82.91	82.98	0.07	75	05195	M	COAL LOSS	
31	82.98	83.27	0.29	75	05195	M	COAL	C-2.PWRD
31	83.27	83.40	0.13	75	05195	M	COAL	C-4.VBRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	83.40	83.50	0.10	75	05196		MUDSTONE	CARB.DK.GY.SHRD
31	83.50	83.53	0.03	75			ROCK LOSS	
31	83.53	84.12	0.59	76	05196		MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN VERY BRECCIATED WITH WHITE CLAY MATRIX. UPPER 15 CM SAMPLED.
31	84.12	84.76	0.64	76			MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE.
32	84.76	86.11	1.35	77			MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN LAMINATED MUDST. WITH BIOTURBATED SLTS T BEDS. VERY BRECCIATED WITH SLIGHTLY G REENISH WHITE CLAY MATRIX.
32	86.11	86.21	0.10	77			MUDSTONE	CARB.M.BLK.LAM.BRKN FLAKEY AND COALY.
32	86.21	86.46	0.25	77			COAL	C-2.DK.BLK.BRKN VERY BRECCIATED WITH WHITE CLAY MATRIX.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	86.46	86.86	0.40	77		COAL LOSS	
32	86.86	86.99	0.13	77		MUDSTONE	CARB. M. BLK. LAM. BRKN FLAKEY AND COALY.
33	86.99	87.24	0.25	78		MUDSTONE	CARB. M. BLK. LAM. BRKN SAME AS ABOVE.
33	87.24	87.57	0.33	78		ROCK LOSS	
33	87.57	88.85	1.28	78		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. VBRKN LOCALLY SHEARED. MANY LISTRIC SURFACES. BRECCIATED WITH ROCK POWDER MATRIX.
33	88.85	89.45	0.60	79		ROCK LOSS	
34	89.45	90.78	1.33	79		SILTSTONE	M-DK. GY. LAM. BIOTR. VBRKN MUDDY SLTST. MOSTLY IRREGULARLY LAMINATED. SOME PARTS ARE MASSIVE, MOTTLED AND BIOTURBATED. "TYNDAL MOTTLES".
34	90.78	91.25	0.47	*80		SILTSTONE	M-DK. GY. LAM. BRKN MUDDY SLTST. IRREGULARLY LAMINATED.
35	91.25	91.71	0.46	80		MUDSTONE	SLTY. M-DK. GY. LAM. VTHINLY LAMINATED. MANY QTZ CARB VEINLETS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	91.71	93.26	1.55	79		SANDSTONE	SLTY. FG. YPR. M. GY. LAM. LAMINATED TO WISPY. FEW BEDS WITH ABUNDANT RIPUP CLASTS. QTZ-CARB VEINS COMMON LOCALLY BRECCIATED WITH QTZ CARB. MATR IX.
36	93.26	93.58	0.32	79		SANDSTONE	FG. YPR. LT. GY. LAM. SLD WISPY UNDULOSE MUD IN SS.
36	93.58	95.35	1.77	*78		SANDSTONE	SLTY. FG. YPR. LT. M. GY. LAM. SLD VARIES, SILTY LAMINATED TO WISPY.
37	95.35	96.55	1.20	78		SANDSTONE	FG. YPR. LT. GY. LAM. SLD WISPY UNDULOSE MUD IN SS.
37	96.55	97.31	0.76	78		SANDSTONE	FG. YPR. LT. GY. LAM. SLD SIMILAR TO ABOVE, WISPS LESS COMMON.
38	97.31	99.06	1.75	79		SANDSTONE	FG. YPR. LT. GY. LAM. SLD SAME AS ABOVE. RARE MUDDY LAMINAE. BECOMING MG WITH DEPTH.
38	99.06	99.40	0.34	79		SILTSTONE	SSY. FG. M-DK. GY. VTHNB. SSD. SLD TOPS UP.
39	99.40	99.46	0.06	79		SILTSTONE	SSY. FG. M-DK. GY. VTHNB. SSD. SLD

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	99.46	100.07	0.61	79	05197		SILTSTONE	SSY.FG.M-DK.GY.VTHNB.SSD.SLD
39	100.07	100.55	0.48	79	05198	L	COAL	C-2.BRKN BRECCIATED COAL, QTY AND MUDST MIXTURE. LOWER 25CMSAMPLED.
39	100.55	100.58	0.03	79	05198	L	MUDSTONE	CARB.DK.GY.SLD
39	100.58	100.71	0.13	79	05198	L	COAL	C-2.VBRKN
39	100.71	100.89	0.18	79	05198	L	COAL	C-2.VBRKN
39	100.89	100.91	0.02	79	05198	L	MUDSTONE	CARB.DK.GY.SHRD
39	100.91	101.18	0.27	79	05198	L	COAL	C-2.BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	101.18	101.22	0.04	79	05198	L	COAL	C-3.SLD
39	101.22	101.24	0.02	79	05198	L	MUDSTONE	CARB.DK.GY.SLD
40	101.24	101.42	0.18	79	05198	L	COAL	C-3.BRKN
40	101.42	101.44	0.02	79	05198	L	COAL	C-6.SLD BONE COAL.
40	101.44	101.55	0.11	79	05198	L	COAL	C-4.BRKN
40	101.55	101.65	0.10	79	05198	L	MUDSTONE	CARB.DK.GY.VBRKN COALY.
40	101.65	101.86	0.21	79	05198	L	COAL LOSS	
40	101.86	101.96	0.10	79	05198	L	COAL	C-3.VBRKN
40	101.96	102.31	0.35	80			ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	102.31	102.68	0.37	80	05199	SILTSTONE	SSY.M.GY.VTHNB.BRKN UPPER 25CM SAMPLED.
40	102.68	103.63	0.95	80		SILTSTONE	SSY.M.GY.VTHNB.SLD
41	103.63	105.38	1.75	*80		SILTSTONE	DK.GY.LAM.BIOTR.BRKN MUDDY. LOCAL LT GY BIOTURBATED V.THIN B EDS. LOCALLY COALY WITH V THIN LAM AND STRINGERS OF COAL. FLAKEY.
42	105.38	107.40	2.02	82		SILTSTONE	M-DK.GY.LAM.BRKN THICKLY LAMINATED TO VTHNB. Y LOCALLY B IOTURBATED. IRREGULARLY LAMINATED.
43	107.40	108.36	0.96	83		SILTSTONE	M-DK.GY.LAM.BRKN SAME AS ABOVE.
43	108.36	109.40	1.04	84		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN IRREGULARLY LAMINATED TO LOCALLY VTHNB.
44	109.40	111.23	1.83	*85		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.
44	111.23	111.30	0.07	84		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	111.30	113.29	1.99	83		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.
46	113.29	114.11	0.82	82		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.
46	114.11	115.37	1.26	81		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN IRREGULARLY LAMINATED TO LOCALLY VTHNB. SAME AS ABOVE.
46	115.37	115.65	0.28	81		ROCK LOSS	
47	115.65	117.25	1.60	*80		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.
47	117.25	117.56	0.31	80		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE.
47	117.56	117.83	0.27	80		ROCK LOSS	
48	117.83	119.73	1.90	80		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BRKN SAME AS ABOVE. TWO FUS WITH SHARP, SCOU RED BASES.
48	119.73	119.93	0.20	79		ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	119.93	120.18	0.25	79	05200		MUDSTONE	CARB. DK. GY. BRKN COALY STRINGERS THROUGHOUT.
49	120.18	120.25	0.07	79	10041	K/L	COAL	C-3. BRKN
49	120.25	120.28	0.03	79	10041	K/L	MUDSTONE	CARB. DK. GY. SLD
49	120.28	120.45	0.17	79	10041	K/L	COAL	C-3. YBRKN
49	120.45	120.64	0.19	79	10041	K/L	COAL	C-3. YBRKN POWDERED IN PLACES.
49	120.64	121.01	0.37	79	10041	K/L	COAL	C-2. YBRKN PARTIALLY POWDERED.
49	121.01	121.08	0.07	79	10041	K/L	ROCK LOSS	
49	121.08	121.85	0.77	79	10041	K/L	COAL	C-2. YBRKN PARTIALLY POWDERED.
50	121.85	121.95	0.10	79	10041	K/L	COAL	C-3. BRKN MUDDY BANDS THROUGHOUT.
50	121.95	122.00	0.05	79	10042	K/L	ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	122.00	122.35	0.35	79	10042	K/L	COAL	C-3. BRKN MUDDY BANDS THROUGHOUT.
50	122.35	122.49	0.14	79	10042	K/L	COAL	C-4. BRKN
50	122.49	122.52	0.03	79	10042	K/L	MUDSTONE	CARB. DK. GY. BRKN
50	122.52	122.66	0.14	79	10042	K/L	ROCK LOSS	
50	122.66	123.13	0.47	79	10042	K/L	COAL	C-4. BRKN MUDDY BANDS THROUGHOUT.
50	123.13	123.15	0.02	79	10042	K/L	MUDSTONE	CARB. DK. GY. SLD
50	123.15	123.46	0.31	79	10042	K/L	COAL	C-2. YBRKN
50	123.46	123.50	0.04	79	10042	K/L	COAL	C-3. SLD
50	123.50	123.57	0.07	79	10042	K/L	COAL	C-2. BRKN
50	123.57	123.58	0.01	79	10042	K/L	COAL	C-6. SLD

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	123.58	123.62	0.04	79	10042	K/L	COAL	C-2.BRKN
50	123.62	123.69	0.07	79	10042	K/L	MUDSTONE	CARB.DK.GY.BRKN
50	123.69	123.77	0.08	79	10042	K/L	COAL LOSS	
50	123.77	123.81	0.04	78	10042	K/L	COAL	C-4.SLD
50	123.81	123.85	0.04	78	10042	K/L	COAL	C-2.SLD
50	123.85	123.89	0.04	78	10042	K/L	COAL	C-4.SLD
51	123.89	124.26	0.37	78	10042	K/L	COAL	C-3.BRKN
51	124.26	124.43	0.17	78	10042	K/L	COAL	C-2.SLD
51	124.43	124.50	0.07	78	10042	K/L	MUDSTONE	CARB.DK.GY.BRKN
51	124.50	124.56	0.06	78	10042	K/L	COAL	C-5.SLD

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	124.56	124.70	0.14	78	10042	K/L	COAL LOSS	
51	124.70	124.97	0.27	78	10043		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
51	124.97	125.17	0.20	78			COAL	C-5.SLD
51	125.17	125.69	0.52	78			MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
51	125.69	125.89	0.20	78			COAL	C-5.SLD
51	125.89	125.93	0.04	78			MUDSTONE	CARB.DK.GY.SLD
52	125.93	126.43	0.50	*78			MUDSTONE	M.BLK.LAM.BRKN MANY COALY LENSES AND STRINGERS. PLANT FRAGMENTS.
52	126.43	126.83	0.40	75			ROCK LOSS	
52	126.83	128.19	1.36	*70			MUDSTONE	SLTY.M.BLK.LAM.BRKN SAME AS ABOVE. BECOMES DK GY AND LESS C OALY WITH DEPTH.

\* DENOTES MEASURED BCA



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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	128.19	129.83	1.64	71		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN SIMILAR TO ROCK TYPE ABOVE.
53	129.83	130.17	0.34	72		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. BRKN SAME AS ABOVE.
54	130.17	131.99	1.82	73		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN MUDDY SLTST. MOSTLY BIOTURBATED. LOCALLY BRECCIATED WITH ROCK POWDER MATRIX.
55	131.99	132.71	0.72	74		SILTSTONE	DK. GY. LAM. BIOTR. SLD SAME ROCK TYPE AS ABOVE.
55	132.71	134.04	1.33	*75		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN SAME ROCK TYPE AS ABOVE. LOCALLY BRECCIA TED WITH ROCK POWDER MATRIX.
55	134.04	134.19	0.15	75		ROCK LOSS	
56	134.19	134.89	0.70	75		SILTSTONE	M. GY. LAM. SLD
56	134.89	135.59	0.70	75		SILTSTONE	CLY. LT-M. GY. LAM. BRKN FINELY LAMINATED M-DK GY SLTST AND LT G Y CLAY. GRADUALLY MORE CLAY WITH DEPTH. A TUFFITE.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	135.59	135.76	0.17	75		BENTONITE	LT. GY. MAS. SLD CHIPPY. SLIGHTLY SWELLING AND GRITTY. O TZ CARB VEIN/LAYER AT BASE. TYPICAL BEN TONITE/TONSTEIN AND TUFFITE ABOVE. K SEA M.
56	135.76	136.18	0.42	75		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN MUDDY SLTST.
56	136.18	136.35	0.17	75		ROCK LOSS	
57	136.35	138.19	1.84	*75		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN SAME ROCK TYPE AS ABOVE. LOCALLY FRACTUR ED TO BRECCIATED BUT LITTLE DISLOCATION
58	138.19	138.64	0.45	75		MUDSTONE	SLTY. M-DK. GY. BRKN LISTRIC SURFACES WITHIN.
58	138.64	139.68	1.04	75	10044	MUDSTONE	SLTY. M-DK. GY. BRKN LOWER 25CM SAMPLED.
58	139.68	140.19	0.51	75	10045 K	COAL	C-3. VBRKN MINOR MUDDY BANDS WITHIN.
59	140.19	140.31	0.12	75	10045 K	COAL	C-2. BRKN
59	140.31	140.59	0.28	75	10045 K	COAL LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	140.59	140.69	0.10	75 10045	K	COAL	C-6.SLD BONE COAL.
59	140.69	141.29	0.60	75 10045	K	COAL	C-2
59	141.29	141.39	0.10	75 10046	K	MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS WITHIN.
59	141.39	141.47	0.08	75 10046	K	COAL LOSS	
59	141.47	141.89	0.42	75 10046	K	COAL	C-3.VBRKN PARTIALLY SHEARED.
59	141.89	141.95	0.06	75 10046	K	COAL	C-3.BRKN
59	141.95	142.03	0.08	75 10046	K	COAL	C-5.SLD
59	142.03	142.19	0.16	75 10047	K	MUDSTONE	CARB.DK.GY.SLD
60	142.19	142.27	0.08	75 10047	K	MUDSTONE	CARB.DK.GY.BRKN
60	142.27	142.32	0.05	75 10047	K	ROCK LOSS	
60	142.32	142.62	0.30	75 10047	K	COAL LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	142.62	143.02	0.40	75 10047	K	COAL	C-2.VBRKN
60	143.02	143.13	0.11	75 10047	K	COAL	C-4.BRKN
60	143.13	144.31	1.18	75 10048		MUDSTONE	CARB.M-DK.GY.SLD COALY STRINGERS AND PLANT FRAGS THROUGH OUT. BECOMES SILTY TOWARDS BASE. UPPE R 25CM SAMPLED.
61	144.31	144.83	0.52	75		MUDSTONE	SLTY.DK.GY.LAM.BRKN V. FAINTLY LAMINATED.
61	144.83	144.97	0.14	75		MUDSTONE	SLTY.DK.GY.LAM.SLD SAME AS ABOVE ROCK TYPE.
61	144.97	145.24	0.27	75		SILTSTONE	SSY.M.GY.LAM SLTST.LAMINAE AND VTHIN BEDS OF SANDY S ILTST.
61	145.24	146.18	0.94	*75		SILTSTONE	M-DK.GY.LAM.WRMBU.BRKN FEW MUD BALLS. SUBVERTICAL FRACTURES WI TH MINOR DISPLACEMENT. TOPS UP.
62	146.18	147.27	1.09	76		SILTSTONE	M-DK.GY.LAM.SSD.VBRKN TOPS UP. LOCALLY BRECCIATED WITH ROCK P OWDER MATRIX.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	147.27	147.46	0.19	77		SANDSTONE	SLTY. VFG. VPR. M. GY. VTHNB. BIOTR. VBRKN BIOTURBATED LT-M GY SLTST. LAMINAE OF M -DK GY SLTST AND VTHNB SS.
62	147.46	147.57	0.11	77		ROCK LOSS	
62	147.57	147.77	0.20	77		SANDSTONE	SLTY. VFG. VPR. M. GY. VTHNB. BIOTR. VBRKN SAME AS ABOVE. VERY VERY BROKEN.
63	147.77	148.52	0.75	78		SANDSTONE	FG. PR. LT-M. GY. MAS. VBRKN MOSTLY VERY VERY BROKEN. BRECCIATED WIT H. ROCK POWDER MATRIX.
63	148.52	149.30	0.78	79		ROCK LOSS	
63	149.30	149.55	0.25	80		SANDSTONE	FG. PR. LT-M. GY. MAS. VBRKN SAME AS ABOVE.
63	149.55	150.13	0.58	80		SILTSTONE	M-DK. GY. LAM. VBRKN PARTLY BROKEN. PARTLY BRECCIATED WITH R OCK POWDER MATRIX.
64	150.13	150.58	0.45	81		SILTSTONE	M-DK. GY. LAM. BIOTR. VBRKN VERY VERY BROKEN. LOCALLY BIOTURBATED. EVENLY LAMINATED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	150.58	150.83	0.25	81		ROCK LOSS	
64	150.83	152.01	1.18	*82		SILTSTONE	M-DK. GY. LAM. VBRKN SIMILAR TO ABOVE ROCK TYPE.
65	152.01	153.50	1.49	*84		SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ABOVE ROCK TYPE.
65	153.50	153.76	0.26	83		ROCK LOSS	
66	153.76	154.88	1.12	83		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. VBRKN QTZ CARB VEINS, SOME WITH CARB. DISSOLVE D OUT. PARTLY VERY VERY BROKEN.
66	154.88	155.26	0.38	82		SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. VBRKN SAME AS ABOVE.
66	155.26	155.90	0.64	81		ROCK LOSS	
67	155.90	157.70	1.80	80		SILTSTONE	SSY. VFG. M-DK. GY. LAM. VBRKN FEW VTHNB. VFG. SS BEDS IN MOSTLY LAMINAT ED SLTST. LOCALLY BRECCIATED WITH ONLY MINOR DISLOCATION. LOCALLY VERY BROKEN AT BOTTOM OF BOX.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	157.70	157.93	0.23	79			ROCK LOSS	
68	157.93	158.33	0.40	79			SILTSTONE	SSY. VFG. M-DK. GY. LAM. BRKN SAME ROCK TYPE AS ABOVE. BRECCIATED AND VERTICALLY FRACTURED.
68	158.33	159.13	0.80	79			SILTSTONE	M-DK. GY. LAM. BRKN
68	159.13	159.87	0.74	*78			SILTSTONE	M-DK. GY. LAM. BRKN VERY VERY BROKEN AT BOTTOM OF INTERVAL.
69	159.87	160.33	0.46	77			SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ROCK TYPE ABOVE.
69	160.33	161.16	0.83	75			ROCK LOSS	
69	161.16	162.18	1.02	73			SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ABOVE. PARTLY FINELY BRECCIATED
70	162.18	163.60	1.42	*70			SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ABOVE. MOSTLY FINELY BRECCIATED LOCALLY VERY FISSILE. LIKE TYPICAL CO ASTER ZONE. MUDDY SLTST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	163.60	163.91	0.31	70			ROCK LOSS	
70	163.91	164.12	0.21	70			SILTSTONE	M-DK. GY. LAM. VBRKN COMPLETELY BRECCIATED. ROCK POWDER MATR IX. MUDDY SLTST.
71	164.12	164.74	0.62	70			SILTSTONE	M-DK. GY. LAM. VBRKN SAME AS ABOVE.
71	164.74	165.46	0.72	70			MUDSTONE	CARB. DK. GY. YSHRD MANY LISTRIC SURFACES. SOFT. LOCALLY BR ECCIATED. MUDDY SLTST.
71	165.46	165.66	0.20	70			ROCK LOSS	
71	165.66	166.06	0.40	70		J	MUDSTONE	CARB. DK. GY. YSHRD SAME AS ABOVE.
71	166.06	166.76	0.70	70		J	ROCK LOSS	
72	166.76	167.92	1.16	70			SILTSTONE	DK. GY. LAM. VBRKN FISSILE. LOCALLY. QUITE BRECCIATED. MUDDY SLTST.
72	167.92	168.44	0.52	70			SILTSTONE	M-DK. GY. VTHNB. SLD ALL BRECCIATED WITH ROCK POWDER MATRIX.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	168.44	170.38	1.94	70			SILTSTONE	M-DK.GY.VTHNB.BRKN SAME AS ABOVE. ALL BRECCIATED.
74	170.38	170.85	0.47	70			SILTSTONE	M-DK.GY.VTHNB.BRKN SAME AS ABOVE. ALL BRECCIATED.
74	170.85	172.36	1.51	70			SILTSTONE	M-DK.GY.VTHNB.BIOTR.BRKN TOPS UP. LOCALLY BRECCIATED. ROCK POWDER MATRIX. LOCALLY SHEARED.
75	172.36	173.76	1.40	70			SILTSTONE	M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. LOCALLY BRECCIATED.
75	173.76	174.14	0.38	*70			SILTSTONE	M-DK.GY.LAM.BIOTR.BRKN SAME AS ABOVE. NOT BRECCIATED.
76	174.14	176.14	2.00	71			SILTSTONE	M-DK.GY.LAM.BIOTR.BRKN SAME ROCK TYPE AS ABOVE. MOSTLY BRECCIA TED. ROCK POWDER MATRIX.
77	176.14	176.78	0.64	73			SILTSTONE	M-DK.GY.LAM.BIOTR.VBRKN SAME ROCK TYPE AS ABOVE.
77	176.78	178.00	1.22	*74			SILTSTONE	M-DK.GY.LAM.BIOTR.BRKN SIMILAR TO ROCK TYPE ABOVE. TOPS UP. LOCALLY RIPPLED. BOTTOM 20CM IS BRECCIATED . RIPMK.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	178.00	178.54	0.54	74			SILTSTONE	M-DK.GY.LAM.BRKN SAME ROCK TYPE AS ABOVE. VERY BRECCIATE D. ROCK POWDER MATRIX.
78	178.54	178.91	0.37	74			SANDSTONE	FG.M.GY.MAS.VBRKN MANY SUBVERTICAL FRACTURES.
78	178.91	179.69	0.78	74			SILTSTONE	SSY.FG.M-DK.GY.LAM.VBRKN RARE LAMINAE OF FG SS IN LAMINATED SLTS T. LOCALLY BRECCIATED.
78	179.69	179.91	0.22	74			SILTSTONE	M-DK.GY.LAM.BRKN SIMILAR TO ROCK TYPE ABOVE. VERY BRECCI ATED.
79	179.91	180.72	0.81	74			SILTSTONE	M-DK.GY.BRKN VERY BRECCIATED. ROCK POWDER MATRIX.
79	180.72	181.64	0.92	74			SILTSTONE	LT.GY.MAS.BRKN BRECCIATED (GTZ CARB MATRIX). LOCALLY B RECCIATED. INTER WITH ROCK POWDER MATRIX . TOP OF TUFFITE ZONE ABOVE I SEAM.
80	181.64	181.69	0.05	74			SILTSTONE	LT.GY.MAS.BRKN SAME AS ABOVE.
80	181.69	182.04	0.35	74			SILTSTONE	DK.GY.VBRKN MUDDY SLTST. BRECCIATED.

\* DENOTES MEASURED BCA

FORM  
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	182.04	182.29	0.25	74			SILTSTONE	LT.GY.MAS.VBRKN REPETITION OF TUFFITE ZONE.
80	182.29	182.57	0.28	74			ROCK LOSS	
80	182.57	183.13	0.56	74			SILTSTONE	LT.GY.MAS.VBRKN SAME AS ABOVE. POSSIBLY 5CM BENTONITE 1 0CM ABOVE BOTTOM OF INTERVAL, SOFTER AND NOT AS SILTY.
80	183.13	183.23	0.10	74			SILTSTONE	DK.GY.BRKN MUDDY SLTST. BRECCIATED.
80	183.23	184.06	0.83	74			SILTSTONE	CLYY.LT-M.GY.VBRKN
80	184.06	184.26	0.20	74			ROCK LOSS	
80	184.26	184.87	0.61	74			SILTSTONE	CLYY.LT-M.GY.BRKN
80	184.87	185.15	0.28	74	10049		MUDSTONE	CARB.DK.GY.BRKN
80	185.15	185.40	0.25	74	10050	I	COAL	C-2.VBRKN
81	185.40	186.02	0.62	74	10050	I	COAL	C-2.VBRKN POWDERED IN PLACES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	186.02	186.18	0.16	74	10050	I	MUDSTONE	CARB.DK.GY.BRKN
81	186.18	186.29	0.11	74	10050	I	COAL	C-2.VBRKN
81	186.29	186.33	0.04	74	10050	I	SILTSTONE	CLYY.M-DK.GY.SLD
81	186.33	186.87	0.54	74	10050	I	COAL	C-2.VBRKN
81	186.87	187.07	0.20	74	10051	I	MUDSTONE	CARB.DK.GY.SLD
82	187.07	187.21	0.14	74	10051	I	COAL	C-2.VBRKN
82	187.21	187.41	0.20	74	10051	I	COAL LOSS	
82	187.41	187.47	0.06	74	10051	I	MUDSTONE	SLTY.M-DK.GY.SLD
82	187.47	189.02	1.55	74	10051	I	COAL	C-2.VBRKN HARD TO TELL MINOR VARIATIONS, PARTIALLY POWDERED, POSSIBLY FROM SHEARING.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	189.02	189.29	0.27	74	10051	1	COAL	C-2.BRKN
83	189.29	190.08	0.79	74	10051	1	COAL LOSS	
83	190.08	190.11	0.03	74	10051	1	COAL	C-6.SLD BONE COAL.
83	190.11	190.91	0.80	74	10052	1	COAL	C-1.BRKN
83	190.91	191.62	0.71	74	10052	1	COAL	C-1.BRKN
84	191.62	192.38	0.76	74	10052	1	COAL	C-1.BRKN
84	192.38	193.33	0.95	74	10053		MUDSTONE	CARB.M-DK.GY.BRKN CARB NEAR TOP, SILTY TOWARDS BASE. COAL Y STRINGERS AND PLANT FRAGS THROUGH OUT. UPPER 25CM SAMPLED.
84	193.33	193.56	0.23	74			MUDSTONE	SLTY.M.GY.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	193.56	195.41	1.85	*74			MUDSTONE	SLTY.VPR.M-DK.GY.LAM.BIOTR.BRKN OCCASIONAL LAMINAE OF VFG SS IN LAMINATED SLTY MUDST. TOPS UP. SUBPARALLEL BED DING.
86	195.41	195.69	0.28	74			MUDSTONE	SLTY.VPR.M-DK.GY.LAM.BIOTR.SLD SAME ROCK TYPE AS ABOVE.
86	195.69	196.25	0.56	74			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BIOTR.BRKN DISCONTINUOUS MUDDY BIOTURBATED LAMINAE , OCCASIONALLY RIPPED UP IN SS. RIPUP.
86	196.25	196.56	0.31	74			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BIOTR.BRKN SAME AS ABOVE. RIPUP.
86	196.56	196.90	0.34	74			SANDSTONE	MG.PR.LT-M.GY.MAS.SLD OCCASIONAL 1-2CM SUBANGULAR MUDST RIPUP IN MASSIVESS.
86	196.90	197.02	0.12	74			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BIOTR.SLD MUDDY BIOTURBATED LAMINAE IN SS.
86	197.02	197.18	0.16	74			SILTSTONE	SSY.FG.VPR.M.GY.LAM.BIOTR.SLD SIMILAR TO ABOVE BUT LESS SAND.
87	197.18	197.52	0.34	74			SILTSTONE	SSY.VPR.M.GY.LAM.BIOTR.SLD SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	197.52	198.06	0.54	.74			SANDSTONE	MG. PR. LT-M. GY. THNB. SLD RARE 2-4CM SUBROUNDED MUDST RIPUP CLAST RARE YTHIN MUDST BED, WIDELY SPACED I N. SS. TOTAL DEPTH = 199.33M.

\* DENOTES MEASURED BCA  
NEWPAGE





















# Gulf Canada Corporation Coal Division

# 723

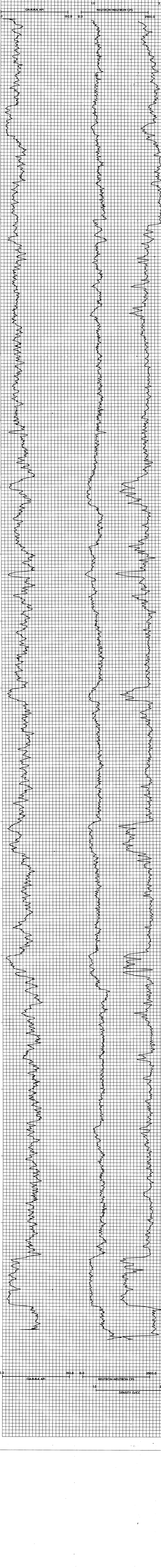
## Geophysical Log

Datasource: **KPNLRDDH86019**      Province: BC      Northing: 6343220.00      Lat: 57402  
 Log Date: 86-09-11      Zone: 9      Easting: 506835.00      Long: 1285312  
 Company: CENTURY      Measuring Point:      Elevation: 1622.1

Scale: 1 to 100.0  
 Depth Range: 0.0 to 202.0  
 True Thickness: NO

Comments:  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE





MOUNT KLAPPAN ANTHRACITE PROJECT

LOST - FOX AREA

GEOLOGICAL REPORT

1986

APPENDIX IV

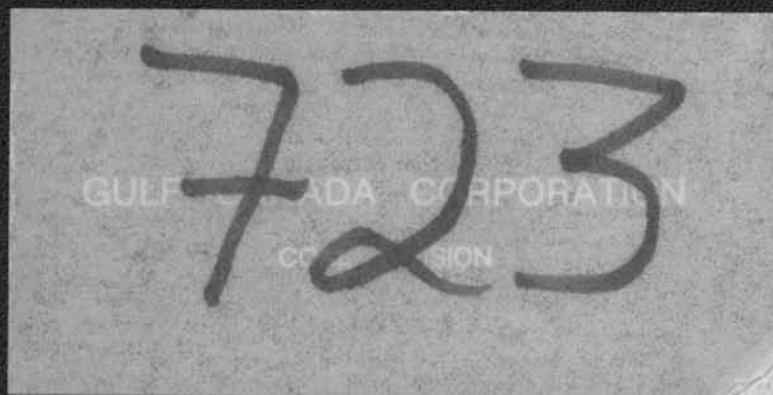
DIAMOND DRILL HOLE DATA

VOLUME III

KPNLRDDH 86 020

TO

KPNLRDDH 86 029



KPNLRDDH86020

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH86020

DATE - 02/13/87

- HISTORY -

START DATE - 12/09/86  
 END DATE - 14/09/86

CONTRACTOR - J.T. THOMAS  
 GEOLOGIST - SAVOIE

OPERATOR - G.C.C.  
 SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE. COMPUTER INPUT  
 BY RAMONA QUOCK.

- LOCATION -

PROVINCE - BC  
 ELEVATION - 1434.61

ZONE - 9  
 NORTHING - 6345278.00  
 EASTING - 504613.56

LICENCE/LEASE NUMBER -

LATITUDE - 571509  
 LONGITUDE - 1285525

- ORIENTATION -

LENGTH - 139.29  
 CORE SIZE - 0.0

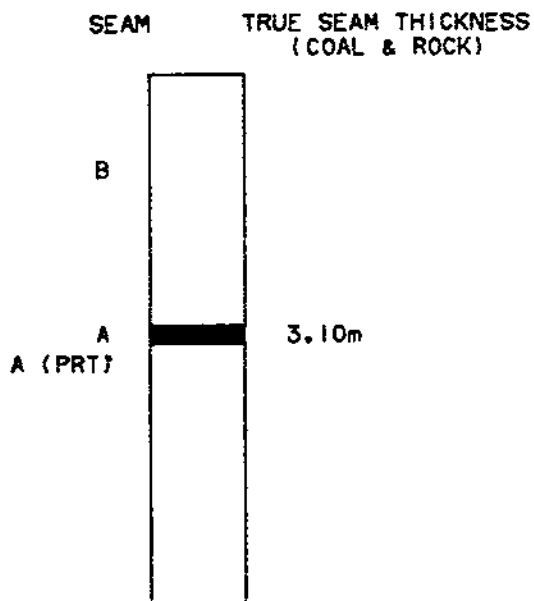
INCLINATION - 60.0  
 AZIMUTH - 290.0

CEMENT - N  
 PLUG - N  
 PIEZ - N

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

=====



**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDHB6020

GULF CANADA CORPORATION  
11/03/87  
KLAP:[205057]B70063020.LOG



87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	15.24	15.24	62		OVERBURDEN	CASING.
1	15.24	16.62	1.38	*62		SANDSTONE	SLTY. FG. PR. M. GY. LAM. SSD. BRKN NUMEROUS VERY THIN INDISTINCT MUDST LAM INAE. SEVERAL ICM BANDS OF MUDST. TOPS UP (LOAD STRUCTURES).
1	16.62	16.68	0.06	63		ROCK LOSS	
1	16.68	16.96	0.28	63		SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. QTZ VEINING AT BASE OF INTERY AL.
2	16.96	18.35	1.39	*64		SILTSTONE	M-DK. GY. LAM. BIOTR. SLD ABUNDANT MUDST LAMINAE AND HELMINTHOPSI S BURROWING. (ICM BIVALVES FOUND.
2	18.35	18.40	0.05	65		SILTSTONE	M. GY. THNB. SLD BAND OF SILT (<2CM).
2	18.40	18.96	0.56	65		SILTSTONE	M. GY. LAM. SSD. SLD MUDST LAMINATIONS. DISTURBED BDG.
3	18.96	19.46	0.50	*66		SILTSTONE	M. GY. LAM. BIOTR. SLD MUDST LAMINAE. ABUNDANT HELMINTHOPSI.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	19.46	19.86	0.40	64		MUDSTONE	SLTY. M. GY. LAM. SLD INDISTINCT SLTST LAMINATIONS.
3	19.86	20.65	0.79	61		SANDSTONE	GRAN. S-P. GY. THKB. BRKN A FEW ANGULAR MUDST RIPUPS (APPROX 2-3C M). MINOR MUDST STRINGERS. GRANULAR BLE BS OF PYRITE, QTZ VEINING. (SIMILAR TO THE MILKY WAY?).
3	20.65	20.96	0.31	58		SILTSTONE	M. GY. LAM. BIOTR. SLD INTERLAMINATED MUDST. NUMEROUS BIVALVE BURROWS. TOPS UP.
4	20.96	21.74	0.78	*55		SILTSTONE	M. GY. LAM. BIOTR. SLD SSD. INDISTINCT SWIRLED MUDST LAMINAE. SANDIER TOWARD BASE.
4	21.74	22.42	0.68	60		SANDSTONE	FG. M. GY. MAS. SLD NUMEROUS DISTORTED MUDST. RIPUP CLASTS.
4	22.42	22.80	0.38	64		SANDSTONE	CLYY. FG. M. GY. MAS. SLD MINOR DEFORMED MUDST. BANDS.
5	22.80	23.92	1.12	*70		SANDSTONE	CLYY. FG. M. GY. SLD TOPS UP AS INDICATED BY BIVALVE BURROWS.
5	23.92	24.20	0.28	69		SANDSTONE	MG. LT-M. GY. MAS. SLD MINOR MUDST RIPUP CLASTS.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	24.20	24.32	0.12	69			SANDSTONE	CLYY. FG. M. GY. SLD
5	24.32	24.37	0.05	69			MUDSTONE	CARB. DK. GY. BRKN COALY WITH PYRITE NODULES. POORLY CONSOLIDATED.
5	24.37	24.47	0.10	69	B		COAL	C-3. SHRD VERY SHEARED & BROKEN.
5	24.47	24.77	0.30	69	B		COAL LOSS	
5	24.77	24.85	0.08	69			MUDSTONE	CARB. DK. GY. SLD PYRITE & QTZ WITHIN.
5	24.85	24.90	0.05	69			SILTSTONE	SSY. M. GY. MAS. SLD
5	24.90	25.05	0.15	69			MUDSTONE	CARB. M-DK. GY. SLD ABUNDANT PLANT FRAGS.
6	25.05	25.35	0.30	68			MUDSTONE	SLTY. M-DK. GY. SHRD ABUNDANT LISTRIC SURFACES COATED WITH A WHITE CARBONATE MINERAL.
6	25.35	25.92	0.57	*68			SILTSTONE	M. GY. LAM. SLD INDISTINCT MUDST LAMINATIONS. SOME SWIRLED BDG. GRADATIONAL CONTACTS.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	25.92	26.74	0.82	67			SANDSTONE	SLTY. VFG. M. GY. MAS. BRKN VERY INDISTINCT MUDST LAMINATIONS. ABUNDANCE OF DISSEMINATED PYRITE.
7	26.74	27.48	0.74	66			SANDSTONE	FG. M. GY. MAS. BRKN MINOR MUDST LAMINATIONS AT BASE OF INTERVAL. ABUNDANCE OF DISSEMINATED PYRITE.
7	27.48	28.55	1.07	65			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN
7	28.55	28.75	0.20	64			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN 2. SMALL. ROUNDED MUDST CLASTS (<1CM).
8	28.75	30.31	1.56	*63			SANDSTONE	FG. MOD. LT-M. GY. MAS. VBRKN QTZ FILLED FRACTURE AT 20 DEGREES. SPARSE MUDST LAMINAE AND ELONGATE CLASTS (ROUND).
8	30.31	30.66	0.35	63			ROCK LOSS	
9	30.66	31.60	0.94	62			SANDSTONE	FG. MOD. LT-M. GY. MAS. SLD VERY HARD.
9	31.60	32.82	1.22	62			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD SEVERAL QTZ FILLED FRACTURES AT 24 DEGREE. DISSEMINATED PYRITE THROUGHOUT.

\* DENOTES MEASURED BCA

87/03/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	32.82	32.93	0.11	62		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD
10	32.93	33.21	0.28	61		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD ABUNDANT MUDST RIPUP CLASTS, SUBROUNDED (LGST = 5CM). ONE ELONGATE COAL CLAST SURROUNDED BY A CARBONATE.
10	33.21	33.93	0.72	61		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD VERY HARD.
10	33.93	34.15	0.22	*61		SILTSTONE	SSY.M.GY.LAM.SSD.SLD TOPS UP, LOAD STRUCTURE, INTERLAMINATED MUDST. SMALL SCALE X-BDG.
10	34.15	34.93	0.78	*73		SANDSTONE	FG.PR.LT-M.GY.MAS.SLD SPARSE MUDST BANDS (<1CM) AND HISPS OF MUD.
11	34.93	35.18	0.25	71		SANDSTONE	FG.PR.LT-M.GY.MAS.SLD
11	35.18	35.69	0.51	70		SANDSTONE	SLTY.VFG.PR.M.GY.LAM.SLD INTERLAMINATED MUDST AND SLTST.
11	35.69	36.97	1.28	67		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD SPARSE MUDST LAMINAE.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	36.97	37.89	0.92	*64		SANDSTONE	SLTY.FG.VPR.M.GY.THNB.BRKN BANDS OF MUDST. MINOR QTZ VEINING PARAL LEL TO BDG PLANE.
12	37.89	38.74	0.85	64		SANDSTONE	SLTY.FG.VPR.M.GY.MAS.BRKN MUDST LAMINATIONS. VERY MINOR QTZ VEINING PERPENDICULAR TO BDG.
13	38.74	39.10	0.36	64		SANDSTONE	FG.VPR.M.GY.MAS.BRKN MINOR QTZ VEINING (<.3CM).
13	39.10	39.17	0.07	65		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.SLD INTERLAMINATED MUDST.
13	39.17	39.27	0.10	65		SANDSTONE	FG.PR.M.GY.MAS.SLD
13	39.27	39.71	0.44	65		SANDSTONE	FG.PR.M.GY.VBRKN INTENSE BREAKAGE. QTZ VEINING IS MINOR.
13	39.71	40.33	0.62	65		ROCK LOSS	
13	40.33	40.93	0.60	65		SANDSTONE	FG.PR.M.GY.VBRKN AS ABOVE.
13	40.93	41.25	0.32	65		ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	41.25	42.52	1.27	65			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN MINOR MUDST LAMINATIONS PRONOUNCED FRACTURE AT 34 DEGREES TO CORE ANGLE.
14	42.52	42.77	0.25	66			ROCK LOSS	
14	42.77	43.01	0.24	66			SANDSTONE	MG. PR. LT-M. GY. MAS. VBRKN
15	43.01	43.71	0.70	66			SANDSTONE	MG. PR. LT-M. GY. MAS. VBRKN COARSENING UPWARD SEQUENCE. (CUS). MINOR MUDST LAMINATIONS.
15	43.71	44.62	0.91	*66			SANDSTONE	FG. PR. M. GY. MAS. BRKN SPARSE MUDST LAMINATIONS.
15	44.62	44.73	0.11	66			SANDSTONE	FG. PR. M. GY. MAS. BRKN DISCONTINUOUS SHIRLED MUDST. LISTRIC SURFACE.
16	44.73	45.11	0.38	65			SANDSTONE	SLTY. FG. PR. M. GY. MB. SLD INTERBEDDED WITH MUDDY SS.
16	45.11	45.31	0.20	65			SANDSTONE	FG. PR. M. GY. VSHRD INTENSE BREAKAGE.
16	45.31	45.83	0.52	65			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	45.83	46.23	0.40	64			SANDSTONE	FG. PR. M. GY. VSHRD MINOR QTZ VEINING. INDISTINCT MUDST SWIRLS IN SS.
16	46.23	46.60	0.37	64			BRECCIA	GY SS AND MUDST CLASTS IN A MG SS MATRIX. ABUNDANT IRREGULAR QTZ VEINING. SHARP LITHO CONTACT.
16	46.60	46.81	0.21	64			SILTSTONE	SSY. M. GY. LAM. SLD INTERLAMINATED MUDST. PYRITE.
17	46.81	48.02	1.21	*63			SILTSTONE	PYR. M-DK. GY. LAM. BIOTR. BRKN AS ABOVE. HELMINTHOPSIS BURROWS. MINOR LISTRIC SURFACES.
17	48.02	48.29	0.27	62			ROCK LOSS	
17	48.29	48.89	0.60	62			MUDSTONE	PYR. M-DK. GY. LAM. VBRKN INTERLAMINATED SLTST. PYRITE BLEBS.
18	48.89	50.17	1.28	61			MUDSTONE	PYR. M-DK. GY. LAM. SLD AS ABOVE. TOPS UP (LOAD STRUCTURE). MINOR OR HELMINTHOPSIS. FRACTURE AT 15 DEGREE S TO CORE ANGLE.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTERVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	50.17	50.88	0.71	*60			MUDSTONE	PYR. M-DK. GY. LAM. SLD INTERLAMINATED SLTST. PYRITE. MINOR HELMINTHOPSIS CORE TWIST OFF.
19	50.88	53.02	2.14	*62			MUDSTONE	PYR. M-DK. GY. LAM. SLD DISCONTINUOUS SLTST LAMINATIONS. ABUNDANT PYRITE. HELMINTHOPSIS.
20	53.02	53.22	0.20	62			MUDSTONE	PYR. M-DK. GY. MAS. SLD DISCONTINUOUS SLTST LAMINATIONS. PYRITE BLEBS.
20	53.22	54.94	1.72	62			MUDSTONE	PYR. M-DK. GY. MAS. SLD. SPARSE SLTST BANDS. INCREDIBLE AMOUNT OF PYRITE BLEBS. FRACTURE AT 25 DEGREES TO CORE ANGLE. LISTRIC SURFACES AT BASE OF INTERVAL.
21	54.94	56.14	1.20	62			MUDSTONE	M-DK. GY. MAS. BRKN AS ABOVE EXCEPT LISTRIC SURFACES AT TOP OF INTERVAL.
21	56.14	56.27	0.13	62			ROCK LOSS	
21	56.27	56.97	0.70	62			MUDSTONE	DK. GY. MAS. SLD ABUNDANT (<2CM) BIVALVIA. DECREASE IN PYRITE.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTERVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	56.97	58.77	1.80	62			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
22	58.77	59.15	0.38	62			ROCK LOSS	
23	59.15	59.32	0.17	62			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
23	59.32	60.13	0.81	62			MUDSTONE	DK. GY. MAS. BRKN ABUNDANT BIVALVES (<2CM). SHARP LOWER CONTACT.
23	60.13	60.91	0.78	*62			SANDSTONE	FG. PR. M. GY. MAS. BRKN A FEW MINOR MUDST BANDS. MINOR QTZ VEIN (<.3CM) PERPENDICULAR TO BDG.
24	60.91	62.12	1.21	68			SANDSTONE	FG. PR. M. GY. MAS. BRKN A FEW MINOR MUDST BANDS.
24	62.12	62.87	0.75	*73			SANDSTONE	MG. PR. M. GY. MAS. SLD AS ABOVE.
25	62.87	64.89	2.02	*77			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN MINOR ICM BANDS OF MUDST. IRREGULAR FRACTURE AT APPROX 15 DEGREES TO CORE ANGLE.
26	64.89	65.19	0.30	75			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD MINOR TRACES OF MUDST LAMINAE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	65.19	66.88	1.69	*74			SANDSTONE	MG. PR. LT-M. GY. MAS. AS ABOVE. ONE 3CM BAND OF MUDST.
26	66.88	66.98	0.10	68			SILTSTONE	H. GY. MAS. SLD TRACE OF MUDST LAMINAE. SHARP UPPER AND LOWER CONTACT.
27	66.98	67.77	0.79	65	10037		MUDSTONE	CARB. DK. GY. BRKN LOWER 25CM SAMPLED.
27	67.77	68.14	0.37	61	10038	A PART	COAL LOSS	
27	68.14	68.55	0.41	58	10038	A PART	COAL	C-3. BRKN
27	68.55	68.68	0.13	57	10038	A PART	COAL	C-3. BRKN
27	68.68	69.03	0.35	*55	10039	A PART	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS & PLANTS THROUGHOUT.
27	69.03	69.24	0.21	57	10039	A PART	ROCK LOSS	
27	69.24	69.78	0.54	60	10039	A PART	COAL LOSS	
27	69.78	69.86	0.08	63	10039	A PART	COAL	C-2. SLD MIXTURE OF QTZ & MINOR CG WITHIN. CONTO RTED.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	69.86	70.05	0.19	64	10039	A PART	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS & PLANT FRAGS THROUGHOUT.
28	70.05	70.15	0.10	65	10039	A PART	COAL	C-1. SLD
28	70.15	70.24	0.09	66	10039	A PART	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS & PLANT FRAGS WITHIN.
28	70.24	70.44	0.20	67	10039	A PART	COAL	C-1. SLD
28	70.44	70.65	0.21	69	10039	A PART	COAL	C-3. SLD BANDED.
28	70.65	70.77	0.12	*70	10039	A PART	MUDSTONE	CARB. DK. GY. SLD COALY PLANT FRAGS WITHIN.
28	70.77	70.83	0.06	69	10039	A PART	COAL	C-2. SLD
28	70.83	70.87	0.04	69	10039	A PART	COAL	C-3. SLD
28	70.87	70.99	0.12	68	10039	A PART	COAL	C-4. SLD MUDDY BANDS WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	70.99	71.11	0.12	67	10039	A PART	COAL	C-1 MINOR CONTORTED MUDDY BANDS WITHIN.
28	71.11	71.15	0.04	67	10039	A PART	COAL	C-4.VBRKN
28	71.15	71.29	0.14	66	10039	A PART	COAL	C-3.VBRKN
28	71.29	71.45	0.16	65	10040		MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS & PLANT FRAGS ABUNDANT.
28	71.45	71.64	0.19	64	10040		MUDSTONE	CARB.DK.GY.BRKN UPPER 9CM SAMPLED.
29	71.64	72.12	0.48	61			MUDSTONE	DK.GY.SLD ABUNDANT PLANT FRAGMENTS AND COALY STRI NGERS. NUMEROUS LISTRIC SURFACES.
29	72.12	73.62	1.50	*54			SILTSTONE	SSY.M.GY.LAM.SSD.SLD INTERLAMINATED MUDST. SANDIER TOWARD BA SE.
30	73.62	74.45	0.83	*58			SILTSTONE	SSY.M.GY.LAM.SSD.SLD AS ABOVE. TOPS UP (LOAD STRUCTURE).
30	74.45	74.64	0.19	59			SILTSTONE	SSY.M.GY.LAM.SSD.SLD AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	74.64	74.88	0.24	59			SANDSTONE	SLTY.M.GY.SSD.SLD SWIRLED BGG; STILL UNDER THE EFFECT OF THE HIGHER ENERGY ENVIRONMENT LOWER IN SECTION.
30	74.88	75.53	0.65	60			SANDSTONE	MG.LT-M.GY.MAS.SLD FINES UPWARDS. GRADUAL CONTACTS. 2 INTE RSECTING QTZ VEINS AT 15 AND 37 DEGREES TO CORE ANGLE (<.2CM). 60 DEGREE ANGLE OF INTERSECTION.
31	75.53	75.60	0.07	60			SANDSTONE	MG.LT-M.GY.MAS.SLD SHARP BASAL CONTACT.
31	75.60	76.01	0.41	61			SILTSTONE	M.GY.LAM.SLD INDISTINCT INTERLAMINATED MUDST. 1CM ZO NE OF CARBONATE MINERAL AND COALY MAT.
31	76.01	77.04	1.03	*62			SILTSTONE	M.GY.SLD MINOR INDISTINCT MUDST LAMINATION. WELM INTHOPSIS BURROWS? MUDDIER TOWARD BASE.
31	77.04	77.49	0.45	62			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	77.49	77.89	0.40	62		MUDSTONE	CARB. DK. GY. BRKN GRADUAL UPPER CONTACT. COALY BDG PLANES . 5CM ZONE AT TOP OF INTERVAL HAS <2CM BIVALVES, SOME REPLACED BY SOME CARBONA TE MINERAL. (CONCAVE SIDE OF SHELL UP).
31	77.89	78.34	0.45	63		ROCK LOSS	
31	78.34	78.38	0.04	63		MUDSTONE	CARB. DK. GY. BRKN PLANT FRAGMENTS.
31	78.38	78.39	0.01	63	A	COAL	C-1. DK. GY. SLD GOOD CLEAT DEVELOPMENT.
32	78.39	78.75	0.36	63	A	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
32	78.75	78.82	0.07	63	A	COAL	C-2. SLD
32	78.82	79.04	0.22	63	A	MUDSTONE	SLTY. M-DK. GY. VBRKN
32	79.04	79.11	0.07	63	A	COAL	C-2. SLD 4CM PYRITE BAND WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	79.11	79.17	0.06	63	A	MUDSTONE	CARB. DK. GY. SLD THIN COALY BANDS WITHIN.
32	79.17	79.20	0.03	63	A	COAL	C-3. SHRD
32	79.20	80.30	1.10	63	A	MUDSTONE	CARB. DK. GY. BRKN PYRITE AND COALY STRINGERS THROUGHOUT.
32	80.30	81.18	0.88	64	A	ROCK LOSS	
33	81.18	81.38	0.20	64		MUDSTONE	CARB. DK. GY. VBRKN BLEBS OF PYRITE ALONG BDG. DISCONTINUOU S HAIR LIKE STRINGERS OF A CARBONATE MI NERAL. PLANT FRAGMENTS.
33	81.38	82.03	0.65	64		MUDSTONE	PYR. DK. GY. VBRKN ABUNDANT PLANT IMPRINTS AND PYRITE COAT ED FRAGMENTS AND BLEBS.
33	82.03	82.56	0.53	64		SILTSTONE	PYR. M-DK. GY. LAM. SSD. SLD MINDR. SMALL SCALE XBDG. INTERLAMINATED MUDST. SOME SECTIONS OF DISTURBED BDG.
34	82.56	82.92	0.36	65		SILTSTONE	PYR. M. GY. LAM. SSD. SLD AS ABOVE. SANDIER TOWARD BASE. TOPS UP (LOAD CAST).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	82.92	84.49	1.57	*65		SANDSTONE	SLTY. FG. M. GY. MAS. SSD. SLD SMALL ZONES CONTAINING MUDST LAMINAE. 1 OPS UP (LOAD CAST). MINOR PYRITE. 5CM 2 ONE OF PLANT FRAGMENTS WITH VERY MINOR CARBONATE COATING.
35	84.49	84.66	0.17	59		SANDSTONE	SLTY. VFG. M-DK. GY. LAM. SSD. SLD INTERLAMINATED MUDST. PYRITE.
35	84.66	85.24	0.58	*57		SANDSTONE	FG. VPR. M. GY. THKB. SLD MINOR SLTST/MUDST LAMINATIONS (INDISTIN CT).
35	85.24	86.04	0.80	58		SANDSTONE	MG. PR. LT-M. GY. MAS. SHRD QTZ VEINING. SOME ANKERITE ALONG FRACTU RES. VERY BROKEN UP.
36	86.04	86.25	0.21	59		SANDSTONE	MG. PR. LT-M. GY. MAS. SHRD AS ABOVE. POSSIBLE CORE LOSS.
36	86.25	86.50	0.25	60		SANDSTONE	MG. PR. LT-M. GY. MAS AS ABOVE. BLADED ANKERITE CRYSTALS ALON G FRACTURE. FRACTURE AT 30 DEGREES TO C ORE ANGLE.
36	86.50	87.10	0.60	61		SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN ONE ANKERITE VEIN AT 32 DEGREES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	87.10	87.25	0.15	61		SANDSTONE	MG. PR. LT-M. GY. MAS. YBRKN RUBBLE.
37	87.25	87.40	0.15	62		SANDSTONE	MG. PR. LT-M. GY. MAS. YBRKN AS ABOVE.
37	87.40	88.30	0.90	63		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD ANKERITE FILLED FRACTURE AT 32 DEGREES TO CORE ANGLE.
37	88.30	88.33	0.03	64		SILTSTONE	CLVY. M-DK. GY. VTHNB. SLD SHARP UPPER & BASAL CONTACT.
37	88.33	88.69	0.36	64		SANDSTONE	MG. LT-M. GY. MAS. SLD FRACTURE AT 30 DEGREES.
37	88.69	88.79	0.10	64		SANDSTONE	MG. LT-M. GY. MAS. SLD
38	88.79	90.59	1.80	66		SANDSTONE	PYR. MG. LT-M. GY. MAS. SLD CONSISTENT AND VERY HARD.
39	90.59	90.81	0.22	68		SANDSTONE	PYR. MG. VPR. LT-M. GY. MAS. BRKN
39	90.81	91.15	0.34	69		SANDSTONE	CG. VPR. LT-M. GY. MAS. BRKN MINOR ELONGATE MUDST CLASTS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	91.15	91.19	0.04		69		SANDSTONE	SLTY. MG. VPR. M. GY. THNB. SLD QTZ ALONG BDG (DISCONTINUOUS). VERY MIN OR VEINS CROSS CUTTING.
39	91.19	91.32	0.13		69		SANDSTONE	MG. VPR. M. GY. THNB. SLD ABUNDANT WELL ROUNDED SLTST RIP UP CLAS TS.
39	91.32	91.45	0.13		70		SANDSTONE	MG. LT-M. GY. THNB. BRKN QTZ VEINING.
39	91.45	91.50	0.05		70		SILTSTONE	M. GY. THNB. SLD SHARP UPPER AND BASAL CONTACT.
39	91.50	91.56	0.06	*	70		SANDSTONE	CG. VPR. LT-M. GY. THNB. SLD MINOR SLTST RIPUP CLASTS.
39	91.56	91.94	0.38		71		SILTSTONE	PYR. M. GY. VTHNB. SSD. SLD CRUDELY INTERBEDDED FG. SS. AND MUDST. SH ARP CONTACTS.
39	91.94	92.37	0.43		72		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD ONE 10CM ZONE OF CRUDELY X-BEDDED SLTST AND SS.
40	92.37	92.45	0.08		73		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	92.45	92.84	0.39		73		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD 2 SLTST RIPUP CLASTS (<2CM, ELONGATE, M OD ROUNDED). ONE <.2CM QTZ VEIN.
40	92.84	93.44	0.60	*	75		SANDSTONE	CG. PR. LT-M. GY. MAS AS ABOVE. GRADATIONAL CONTACTS.
40	93.44	94.43	0.99		73		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD PYRITE BLEBS ALONG BDG PLANES.
41	94.43	95.40	0.97		70		SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. SLD QTZ FILLED FRACTURE AT 26 DEGREES. PYRI TE BLEBS ON BDG SURFACE.
41	95.40	96.31	0.91		67		SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. SLD AS ABOVE. BARE SLTST CLASTS. BAND OF SL TST AT BASE. (1CM).
42	96.31	96.65	0.34		65		SANDSTONE	CG. PR. LT-M. GY. MAS. SLD ONE ELONGATE SLTST CLAST.
42	96.65	96.75	0.10		64		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD ABUNDANT ELONGATE SLTST CLASTS.
42	96.75	97.60	0.85		63		SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. YBRKN FEW INDISTINCT SLTST STRINGERS.
43	97.60	97.90	0.30		61		SANDSTONE	FG. PR. LT-M. GY. MAS. BRKN FRACTURE ALONG LENGTH OF CORE.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	97.90	97.98	0.08	61		SILTSTONE	SSY. PR. M. GY. MAS. BRKN
43	97.98	98.28	0.30	*60		SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. SLD GRADATIONAL BASAL CONTACTS.
43	98.28	98.61	0.33	63		SANDSTONE	FG. PR. LT-M. GY. MAS. SLD MINOR DISCONTINUOUS MUDST LAMINAE. QTZ VEIN <.1CM.
43	98.61	98.65	0.04	64		SANDSTONE	FG. PR. LT-M. GY. MAS. SLD QTZ VEIN PARALLEL TO BDG. (APPROX 60 DE GREES).
43	98.65	99.43	0.78	*68		SANDSTONE	PYR. FG. PR. LT-M. GY. MAS. SLD VERY HARD. MINOR (.5-2CM) MUDST BANDS, PYRITE.
44	99.43	99.64	0.21	69		SANDSTONE	YFG. PR. LT-M. GY. MAS. SLD TRACE OF MINOR SLTST LAMINAE.
44	99.64	99.65	0.01	69		SILTSTONE	M-DK. GY. LAM. BIOTR. SLD VERTICAL BIVALVE BURROW (3CM LONG, 1CM WIDE).
44	99.65	100.66	1.01	*70		SANDSTONE	FG. PR. LT-M. GY. MAS. SLD 5CM BAND CONTAINING MUDST RIPUP CLASTS (<1CM), COARSER GRAINED DOWN SECTION.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	100.66	101.00	0.34	67		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD TRACES OF WISPS OF MUD IN SAND.
44	101.00	101.23	0.23	65		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD AS ABOVE.
45	101.23	101.79	0.56	63		SANDSTONE	FG. PR. LT-M. GY. MAS. SLD AS ABOVE.
45	101.79	102.17	0.38	*61		SANDSTONE	FG. PR. M. GY. LAM. SLD INTERLAMINATED SLTST/MUDST. TOPS UP (LO AD STRUCTURES).
45	102.17	102.40	0.23	62		SANDSTONE	SLTY. VFG. PR. LT-M. GY. MAS. SSD. SLD
45	102.40	102.49	0.09	62		SANDSTONE	CG. PR. LT-M. GY. THNB. SLD
45	102.49	103.26	0.77	63		SANDSTONE	CG. PR. LT-M. GY. MAS. SLD FINING UPWARD SEQUENCES. .4CM QTZ VEIN PERPENDICULAR TO BEDDING.
46	103.26	103.75	0.49	65		SANDSTONE	CG. PR. LT-M. GY. MAS. SLD

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	103.75	103.99	0.24		66		SANDSTONE	FG.PR.LT-DK.GY.VTHNB.SLD INTERBEDDED WITH SLTST.
46	103.99	104.15	0.16		67		SILTSTONE	M-DK.GY.THNB.SLD MINOR INDISTINCT MUDST LAMINAE. CARBONATE VEIN ALONG BDG PLANE.
46	104.15	104.43	0.28		67		SANDSTONE	MG.PR.LT-DK.GY.THNB.SLD 4 BANDS OF SLTST (2-3CM THICK).
46	104.43	104.99	0.56		68		SANDSTONE	CG.PR.LT.GY.MAS.SLD ONE QTZ FILLED FRACTURE AT A 25 DEGREE ANGLE TO CORE.
47	104.99	106.11	1.12		70		SANDSTONE	CG.PR.LT.GY.MAS.SLD ONE QTZ VEIN AT 25 DEGREES (<.4CM THICK).
47	106.11	106.87	0.76		*73		SANDSTONE	CG.PR.LT.GY.MAS.SLD INDISTINCT SLTST LAMINATIONS (SPARSE).
48	106.87	107.22	0.35		75		SANDSTONE	MG.PR.LT.GY.MAS.SLD SHARP BASAL CONTACT. PYRITE ABUNDANT ON BDG SURFACE.
48	107.22	107.33	0.11		76		SILTSTONE	CLYY.M.GY.LAM.SLD INTERLAMINATED WITH FG SS. TOPS UP (LOAD CAST).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	107.33	107.36	0.03		76		SANDSTONE	FG.LT-M.GY.THNB.SLD
48	107.36	107.44	0.08		*76		SILTSTONE	M.GY.THNB.SSD.SLD INTERLAMINATED WITH FG SS.
48	107.44	107.49	0.05		75		SANDSTONE	FG.LT-M.GY.THNB.SLD
48	107.49	107.77	0.28		73		SANDSTONE	FG.PR.LY-BK.GY.THNB.SSD.SLD INTERBEDDED SLTST/MUDST. TOPS UP.
48	107.77	107.90	0.13		69		SANDSTONE	MG.PR.LT-M.GY.THNB.SLD
48	107.90	107.98	0.08		68		SILTSTONE	CLYY.M.GY.THNB.SLD
48	107.98	108.80	0.82		*61		SANDSTONE	FG.PR.LT-M.GY.MAS.SSD.SLD INDISTINCT SLTST/MUDST LAMINATIONS. DISTURBED SECTIONS IN INTERVAL (SWIRLED SEDIMENT).
49	108.80	109.36	0.56		63		SANDSTONE	PYR.CG.PR.LT.GY.MAS.SLD MINOR MUDST/SLTST BANDS (<3CM). TOP 10CM ARE VERY BROKEN UP. FINING UPWARD SEQUENCE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	109.36	109.87	0.51	65			SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. SLD INDISTINCT SLTST/MUDST LAMINATIONS. ABUNDANT PYRITE ON BROKEN SURFACES.
49	109.87	110.13	0.26	66			SANDSTONE	PYR. FG. PR. LT-M. GY. MAS. SLD SHIRLED SLTST & MUDST. ABUNDANT PYRITE.
49	110.13	110.16	0.03	67			SILTSTONE	M. GY. LAM. SLD INTERLAMINATED MUDST.
50	110.16	110.24	0.08	67			SILTSTONE	M. GY. LAM. SLD AS ABOVE.
50	110.24	110.58	0.34	67			SANDSTONE	FG. M. GY. MAS. SLD SHARP UPPER CONTACT.
50	110.58	110.61	0.03	*68			SANDSTONE	FG. M. GY. MAS. SLD SHARP BASAL CONTACT. TOPS UP (LOAD CAST).
50	110.61	110.81	0.20	68			SILTSTONE	M. GY. THNB. SLD GRADES DOWNWARD INTO FG. SS.
50	110.81	111.17	0.36	68			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD FINING UPWARD SEQUENCE.
50	111.17	111.23	0.06	68			SILTSTONE	SSY. M. GY. LAM. SLD INTERLAMINATED MUDST/SLTST. TOPS UP (LOAD CAST).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	111.23	111.88	0.65	69			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD SMALL FUS. INDISTINCT TRACES OF SLTST LAMINAE.
51	111.88	111.99	0.11	69			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD
51	111.99	113.49	1.50	69			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD SPARSE SLTST LAMINAE. ONE 5.4CM QTZ VEIN.
52	113.49	114.93	1.44	*70			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD MINOR INDISTINCT SLTST/MUDST LAMINAE. 1 CM CARBONATE VEIN WITH MUDST INTERMIXED.
52	114.93	115.44	0.51	66			SANDSTONE	PYR. MG. PR. LT-M. GY. MAS. SLD MINOR SLTST/MUDST LAMINAE.
53	115.44	116.89	1.45	62			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD VERY HARD. WELL CEMENTED.
53	116.89	117.39	0.50	*58			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD SPARSE INDISTINCT SLTST LAMINAE. 7CM QTZ VEIN AT TOP OF INTERVAL PARALLEL TO BDG.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	117.39	118.07	0.68	*58			SANDSTONE	FG.M.GY.VTHNB.SLD INTERBEDDED SLTST/MUDST. MINOR PYRITE.
54	118.07	118.16	0.09	58			SILTSTONE	SSY.M.GY.MAS.SLD
54	118.16	118.46	0.30	58			SILTSTONE	SSY.M.GY.MAS.SLD GRADATIONAL LOWER CONTACT. HOMOGENOUS. ONE MUDST BAND (<1 CM).
54	118.46	118.76	0.30	59			SILTSTONE	M.GY.MAS.SLD VERY HOMOGENOUS SILT.
54	118.76	118.95	0.19	59			SANDSTONE	FG.LT-M.GY.MB.SLD VERY MINOR INDISTINCT MUDST LAMINAE.
54	118.95	119.32	0.37	59			SILTSTONE	M.GY.MAS.SLD INCREASE IN MUDST LAMINATIONS TOWARD BASE.
55	119.32	119.39	0.07	59			SILTSTONE	LT-M.GY.MAS.SLD
55	119.39	120.71	1.32	*60			SILTSTONE	M-DK.GY.VTHNB.SLD INTERBEDDED MUDST. MINOR BIOTR8 DESTROYING BDG IN SOME AREAS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	120.71	120.81	0.10	60			SANDSTONE	MG.LT.GY.VBRKN RUBBLE, CORE LOSS*
55	120.81	121.29	0.48	60			SILTSTONE	M-DK.GY.LAM.BIOTR.SLD POSSIBLE HELMINTHOPUS BURROWING.
56	121.29	122.16	0.87	60			SILTSTONE	SSY.M.GY.VTHNB.SLD TOPS UP (LOAD CASTS). INTERBEDDED MUDST RANDOM CHANGE IN SED SUPPLY DURING DE POSITION.
56	122.16	122.22	0.06	60			SANDSTONE	FG.LT-M.GY.THNB.SLD INDISTINCT MUDST LAMINAE TRACES. SHARP UPPER AND BASAL CONTACT.
56	122.22	123.33	1.11	60			SILTSTONE	M.GY.LAM.SLD INTERLAMINATED MUDST WITH MINOR FG SS & ANDS. DISTURBED BDG. MUDIER TOWARD BASE
57	123.33	123.67	0.34	60			MUDSTONE	SLTY
57	123.67	125.36	1.69	60			MUDSTONE	SLTY.M-DK.GY.VTHNB.BIOTR.SLD DISTURBED BDG. DEFORMED INTERBEDS OF SL TST. PYRITE BLEBS. 4CM X 1CM BIVALVE BU RROW. TOPS UP (LOAD CASTS).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	125.36	126.77	1.41	60			MUDSTONE	SLTY. M-DK. GY. THNB. SLD AS ABOVE.
58	126.77	127.39	0.62	*60			MUDSTONE	SLTY. M-DK. GY. THNB. SLD
59	127.39	128.46	1.07	62			MUDSTONE	SLTY. M-DK. GY. MAS. SLD MINOR SLTY LAMINAE.
59	128.46	128.54	0.08	*63			SILTSTONE	LT-M. GY. LAM. SLD TRACES OF MUDST LAMINAE. POSSIBLE HELMI NTHOPSIS BURROWS.
59	128.54	129.44	0.90	63			MUDSTONE	M-DK. GY. MAS. SLD VERY MINOR SLTY LAMINAE. MINOR PYRITE BLEBS.
60	129.44	129.64	0.20	62			MUDSTONE	M-DK. GY. MAS. SLD AS ABOVE.
60	129.64	129.74	0.10	62			MUDSTONE	DK. GY. LAM. SLD INTERLAMINATED SLTST AND ABUNDANT QTZ.
60	129.74	129.77	0.03	62			MUDSTONE	M-DK. GY. MAS. SLD
60	129.77	130.73	0.96	62			MUDSTONE	M-DK. GY. MAS. SLD INDISTINCT SLTST LAMINAE. MINOR PYRITE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	130.73	130.79	0.06	61			SILTSTONE	LT-M. GY. LAM TRACES OF MUDST LAMINAE.
60	130.79	131.35	0.56	*61			MUDSTONE	PYR. M-DK. GY. MAS. SLD A FEW ZONES OF SLTST INFLUENCE MIXED WITH MUDST. MINOR SLTST LAMINAE. PYRITE BLEBS.
61	131.35	132.58	1.23	63			MUDSTONE	PYR. M-DK. GY. MAS. SLD VERY MINOR SLTST LAMINAE. ABUNDANT LARGE PYRITE BLEBS.
61	132.58	132.60	0.02	64			SILTSTONE	LI-M. GY. VTHNB. SLD
61	132.60	132.77	0.17	*64			MUDSTONE	M-DK. GY. MAS. SLD
61	132.77	133.36	0.59	64			MUDSTONE	M-DK. GY. MAS. SLD MINOR SLTST LAMINATIONS. ABUNDANT PYRITE BLEBS.
62	133.36	135.39	2.03	63			MUDSTONE	M-DK. GY. MAS. SLD AS ABOVE.
63	135.39	135.49	0.10	62			MUDSTONE	M-DK. GY. MAS. SLD GRADES DOWNWARD INTO A SLTST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	135.49	135.65	0.16	*62		SILTSTONE	LT-M.GY.LAM.BIOTR.SLD MINOR INDISTINCT MUDST LAMINAE. ONE 1CM BAND OF MUDST. MINOR HELMINTHOPSIS BUR ROWING.
63	135.65	135.89	0.24	62		MUDSTONE	M-DK.GY.MAS.SLD PYRITE BLEB AT BASE. MINOR PYRITE THROU GHOUT LOWER SECTION OF HDLE. T.D. = 139 .29 M.

\* DENOTES MEASURED BCA  
NEWPAGE









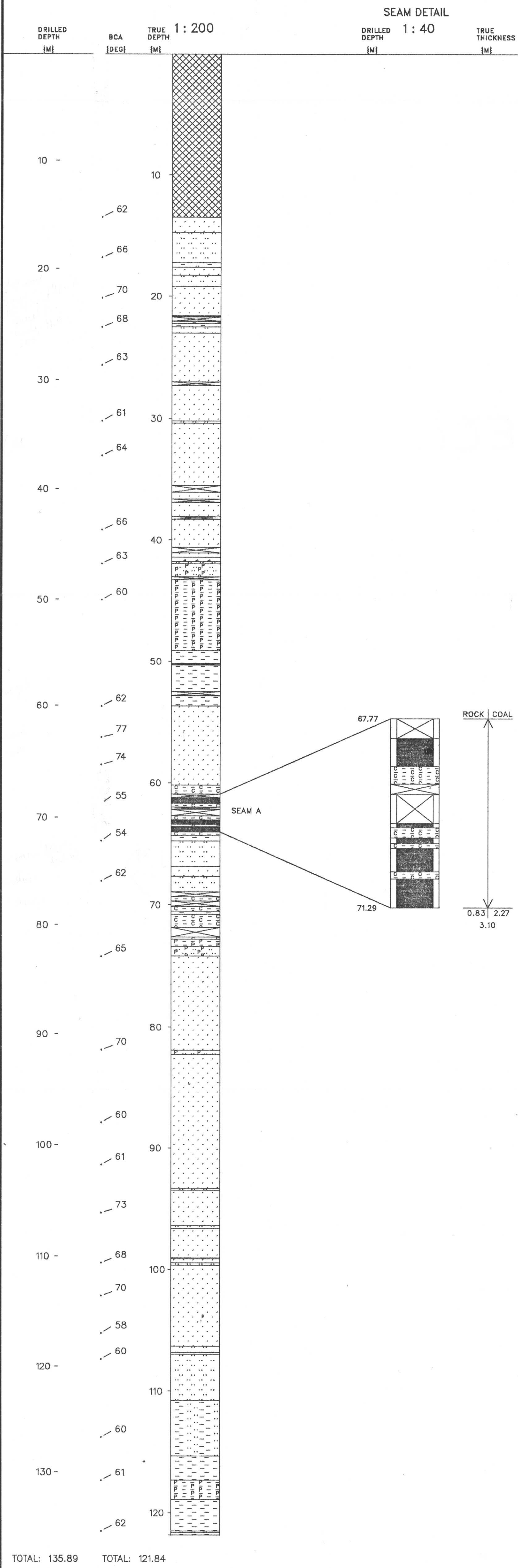
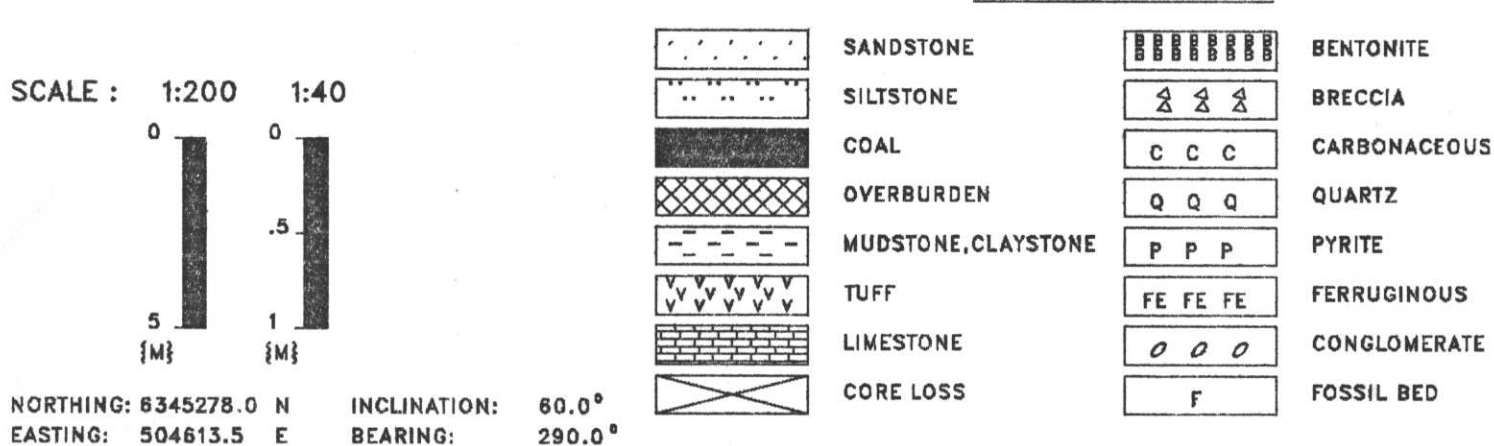
GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86020

723

GEOLOGIST : SAVOIE

DATE : FEB 26/87

DRAWING NO. :



# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

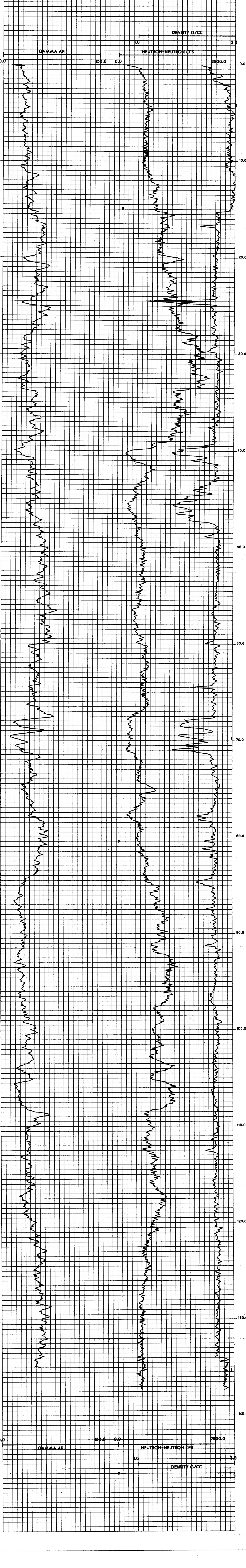
Datasource: **KPNLRDDH86020**  
 Log Date: 86-09-14  
 Company: CENTURY  
 Geologist: SAVOIE

Province: BC    Northing: 6345280.00    Lat: 571509  
 Zone: 9    Easting: 504614.00    Long: 1285525  
 Measuring Point:    Elevation: 1434.6

Scale: 1 to 100.0  
 Depth Range: 0.0 to 142.0  
 True Thickness: NO

Comments:  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9030A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



**KPNLRDDH86021**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86021

DATE - 02/13/87

- HISTORY -

START DATE - 12/09/86

END DATE - 13/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MCKENZIE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1642.65

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343068.00

EASTING - 506427.81

LATITUDE - 571357

LONGITUDE - 1285337

- ORIENTATION -

LENGTH - 117.95

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

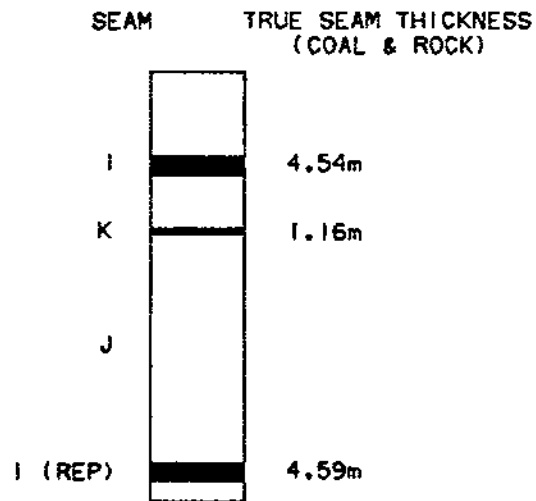
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



**NOTE:**

SCHMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86021

GULF CANADA CORPORATION  
11/03/87  
KLAP:12050571870063021.L06





87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	70			OVERBURDEN	CASING.
1	3.05	3.76	0.71	70			MUDSTONE	SLTY.DK.GY.THNB.BRKN SILTY M GY MUDST INTERBEDDED WITH DK GY MUDST (DOMINANT).
1	3.76	3.85	0.09	70			MUDSTONE	SLTY.DK.GY.BIOTR.BRKN MINOR HORIZONTAL BURROWING AND ASSOCIATED SSD. BURROWS RANGE 3-5MM DIA.
1	3.85	4.14	0.29	*70			MUDSTONE	SLTY.DK.GY.BRKN SILTY M GY MUDST INTERBEDDED WITH DK GY MUDST.
1	4.14	4.24	0.10	71			MUDSTONE	SLTY.BIOTR.BRKN MINOR HORIZONTAL BURROW, 2-4 MM. DIAMETER.
1	4.24	4.88	0.64	72			MUDSTONE	SLTY.DK.GY.THNB.BRKN MINOR BIOTURBATION. UNDULATING IRREGULAR BEDDING 0.1-1.0 CM THICK.
2	4.88	5.32	0.44	74			MUDSTONE	SLTY.DK.GY.VTHNB.VBRKN MINOR FRACTURING. MINOR QTZ CARBONATE INFILLING OF FRACTURES 10 DEGREES FROM CORE AXIS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	5.32	5.65	0.33	75			ROCK LOSS	
2	5.65	6.94	1.29	*78			MUDSTONE	SLTY.DK.GY.BRKN MINOR FRACTURES. NO APPARENT DISPLACEMENT. QUARTZ CARBONATE INFILLING.
3	6.94	7.90	0.96	*76			MUDSTONE	SLTY.DK.GY.VTHNB.SLD LESS CONTRAST BETWEEN BEDS (COMPARED TO OVERLYING BEDS). SUB PARALLEL BEDDING. 3CM FINING UPWARD SEQUENCE AT BASE. SCOURED BASAL CONTACT. MINOR RIPUP CLASTS.
3	7.90	8.84	0.94	76			MUDSTONE	SLTY.M.GY.SLD OCCASIONAL WAVY BEDDING CONTACT, OTHERWISE PLANER PARALLEL.
4	8.84	10.48	1.64	*76			MUDSTONE	SLTY.M.GY.SLD INTERBEDDED SEQUENCE OF SILTY MUDST BEDS. 2 QTZ CARBONATE IN FILLED FRACTURE PATTERNS, 10 AND 80 DEGREES TO CORE AXIS.
4	10.48	10.54	0.06	75			MUDSTONE	M.GY.BRKN MODERATELY SOFT. WEATHERED.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	10.54	10.95	0.41	74			MUDSTONE	SLTY. M. GY. BRKN CORE IS BROKEN ALONG FRACTURES; FRACTURES WERE INFILLED WITH QTZ CARBONATE CEMENT.
5	10.95	11.43	0.48	73			MUDSTONE	SLTY. M. GY. BRKN OVERALL FINING UPWARDS SEQUENCE.
5	11.43	11.45	0.02	73			MUDSTONE	M. GY. BRKN SOFT.
5	11.45	11.49	0.04	73			MUDSTONE	DK. GY. VTHNB. SLD
5	11.49	11.68	0.19	73			MUDSTONE	SLTY. M-DK. GY. BRKN TWO DIRECTIONS OF FRACTURING. SLTST APPROX 10 DEGREES TO CORE AXIS INFILLED WITH QTZ/CARBONATE CEMENT OFFSET BY SECOND SET ALSO ABOUT 10 DEGREES TO CORE AXIS, NO INFILLING.
5	11.68	12.01	0.33	72			MUDSTONE	SLTY. M. GY. THNB. SLD CORE SPINDLED.
5	12.01	12.02	0.01	*72			MUDSTONE	DK. GY.
5	12.02	12.30	0.28	72			MUDSTONE	M. GY. MINOR FRACTURING. TUFFITE.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	12.30	12.31	0.01	72			MUDSTONE	SLTY. LT. GY. SLD BENTONITIC.
5	12.31	12.65	0.34	72			MUDSTONE	LT-M. GY. SLD TUFFITE.
5	12.65	12.85	0.20	72			MUDSTONE	LT-M. GY. BRKN SHEARED. TUFFITE.
5	12.85	13.06	0.21	72			MUDSTONE	LT-M. GY. SLD TUFFITE.
6	13.06	13.12	0.06	72			MUDSTONE	SLTY. LT-M. GY. SLD FINELY LAMINATED. TUFFITE.
6	13.12	13.14	0.02	72			MUDSTONE	M. GY. BRKN SOFT. WEATHERED. BENTONITE.
6	13.14	13.46	0.32	71			MUDSTONE	SLTY. LT-M. GY. FINELY LAMINATED. TUFFITE.
6	13.46	13.61	0.15	71			MUDSTONE	SLTY. LT-M. GY. BRKN BRECCIATED TUFFITE.
6	13.61	13.88	0.27	71			MUDSTONE	LT. GY. BRKN TUFFITE.
6	13.88	14.00	0.12	71			ROCK LOSS	

\* DENOTES MEASURED BCA

FORM  
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	14.00	14.23	0.23	71			MUDSTONE	CLYY. LT-M. GY. BRKN CONCHOIDAL POORLY DEVELOPED FRACTURE. CORE SPINDLED. TUFFITE.
6	14.23	14.25	0.02	71			MUDSTONE	CLYY. LT. GY. BRKN SOFT. BENTONITE.
6	14.25	14.34	0.09	71			MUDSTONE	DK. GY. BRKN FINE SILTY BANDS.
6	14.34	14.59	0.25	71			ROCK LOSS	
6	14.59	14.92	0.33	71			MUDSTONE	M. GY. VBRKN MUDSTONE FRAGMENTS.
6	14.92	15.16	0.24	71			MUDSTONE	M. GY. BRKN
6	15.16	15.47	0.31	71			ROCK LOSS	
7	15.47	15.91	0.44	70			MUDSTONE	M. GY. VBRKN
7	15.91	16.02	0.11	70			MUDSTONE	M. GY. SLD
7	16.02	16.11	0.09	70			MUDSTONE	M. GY. BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	16.11	17.25	1.14	*70			MUDSTONE	M-DK. GY. BRKN
8	17.25	18.22	0.97	70			MUDSTONE	DK. GY. BRKN MINOR SILTY LAMINATIONS.
8	18.22	19.15	0.93	70			MUDSTONE	DK. GY.
9	19.15	20.02	0.87	*70			MUDSTONE	DK. GY. SLD FREQUENCY OF SILTY LAMINATIONS INCREASE D UPWARDS.
9	20.02	21.11	1.09	72			MUDSTONE	DK. GY. BRKN FRACTURED APPROX 10 DEGREES TO CORE AXIS. NO INFILLING. SILTY LAMINATIONS.
10	21.11	23.07	1.96	*74			MUDSTONE	SLTY. DK. GY INTERBEDDED MEDIUM AND DARK SILTY MUDSTONE.
11	23.07	23.82	0.75	*76	10054		MUDSTONE	SLTY. M-DK. GY. BRKN LOWER 25CM SAMPLED.
11	23.82	23.87	0.05	76	10055 I		COAL	C-6. BRKN
11	23.87	24.01	0.14	76	10055 I		COAL	C-2. VBRKN

\* DENOTES MEASURED BCA



PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	24.01	24.04	0.03	76	10055	I	COAL	C-5.SLD
11	24.04	24.10	0.06	76	10055	I	COAL	C-2.VBRKN
11	24.10	24.45	0.35	75	10055	I	COAL LOSS	
11	24.45	24.50	0.05	75	10055	I	ROCK LOSS	
11	24.50	24.60	0.10	75	10055	I	MUDSTONE	CLYY.M-DK.GY.SLD POORLY CONSOLIDATED.
11	24.60	24.63	0.03	75	10055	I	MUDSTONE	CLYY.DK.GY.SLD POORLY CONSOLIDATED.
11	24.63	24.71	0.08	75	10055	I	COAL	C-4.BRKN
11	24.71	24.78	0.07	75	10055	I	COAL	C-3.VBRKN
11	24.78	26.27	1.49	74	10055	I	COAL LOSS	
11	26.27	26.32	0.05	74	10055	I	MUDSTONE	SLTY.M.GY.VBRKN
11	26.32	26.39	0.07	74	10055	I	COAL	C-2.VBRKN

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	26.39	27.00	0.61	74	10055	I	COAL LOSS	
11	27.00	27.05	0.05	73	10055	I	ROCK LOSS	
11	27.05	27.08	0.03	73	10055	I	MUDSTONE	SLTY.M-DK.GY.SLD MAY NOT BE IN PLACE.
11	27.08	27.13	0.05	73	10055	I	COAL	C-2.VBRKN
12	27.13	27.19	0.06	73	10055	I	COAL	C-2.VBRKN POSSIBLY C-1 IN PLACES.
12	27.19	27.24	0.05	73	10055	I	COAL	C-3.SLD BONEY IN PLACES.
12	27.24	27.56	0.32	73	10055	I	COAL	C-2.VBRKN C-1 AND/OR C-2.
12	27.56	28.12	0.56	73	10055	I	COAL	C-2.VBRKN PARTIALLY POWDERED. C-1 AND/OR C-2.
12	28.12	28.28	0.16	72	10055	I	ROCK LOSS	
12	28.28	28.55	0.27	72	10055	I	COAL LOSS	
12	28.55	29.17	0.62	*72	10056		MUDSTONE	CLYY.M-DK.GY.BRKN CARB AT TOP OF UNIT. MINOR SILTY BANDS WITHIN. UPPER 25CM SAMPLED.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	29.17	29.26	0.09	67			MUDSTONE	CLYY.M-DK.GY.BRKN
13	29.26	29.28	0.02	67			MUDSTONE	CLYY.LT.BLK.SLD SOFT.
13	29.28	30.47	1.19	58			MUDSTONE	LT-M.GY.VBRKN FAULT BRECCIA. VERY BROKEN UP. NOT CONS OLIDATED.
13	30.47	30.81	0.34	48			MUDSTONE	LT-M.GY.PWRD FAULT BRECCIA. PULVERIZED DURING DRIVIN G. COMPOSE D OF ANGULAR MUDSTONE FRAGME NTS UP TO 0.5CM IN DIAMEYER IN A MATRIX OF POWDERED MUDSTONE. CLASTS SHDN MIND R INFILLED FRACTURES NOT CONSOLIDATED.
13	30.81	30.95	0.14	*45			MUDSTONE	M.GY FINELY LAMINATED IRREGULAR CONTACTS. NO T CONSOLIDATED.
13	30.95	31.10	0.15	45			MUDSTONE	LT-M.GY.VBRKN FAULT BRECCIA. VERY BROKEN DUE TO FAULT ING. & DRIL LING. NOT CONSOLIDATED.
14	31.10	31.56	0.46	*46			MUDSTONE	SLTY.M-DK.GY.VBRKN MUDSTONE FRAGMENTS NOT CONSOLIDATED.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	31.56	31.99	0.43	31			ROCK LOSS	
14	31.99	32.55	0.56	14			MUDSTONE	LT-M.GY.VBRKN FAULT BRECCIA. NOT COMPLETELY CONSOLIDA TED. MINOR QUARTZ CARBONATE INFILLING O F IRREGULAR FRACTURES.
14	32.55	32.78	0.23	*01			MUDSTONE	SLTY.M.GY.SLD FINELY LAMINATED. STRUCTURELY DISTORTED BEDDING. LIISTRIC SURFACE SUB PARALLEL TO BDC.
14	32.78	33.06	0.28	29			MUDSTONE	M.GY.BRKN BEDDING NOT VISIBLE.
15	33.06	33.50	0.44	*68			MUDSTONE	M-DK.GY.SLD
15	33.50	33.63	0.13	66			MUDSTONE	SLTY.M-DK.GY.BRKN
15	33.63	34.01	0.38	65			MUDSTONE	SLTY.M.GY.BRKN MINOR SHEARING. QUARTZ CARBONATE INFILL ING.
15	34.01	34.54	0.53	62			MUDSTONE	SLTY.M-DK.GY.VBRKN MINOR SHEARING.
15	34.54	34.68	0.14	60			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	34.68	35.29	0.61	58			MUDSTONE	LT-M.GY.VBRKN
15	35.29	36.77	1.48	52			ROCK LOSS	
15	36.77	37.13	0.36	47			MUDSTONE	LT.GY.VBRKN MINOR POWDERED GREENISH WHITE TALCY CLAY ON FRACTURE SURFACES.
16	37.13	37.43	0.30	*45			MUDSTONE	SILTY LT-M.GY.BRKN GREENISH WHITE CLAY LINING IRREGULAR FRACTURES. MINOR SHEARING. BRECCIATED.
16	37.43	38.56	1.13	48			MUDSTONE	LT-M.GY.SLD BRECCIATED; MUDSTONE FRAGMENTS IN A SEMI CONSOLIDATED MUDSTONE MATRIX QTZ CARB INFILLING FRACTURES MNR CLAY.
17	38.56	38.70	0.14	51			MUDSTONE	DK.GY.SHRD LISTRIC SURFACES APPROX 20 DEGREES TO CORE AXIS.
17	38.70	38.86	0.16	51			MUDSTONE	LT.GY.SHRD EXTREMELY BRECCIATED. APPROXIMATELY 50 % QTZ/CARBONATE FRAGMENTS. CRYSTALS UP TO 0.5CM LONG.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	38.86	39.01	0.15	52			ROCK LOSS	
17	39.01	39.73	0.72	54			MUDSTONE	LT-M.GY.VBRKN BRECCIATED.
17	39.73	40.61	0.88	*57			MUDSTONE	M.GY.BRKN IRREGULAR FRACTURES. MODERATE BRECCIATION.
18	40.61	41.16	0.55	57			MUDSTONE	M.GY.BRKN MINOR SHEARING. MINOR SILTY MDST INTERBEDS. QUARTZ/CARBONATE IN MINOR SHEARS.
18	41.16	42.24	1.08	56			MUDSTONE	LT-M.GY.BRKN FINELY LAMINATED WITH SILTY MUDSTONE INTERBEDS. LOW ANGLE TRUNCATIONS INDICATE UPRIGHT ORIENTATION. SMALL SCALE NORMAL LY OFFSET FRACTURE; LESS THAN 0.1CM DISPLACEMENT. GREENISH WHITE TALCY CLAY LINING SEMI FRACTURES. MINOR SSD.
18	42.24	42.64	0.40	56			ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	42.64	42.80	0.16	56	10057		MUDSTONE	M-DK. GY. VBRKN
19	42.80	43.05	0.25	56	10058	K	COAL LOSS	
19	43.05	43.11	0.06	56	10058	K	ROCK LOSS	
19	43.11	43.36	0.25	56	10058	K	COAL LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	43.36	43.40	0.04	55	10058	K	COAL	C-3. SHRD
19	43.40	43.44	0.04	55	10058	K	MUDSTONE	SLTY. M. GY. BRKN
19	43.44	43.79	0.35	55	10058	K	COAL	C-3. BRKN PARTIALLY SHEARED.
19	43.79	43.93	0.14	55	10058	K	COAL LOSS	
19	43.93	44.02	0.09	55	10058	K	ROCK LOSS	
19	44.02	44.20	0.18	55	10058	K	COAL LOSS	
19	44.20	44.88	0.68	55	10059		MUDSTONE	M-DK. GY. VBRKN MINOR CARB WITHIN. UPPER 25CM SAMPLED.
19	44.88	45.27	0.39	55			ROCK LOSS	

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	45.27	45.74	0.47	54			MUDSTONE	M-DK.GY.VBRKN MINOR CARB WITHIN. UPPER 25CM SAMPLED.
20	45.74	47.00	1.26	#54			MUDSTONE	M.GY.BRKN CONSOLIDATED FAULT BRECCIA. FAULT PLANE APPROXIMATELY 5 DEGREES OFF CORE AXIS CONSISTENT ANGLE WITH FRACTURES IN UN DERLYING SANDSTONE UNIT. FAULT BRECCIA ABUTS UNDISTURBED MUDSTONE AT A CLEAN C ONTACT.
20	47.00	47.56	0.56	57			SANDSTONE	VFG.LT-M.GY.BRKN MINOR BIOTURB DUE TO HORIZONTAL BURROW. ASSOCIATED SOFT SEDIMENT DEFORMATION. FG.
20	47.56	47.73	0.17	59			ROCK LOSS	
21	47.73	48.48	0.75	61			SANDSTONE	VFG.LT.GY.BRKN
21	48.48	48.55	0.07	62			SANDSTONE	MUDST LAMINATIONS.UNDULATING PARALLEL C ONTACTS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	48.55	48.72	0.17	63			SANDSTONE	VFG.LT-M.GY.SLD CONTAINS MINOR DK GY MUDST BEDS UP TO 1 .0CM THICK. FG.
21	48.72	48.99	0.27	63			SANDSTONE	VFG.GY.BRKN DK GY MUDST MATRIX.
21	48.99	49.11	0.12	64			ROCK LOSS	
21	49.11	49.22	0.11	65			MUDSTONE	SLTY.M.GY.BRKN SILTY MUDSTONE AND MINOR VFG SS BEDS.
21	49.22	49.38	0.16	65			MUDSTONE	SLTY.M.GY.SLD MINOR FG SS BEDS.
21	49.38	49.52	0.14	66			SANDSTONE	VFG.M.GY.BRKN MUDDY.
22	49.52	50.06	0.54	67			MUDSTONE	SLTY.M.GY.BRKN
22	50.06	51.00	0.94	70			SANDSTONE	VFG.LT-M.GY.YBRKN FREQUENT MUDDY SILTYSTONE BEDS. LAMINATE D CLAYEY M UDSTONE MATRIX.
23	51.00	51.14	0.14	72			MUDSTONE	SLTY.LT-M.GY.BRKN INTERBEDDED WITH LT-MD GY SILTY SANDSTO NE. SUBPARALLEL WAVY BEDDING CONTACTS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	51.14	52.18	1.04	*74		MUDSTONE	SLTY.LT-M.GY.SLD INTERBEDS WITH YTHNB OF SILTSTONE AND V FG SS SUBPARALLEL WAVY CONTACTS.
23	52.18	52.81	0.63	74		SANDSTONE	VFG.LT-M.GY.MAS IMMATURE SS. MATRIX HAS HIGH MUD CONTEN T.
24	52.81	52.87	0.06	73		SANDSTONE	VFG.LT-M.GY.MAS IMMATURE SS. MATRIX HAS HIGH MUD CONTEN T.
24	52.87	53.83	0.96	73		SANDSTONE	VFG.LT-M.GY.SLD IMMATURE. FRACTURE 0.7CM WIDE INFILLED WITH QTZ-ORIENTED 16 DEGREES FROM CORE AXIS MINOR FRACTURES WITH PARALLEL ORIE NTATION.
24	53.83	53.89	0.06	73		MUDSTONE	SLTY.M.GY.SLD MINOR FG SS LAMINATIONS.
24	53.89	54.88	0.99	73		SANDSTONE	VFG.LT-M.GY.SLD MINOR QUARTZ INFILLED FRACTURES. NO APP ARENT DISPLACEMENT.
25	54.88	55.80	0.92	72		SANDSTONE	VFG.LT-M.GY.SLD GRADUAL COARSENING UPWARDS SEQUENCE.FRA CTURE INFILLED WITH QTZ.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	55.80	56.97	1.17	72		MUDSTONE	SLTY.LT-M.GY.SLD FREQUENT INTERBEDS OF IMMATURE VFG-FG,L T-M GY SS. SHARP CONTACTS.
26	56.97	57.66	0.69	72		MUDSTONE	SLTY.LT-M.GY.SLD FREQUENT INTERBEDS OF IMMATURE VFG-FG,L T-M GY SS. SHARP CONTACTS.
26	57.66	59.07	1.41	71		MUDSTONE	SLTY.LT-M.GY.SLD FREQUENT INTERBEDS OF IMMATURE VFG-FG,L T-M GY SS. PLANAR PARALLEL CONTACTS.SMA LL SCALE,LOW ANGLE TRUNCATIONS INDICATE UPRIGHT ORIENTATION.
27	59.07	60.61	1.54	70		MUDSTONE	SLTY.LT-M.GY.SLD FREQUENT VFG-FG SS INTERBEDS (FREQUENCY OF SS INTERBEDS INCREASES UPWARD).
27	60.61	61.14	0.53	70		MUDSTONE	SLTY.LT-M.GY.SLD VFG-FG SS INTERBEDS. MINOR RIPPLE CROSS LAM IN DICATING UPRIGHT ORIENTATION.
28	61.14	61.75	0.61	70		MUDSTONE	SLTY.LT-M.GY VFG SS INTERBEDS. LOW ANGLE TRUNCATIONS , MINOR SYMMETRICAL RIPPLES.
28	61.75	63.22	1.47	69		MUDSTONE	SLTY.LT-M.GY.SLD VFG SS INTERBEDS. 5CM SET OF CROSSBEDDI NG AT 22 DEGREES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	63.22	64.73	1.51	69			MUDSTONE	M-DK.GY.SLD STRONG BEDDING PLANE CLEAVAGE. INTERLAMINATED CONFORMABLE SEQUENCE OF DK GY MUDST AND MD GY MUDSTONE (COASTER ZONE).
29	64.73	65.19	0.46	68			MUDSTONE	M-DK.GY.SLD SAME AS ABOVE.
30	65.19	67.33	2.14	68			MUDSTONE	DK.GY.SLD
31	67.33	67.55	0.22	67			MUDSTONE	DK.GY.SLD SAME AS ABOVE.
31	67.55	69.37	1.82	67			MUDSTONE	DK.GY.SLD SAME AS ABOVE.
32	69.37	70.55	1.18	66			MUDSTONE	DK.GY.SLD SAME AS ABOVE.
32	70.55	71.42	0.87	66			MUDSTONE	DK.GY.SLD SAME AS ABOVE.
33	71.42	71.61	0.19	65			MUDSTONE	DK.GY.SLD SAME AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	71.61	71.69	0.08	65			MUDSTONE	M.GY.SLD INCLUDES A 4CM FRACTURE PARALLEL TO BEDDING INFILLED WITH CARBONATE CRYSTALS E LONGATE PERPENDICULAR TO BEDDING.
33	71.69	71.93	0.24	65			MUDSTONE	M.GY.BRKN MODERATE BEDDING PLANE CLEAVAGE. INTERLAMINATED INTERBEDDED MD GY MUDST AND DK GY MUDST.
33	71.93	72.01	0.08	65			MUDSTONE	M-DK.GY.BRKN SAME AS ABOVE WITH FRACTURE INFILLED WITH CARBONATE. FRACTURES ARE PARALLEL TO BEDDING PLANE.
33	72.01	72.25	0.24	65			MUDSTONE	M-DK.GY.BRKN NO APPARENT LAMINATIONS. SOFT.
33	72.25	72.80	0.55	65			MUDSTONE	M-DK.GY.BRKN OCCASIONAL COALY STRINGERS.
33	72.80	73.49	0.69	65		J	MUDSTONE	CARB.DK.GY.BRKN OCCASIONAL COALY STRINGERS.
33	73.49	73.59	0.10	64		J	COAL	C-5.BLK.SLD

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	73.59	73.69	0.10	64		J	MUDSTONE	DK.GY.SLD SMALL FRACTURE ALONG BOG PLANE INFILLED WITH CALCITE.
34	73.69	73.70	0.01	64		J	COAL	C-5.BLK HIGH MUD CONTENT.
34	73.70	74.64	0.94	64			MUDSTONE	CARB.BLK.SLD MINOR COAL STRINGERS.
34	74.64	75.74	1.10	64			MUDSTONE	CARB.DK.GY.SLD SLIGHTLY CARBONACEOUS. MINOR BIOTURB. O CCASIONAL SILTY BED. MNR. 0.2CM WIDE BUR ROW.
35	75.74	76.26	0.52	63			MUDSTONE	SLTY.DK.GY.SLD MINOR BIOTURB. MINOR SILTY MUDSTONE INTE RBEDS.
35	76.26	76.67	0.41	63			MUDSTONE	SLTY.M-DK.GY.BIOTR INTERBEDDED DK GY MUDST AND M GY MUDST. BIOTRE. SOFT SEDIMENT DEFORMATION.
35	76.67	77.20	0.53	*63			MUDSTONE	SLTY.M-DK.GY.BIOTR SAME AS ABOVE.
35	77.20	77.81	0.61	63			MUDSTONE	SLTY.M-DK.GY INTERBEDDED DK GY MUDST. AND M GY MUDST.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.81	79.56	1.75	63			MUDSTONE	SLTY.M-DK.GY.BIOTR.SLD INTERBEDDED DK GY MUDSTONE AND MD GY SI LTY MUDST.
36	79.56	79.62	0.06	64			SANDSTONE	VFG.LT.GY.SLD SHARP BASAL CONTACT. SCoured. POSSIBLE SLUMP.
36	79.62	79.64	0.02	64			MUDSTONE	DK.GY.SLD
36	79.64	79.72	0.08	64			SANDSTONE	LT.GY.SLD BIOTURBATED BASAL CONTACT.
36	79.72	79.83	0.11	64			MUDSTONE	SLTY.M-DK.GY.SLD DIAGONAL BURROWS APPROX 1-2CM IN DIAMET ER.
36	79.83	80.05	0.22	64			MUDSTONE	M-DK.GY.SLD
37	80.05	80.86	0.81	64			MUDSTONE	M-DK.GY.SLD
37	80.86	81.56	0.70	64			ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	81.56	81.64	0.08	64			SANDSTONE	VFG. GY INTERBEDDED WITH H GY MUDST. SOFT SEDIMENT DEFORMATION. POSSIBLE SLUMP.
37	81.64	82.85	1.21	65			MUDSTONE	SLTY. M-DK. GY. SLD INTERBEDDED WITH VFG-FG LT GREY IMMATURE SANDSTONE BEDS. (UP TO 1CM THICK).
38	82.85	83.47	0.62	65			MUDSTONE	SLTY. M-DK. GY. SLD MUDDY. MINOR SSD. HORIZONTAL BURROWS 1-3MM DIAMETER.
38	83.47	84.51	1.04	*65			MUDSTONE	SLTY. M-DK. GY. SLD MINOR BIOTURB AND SSD. INTERBEDDED WITH SILTY MGY MUDST.
38	84.51	84.84	0.33	65			MUDSTONE	SLTY. M-DK. GY. SLD FINELY LAMINATED TO VERY THINLY BEDDED.
39	84.84	86.35	1.51	65			MUDSTONE	SLTY. M-DK. GY. SLD INTERBEDDED WITH LT GY VFG SS BEDS. MINOR SSD.
39	86.35	86.55	0.20	65			ROCK LOSS	
39	86.55	87.10	0.55	65			MUDSTONE	SLTY. M-DK. GY. SLD MINOR LT GY SS INTERBEDS. MINOR SSD.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	87.10	89.21	2.11	65			MUDSTONE	SLTY. M-DK. GY. SLD INTERLAMINATED WITH LT GY SILTY VFG SS BEDS.
40	89.21	90.01	0.80	66			ROCK LOSS	
41	90.01	90.32	0.31	66			MUDSTONE	M-DK. GY. SLD SAME AS ABOVE.
41	90.32	92.11	1.79	66			MUDSTONE	M-DK. GY. SLD SAME AS ABOVE.
42	92.11	93.40	1.29	66			MUDSTONE	SLTY. M-DK. GY. SLD SAME AS ABOVE.
42	93.40	94.12	0.72	*66			MUDSTONE	M-DK. GY. SLD SAME AS ABOVE.
43	94.12	94.27	0.15	67			MUDSTONE	M-DK. GY. SLD INTERBEDDED WITH VFG SS BEDS.
43	94.27	96.25	1.98	69			SANDSTONE	LT-H. GY ARGILLACEOUS. FAINT BEDDING APPARENT, 1-2 CM THICK.
44	96.25	96.45	0.20	71			SANDSTONE	VFG. LT. GY. SLD WAVY WISPY BEDDING.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 25

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	96.45	98.13	1.68	73			SANDSTONE	YFG. LT. GY. SLD SUBPARALLEL BEDDING CONTACTS. CONFORMABLE INTACT MUD DRAPES. FREQUENT DK GY MUDSTONE INTERLAMINATIONS.
45	98.13	98.54	0.41	75			SANDSTONE	YFG. LT-M. GY. SLD AS ABOVE WITH SCoured BASAL CONTACT.
45	98.54	99.46	0.92	*76			MUDSTONE	LT. GY. SLD WISPY CROSS BEDS OF BLACK MUDSTONE. TUF. FITE.
45	99.46	100.13	0.67	75			MUDSTONE	LT. GY. BRKN SAME AS ABOVE.
46	100.13	100.41	0.28	75			MUDSTONE	LT. GY. SLD SAME AS ABOVE.
46	100.41	100.47	0.06	75			MUDSTONE	CLY. LT. GY. BRKN SOFT. CLAYEY. BENTONITIC. WEATHERED.
46	100.47	100.56	0.09	75			MUDSTONE	M. GY. BRKN SOFT. WEATHERED.
46	100.56	102.17	1.61	74			MUDSTONE	M-DK. GY. SLD FAINT, SLIGHTLY SILTY MUDST INTERLAMINATIONS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	102.17	102.38	0.21	74			MUDSTONE	DK. GY. SLD
47	102.38	104.21	1.83	73			MUDSTONE	DK. GY. SLD
48	104.21	105.43	1.22	72			MUDSTONE	DK. GY. SLD MINOR INTERBEDS OF MED. GY. MUDST.
48	105.43	106.13	0.70	*71			MUDSTONE	DK. GY. SLD SAME AS ABOVE.
49	106.13	106.79	0.66	70	10001		MUDSTONE	CARB. DK. GY. SLD ABUNDANT PLANT FRAG. THROUGHOUT. SILTY AT TOP.
49	106.79	106.81	0.02	70	10002	I REP	COAL	C-2. SLD
49	106.81	106.90	0.09	70	10002	I REP	COAL	C-2. BRKN
49	106.90	106.94	0.04	70	10002	I REP	COAL	C-4. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	106.94	107.00	0.06	70	10002	I REP	MUDSTONE	CARB. DK. GY. SLD
49	107.00	107.08	0.08	70	10002	I REP	ROCK LOSS	
49	107.08	107.16	0.08	70	10002	I REP	COAL LOSS	
49	107.16	107.50	0.34	70	10002	I REP	COAL	C-3. VBRKN PARTIALLY SHEARED.
49	107.50	107.53	0.03	69	10002	I REP	COAL	C-6 SPGIL APPEARANCE.
49	107.53	107.57	0.04	69	10002	I REP	COAL	C-3. SLD
49	107.57	107.63	0.06	69	10002	I REP	COAL	C-5. BRKN
49	107.63	107.94	0.31	69	10002	I REP	COAL	C-2. BRKN
49	107.94	108.06	0.12	69	10003	I REP	MUDSTONE	DK. GY. BRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	108.06	108.09	0.03	69	10003	I REP	COAL	C-3. SLD
50	108.09	108.17	0.08	69	10003	I REP	MUDSTONE	SLTY. M-DK. GY. SLD
50	108.17	108.36	0.19	69	10003	I REP	COAL	C-4. SLD
50	108.36	108.39	0.03	69	10003	I REP	COAL LOSS	
50	108.39	108.47	0.08	68	10003	I REP	ROCK LOSS	
50	108.47	108.50	0.03	68	10003	I REP	COAL LOSS	
50	108.50	108.64	0.14	68	10003	I REP	COAL	C-4. SLD
50	108.64	108.77	0.13	68	10003	I REP	COAL	C-3. BRKN
50	108.77	108.80	0.03	68	10003	I REP	SILTSTONE	M. GY. SLD
50	108.80	109.53	0.73	68	10003	I REP	COAL	C-2. SHRD VERY BROKEN & SHEARED.
50	109.53	109.54	0.01	67	10003	I REP	MUDSTONE	CARB. DK. GY. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	109.54	109.59	0.05	67	10003	I REP	ROCK LOSS	
50	109.59	109.84	0.25	67	10003	I REP	COAL LOSS	
50	109.84	109.97	0.13	67	10003	I REP	COAL	C-3.SLD
50	109.97	110.01	0.04	67	10004	I REP	COAL	C-2.SLD
50	110.01	110.44	0.43	67	10004	I REP	COAL	C-1.SLD LAST 10CM BROKEN.
51	110.44	111.62	1.18	66	10004	I REP	COAL	C-1.SLD
51	111.62	111.76	0.14	65	10004	I REP	COAL	C-1.BRKN
51	111.76	112.36	0.60	65	10005		MUDSTONE	CARB. DK. GY. SLD PLANT FRAGS WITHIN COALY STRINGERS NEAR TOP OF UNIT.
52	112.36	113.97	1.61	*64			MUDSTONE	SLTY. DK. GY. SLD MUD MATRIX WITH MINOR SILT & YFG. SS. CON TENT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	113.97	114.39	0.42	59			MUDSTONE	SLTY. M-DK. GY. SLD INTERLAMINATED WITH M GY SILTY YFG SS B EDS. FINES UPWARD.
53	114.39	115.37	0.98	56			SANDSTONE	SLTY. PR. LT. GY. SLD FINING UPWARDS. HIGH MUD CONTENT MATRIX . MINOR FRACTURES.
53	115.37	115.94	0.57	53			SANDSTONE	SLTY. PR. LT. GY. SLD SAME AS ABOVE.
54	115.94	116.85	0.91	50			SANDSTONE	PR. LT. GY. SLD SAME AS ABOVE.
54	116.85	117.16	0.31	47			SANDSTONE	PR. LT. GY. SLD SAME AS ABOVE.
54	117.16	117.20	0.04	*46			SANDSTONE	PBLY. FG. PR. LT. GY. SLD OPEN FRAME WORK. ASSEMBLAGE OF PEBBLES ALIGNED IN BEDDING PLANE. CLASTS ARE EL ONGATE & ROUNDED. POORSORTING. GRAIN SI ZE FROM CG. SAND TO COBBLE.
54	117.20	117.42	0.22	46			SANDSTONE	FG. PR. LT. GY. SLD I. D. = 117.95 END OF HOLE DRILLER'S MAR KER.

\* DENOTES MEASURED BCA  
NEWPAGE









GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86021

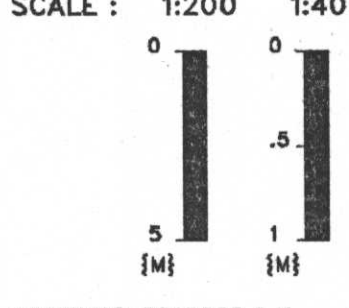
723

GEOLOGIST : MCKENZIE

DATE : FEB 26/87

DRAWING NO. :

LITHOLOGIC SYMBOLS

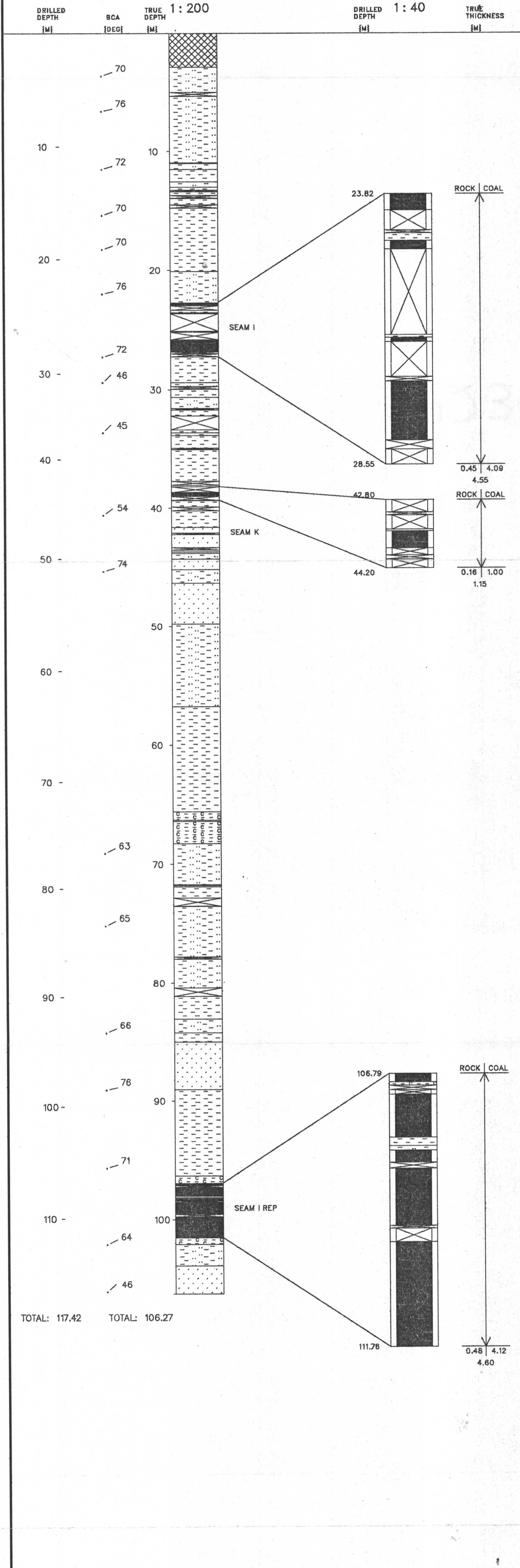


NORTHING: 6343068.0 N  
 EASTING: 506427.8 E

INCLINATION: 90.0°

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

SEAM DETAIL





# Gulf Canada Corporation Coal Division

# 723

## Geophysical Log

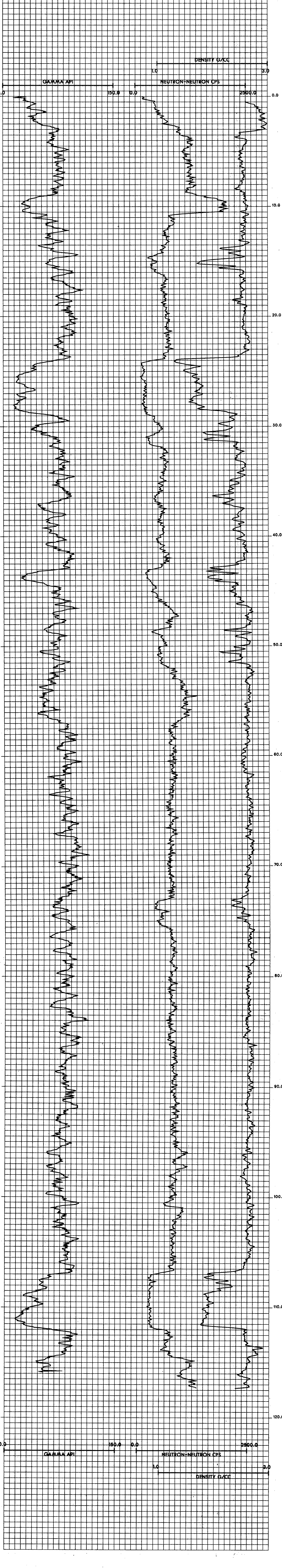
**Datasource:** KPnlRDDH86021  
**Log Date:** 86-09-13  
**Company:** CENTURY  
**Geologist:** MCKENZIE

**Province:** BC    **Northing:** 6343070.00    **Lat:** 571357  
**Zone:** 9    **Easting:** 506428.00    **Long:** 1285337  
**Measuring Point:**    **Elevation:** 1642.6

**Scale:** 1 to 100.0  
**Depth Range:** 0.0 to 122.0  
**True Thickness:** NO

**Comments:**  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



KPNLRDDH86022

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86022

DATE - 02/13/87

- HISTORY -

START DATE - 13/09/86

END DATE - 16/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MACLEOD

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1634.91

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343008.00

EASTING - 506732.87

LATITUDE - 571355

LONGITUDE - 1285319

- ORIENTATION -

LENGTH - 201.77

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 4.57

AQUIFER DEPTHS (M) - 0.00

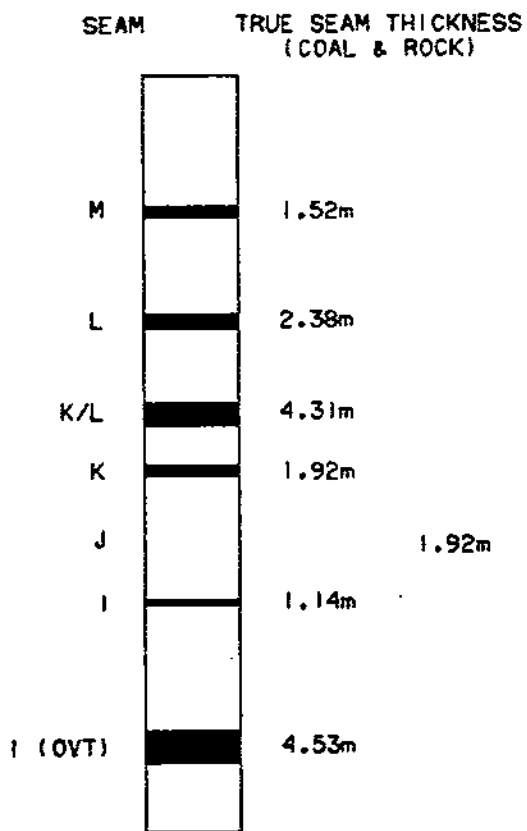
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86022

GULF CANADA CORPORATION  
11/03/87  
KLAP: (205057) B70063022.LOG



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DM86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	58			OVERBURDEN	CASING.
1	4.57	4.87	0.30	58			MUDSTONE	DK. GY. MAS. VBRKN
1	4.87	5.18	0.31	58			ROCK LOSS	
1	5.18	6.12	0.94	*58			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.
2	6.12	6.24	0.12	57			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.
2	6.24	6.70	0.46	56			ROCK LOSS	
2	6.70	7.82	1.12	54			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.
2	7.82	8.22	0.40	52			ROCK LOSS	
2	8.22	8.60	0.38	51			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DM86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	8.60	9.44	0.84	*50			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.
3	9.44	9.85	0.41	59			ROCK LOSS	
3	9.85	10.75	0.90	*68			MUDSTONE	DK. GY. MAS. VBRKN OCC FINE SILTY LAM WITH SHARP WAVY TO P LANAR CONTACTS.
3	10.75	11.38	0.63	48			ROCK LOSS	
4	11.38	12.26	0.88	*29			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN ABUNDANT LIGHTER GY SLTY LAM WITH GRADA TIONAL TO SHARP WAVY CONTACTS. BRECCIAT ED WITH CLAY FRACTURE INFILLS.
4	12.26	12.81	0.55	30			MUDSTONE	DK. GY. MAS. VBRKN BEDDING OBSCURED BY HIGHLY BROKEN NATUR E OF CORE.
4	12.81	13.20	0.39	31			ROCK LOSS	
4	13.20	13.63	0.43	*32			MUDSTONE	SLTY. DK. GY. LAM. VBRKN ABUNDANT LT GY SLTY LAM AS ABOVE. CORE TWIST OFF IN MIDDLE OF UNIT.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	13.63	13.79	0.16	*30			MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE. CORE BROKEN PARALLEL TO BEDDING PLANE.
5	13.79	14.43	0.64	28			ROCK LOSS	
5	14.43	14.71	0.28	*25			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE.
5	14.71	15.89	1.18	*39			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE. 1CM QTZ FILLED FRACTURE PARALLEL TO BEDDING PLANE. BRECCIATED WITH MUD-FILLED FRACTURES.
5	15.89	16.24	0.35	37			ROCK LOSS	
6	16.24	16.99	0.75	*36			MUDSTONE	SLTY.DK.GY.LAM.VBRKN ABUNDANT LIGHTER GY SLTY LAM.
6	16.99	17.46	0.47	36			ROCK LOSS	
6	17.46	18.33	0.87	*36			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE. MINOR PYRITE FLECKS.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	18.33	18.55	0.22	35			MUDSTONE	SLTY.DK.GY.LAM.BRKN BRECCIATED WITH CLAY FRACTURE INFILLS. ABUNDANT SLTY LAM AS ABOVE.
7	18.55	19.17	0.62	*34			MUDSTONE	SLTY.DK.GY.LAM.VBRKN ABUNDANT SLTY LAM AS ABOVE. MINOR SSD.
7	19.17	19.64	0.47	33			ROCK LOSS	
7	19.64	20.24	0.60	32			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE.
7	20.24	20.61	0.37	31			ROCK LOSS	
8	20.61	21.61	1.00	*30			MUDSTONE	SLTY.DK.GY.LAM.BRKN ABUNDANT SLTY LAM. INCREASE IN ABUNDANCE TO TOP OF UNIT. MINOR PYRITE FLECKS.
8	21.61	21.88	0.27	30			ROCK LOSS	
8	21.88	22.43	0.55	29			MUDSTONE	SLTY.DK.GY.LAM.VBRKN MINOR SLTY LAM.
8	22.43	23.70	1.27	29			ROCK LOSS	

\* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	23.70	25.37	1.67	27			MUDSTONE	SLTY. DK. GY. LAM. VBRKN INCREASING BRECCIATION WITH CLAY FILLED FRACTURES TO TOP OF UNIT. MINOR SLTY L AM.
10	25.37	27.62	2.25	26			BRECCIA	DK. GY. SLD ALL FRACTURES FILLED WITH POORLY CONSOL IDATED MUD.
11	27.62	28.18	0.56	*25			MUDSTONE	SLTY. DK. GY. LAM. BRKN BOTTOM HALF OF UNIT BRECCIATED WITH CLA Y FILLED FRACTURES. ABUND. SLTY LAM AT TOP WITH GRADATIONAL TO SHARP PLANAR CO NTACTS.
11	28.18	28.89	0.71	26			ROCK LOSS	
11	28.89	29.46	0.57	*28			MUDSTONE	SLTY. DK. GY. LAM. BRKN ABUNDANT. LT. GY. SLTY LAM.
11	29.46	30.16	0.70	26			MUDSTONE	SLTY. DK. GY. LAM. BRKN LT. GY. SLTY LAM AS ABOVE. BRECCIATED MIT H CLAY FILLED FRACTURES.
11	30.16	30.47	0.31	24			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	30.47	31.13	0.66	23			MUDSTONE	SLTY. DK. GY. LAM. VBRKN BRECCIATED WITH UNCONSOLIDATED CLAY INF ILLED FRACTURES.
12	31.13	31.20	0.07	22			MUDSTONE	SLTY. DK. GY. LAM. SLD ABUNDANT SLTY LAM.
12	31.20	31.37	0.17	21			MUDSTONE	SLTY. DK. GY. LAM. BRKN BRECCIATED WITH UNCONSOL CLAY INFILLED FRAC. CORE TWIST OFF. AT BASE.
12	31.37	32.10	0.73	*20			MUDSTONE	SLTY. DK. GY. LAM. BRKN ABUNDANT SLTY LAM.
13	32.10	32.31	0.21	23			MUDSTONE	SLTY. DK. GY. LAM. SLD VERY MINOR SLTY LAM.
13	32.31	32.47	0.16	24			MUDSTONE	DK. GY. VBRKN RUBBLE.
13	32.47	32.80	0.33	25			ROCK LOSS	
13	32.80	32.86	0.06	26			MUDSTONE	DK. GY. BRKN
13	32.86	33.02	0.16	27			MUDSTONE	SLTY. DK. GY. LAM. BRKN MINOR SLTY LAM AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	32.02	33.14	0.12	28			MUDSTONE	DK.GY.BRKN BRECCIATED WITH CLAY INFILLED FRAC.
13	33.14	33.36	0.22	29			MUDSTONE	SLTY.DK.GY.LAM.SLD MINOR SLTY LAM.
13	33.36	33.46	0.10	29			MUDSTONE	DK.GY.SLD BRECCIATED WITH CLAY INFILLED FRAC.
13	33.46	33.89	0.43	*31			MUDSTONE	SLTY.DK.GY.LAM.SLD ABUNDANT SLTY LAM.
13	33.89	34.26	0.37	31			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE.
13	34.26	34.75	0.49	32			ROCK LOSS	
14	34.75	35.40	0.65	33			MUDSTONE	SLTY.M-DK.GY.BRKN
14	35.40	36.14	0.74	34 05351			MUDSTONE	SLTY.M-DK.GY.BRKN LOWER 19CM SAMPLED. HIGHLY SHEARED. SLIC KENSIDES.
14	36.14	36.20	0.06	34 05351			MUDSTONE	SLTY.M-DK.GY.VBRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	36.20	36.35	0.15	34 05352	M		COAL LOSS	
14	36.35	36.38	0.03	34 05352	M		COAL	C-4.SLD POORLY CONSOLIDATED. SHEARED.
14	36.38	36.44	0.06	34 05352	M		MUDSTONE	CARB.DK.GY.SLD
15	36.44	36.80	0.36	35 05352	M		COAL LOSS	
15	36.80	36.88	0.08	35 05352	M		MUDSTONE	CARB.DK.GY.VBRKN
15	36.88	36.92	0.04	35 05352	M		COAL	C-4.BRKN
15	36.92	36.97	0.05	35 05352	M		MUDSTONE	CARB.DK.GY.BRKN
15	36.97	37.15	0.18	35 05352	M		ROCK LOSS	
15	37.15	37.83	0.68	36 05352	M		COAL LOSS	
15	37.83	37.92	0.09	36 05352	M		COAL	C-4.BRKN PARTIALLY SHEARED & POWDERED.
15	37.92	38.00	0.08	36 05352	M		MUDSTONE	CARB.DK.GY.BRKN

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	38.00	38.06	0.06	36	05352	M	ROCK LOSS	
15	38.06	38.18	0.12	36	05352	M	COAL LOSS	
15	38.18	38.25	0.07	37	05352	M	COAL	C-3.VBRKN SHEARED & POWDERED.
15	38.25	38.36	0.11	37	05352	M	MUDSTONE	CARB.DK.GY.VBRKN
15	38.36	38.49	0.13	37	05352	M	ROCK LOSS	
15	38.49	38.68	0.19	37	05352	M	COAL LOSS	
15	38.68	38.80	0.12	37	05352	M	COAL	C-4.VBRKN SHEARED AND MIXED WITH MUD.
15	38.80	39.84	1.04	38	05353		MUDSTONE	SLTY.M.GY.BRKN UPPER 25CM SAMPLED.
16	39.84	39.89	0.05	39			MUDSTONE	CARB.BLK.BRKN ABUNDANT COALY STRINGERS.
16	39.89	40.47	0.58	39			MUDSTONE	SLTY.DK.GY.BRKN HIGHLY BRECCIATED WITH CLAY INFILLED FR AC.
16	40.47	40.58	0.11	39			MUDSTONE	SLTY.DK.GY.SLD SLTY LAM. MINOR CLAY FILLED FRACTURES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	40.58	41.09	0.51	40			SILTSTONE	CLYY.DK.GY.BRKN MUCH SILTIER THAN ABOVE UNIT. HIGHLY BR ECCIATED WITH CLAY INFILLED FRAC.
16	41.09	41.35	0.26	40			MUDSTONE	SLTY.DK.GY.BRKN HIGHLY BREC WITH CLAY FILLED FRAC.
16	41.35	41.74	0.39	41			MUDSTONE	CARB.BLK.BRKN SOFT AND POORLY CONSOL. BRECCIATED.
17	41.74	42.24	0.50	41			MUDSTONE	SLTY.DK.GY.BRKN BRECCIATED WITH CLAY FILLED FRAC.
17	42.24	43.22	0.98	42			MUDSTONE	CARB.DK.GY.BRKN PARTIALLY BREC AND POORLY CONSOL. SILTI ER TOWARDS TOP.
17	43.22	43.59	0.37	43			MUDSTONE	SLTY.DK.GY.BRKN BRECCIATED AS ABOVE.
18	43.59	43.68	0.09	43			MUDSTONE	SLTY.DK.GY.BRKN BRECCIATED AS ABOVE.
18	43.68	44.12	0.44	44			MUDSTONE	SLTY.DK.GY.BRKN
18	44.12	44.46	0.34	*44			SILTSTONE	CLYY.DK.GY.LAM.BRKN BREC AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	44.46	44.62	0.16	*86			SILTSTONE	CLYY.DK.GY.LAM.SLD UPPER 10CM OF CORE ONLY BRKN. BRECCIATE D AS ABOVE.
19	44.62	45.61	0.99	85			MUDSTONE	SLTY.DK.GY.BRKN BRECCIATED AS ABOVE. MORE CARB TOWARDS BASE.
19	45.61	46.01	0.40	83			ROCK LOSS	
19	46.01	46.46	0.45	82			SILTSTONE	CLYY.M.GY.LAM.VBRKN RUBBLE.
19	46.46	46.96	0.50	81			ROCK LOSS	
19	46.96	47.14	0.18	*80			SILTSTONE	CLYY.M.GY.LAM.BRKN BRECCIATED. MINOR VERTICAL QTZ FILLED F RACTURES.
19	47.14	47.67	0.53	71			MUDSTONE	CARB.DK.GY.LAM.BRKN BRECCIATED. SOFT AND PARTLY UNCONSOL. I NCREASE IN SLTY LAM TOWARDS TOP OF UNIT . GRADATIONAL UPPER CONTACT.
20	47.67	48.02	0.35	60			SILTSTONE	CLYY.DK.GY.LAM.BRKN PARTLY BRECCIATED. GRADATIONAL UPPER AN D LOWER CONTACTS. QTZ FILLED FRACTURES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	48.02	49.83	1.81	*32			MUDSTONE	SLTY.DK.GY.LAM.BRKN PARTLY CARB. LISTRIC SHEAR SURFACES. PA RTLY BRECCIATED. MINOR QTZ VEINS (<1CM) PARALLEL TO BGG PLANES. SLTY LAM HAVE MANY CONTACTS.
21	49.83	51.78	1.95	*49			MUDSTONE	SLTY.DK.GY.LAM.BRKN PARTLY CARB. LISTRIC SHEAR SURFACES. SL TY LAM UP TO 1CM THICK. HIGHLY FRACTURE D.
21	51.78	52.18	0.40	34			ROCK LOSS	
22	52.18	53.23	1.05	*25			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SLTY LAM. MINOR LISTRIC SHEAR SURFACES. QTZ FILLED FRAC AT RANDOM ORIENTATIONS. PARTLY BRECCIATED.
22	53.23	54.22	0.99	*40			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SLTY LAM.
22	54.22	54.82	0.60	42			ROCK LOSS	
23	54.82	56.77	1.95	*45			MUDSTONE	SLTY.DK.GY.LAM.VBRKN SLTY LAM AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	56.77	58.79	2.02	*33			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN WELL DEFINED SLTY LAM. SSD INDICATES TO PSUP. MIND R LISTRIC SHEAR SURFACES.
25	58.79	59.84	1.05	*30			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE.
25	59.84	60.70	0.86	*45			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE.
26	60.70	61.79	1.09	*31			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE. SSD AND WORM BURROW INDICATE TOPS. UP.
26	61.79	61.91	0.12	*40			MUDSTONE	SLTY. DK. GY. LAM. ABUNDANT. SLTY. LAM.
27	61.91	64.13	2.22	*39			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE.
27	64.13	64.23	0.10	41			ROCK LOSS	
28	64.23	64.78	0.55	41	05354		MUDSTONE	SLTY. M. GY. BRKN LOWER 25CM SAMPLED.
28	64.78	64.83	0.05	41	05355 L		COAL	C-3. BRKN
28	64.83	64.99	0.16	41	05355 L		COAL LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	64.99	65.14	0.15	42	05355 L		ROCK LOSS	
28	65.14	65.75	0.61	42	05355 L		COAL	C-2. BRKN
28	65.75	66.24	0.49	43	05355 L		COAL LOSS	
28	66.24	66.27	0.03	43	05355 L		COAL	C-4. SLD THIN C-2 BANDS WITHIN.
28	66.27	66.57	0.30	43	05355 L		COAL	C-3. BRKN
28	66.57	66.62	0.05	44	05356 L		MUDSTONE	CARB. DK. GY. SLD
28	66.62	66.72	0.10	44	05356 L		COAL	C-3. BRKN
28	66.72	66.79	0.07	44	05356 L		MUDSTONE	CARB. SLD THIN COALY STRINGERS THROUGHOUT.
28	66.79	66.82	0.03	44	05356 L		ROCK LOSS	
28	66.82	66.95	0.13	44	05356 L		COAL LOSS	
29	66.95	67.18	0.23	44	05356 L		COAL	C-2. BRKN

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	67.18	67.44	0.26	45 05356	L	COAL	C-3.BRKN
29	67.44	67.49	0.05	45 05356	L	MUDSTONE	CARB.DK.GY.SLD
29	67.49	67.88	0.39	45 05356	L	COAL	C-3.BRKN
29	67.88	67.92	0.04	45 05356	L	MUDSTONE	CARB.M-DK.GY.SLD
29	67.92	68.08	0.16	46 05356	L	ROCK LOSS	
29	68.08	68.14	0.06	46 05356	L	COAL LOSS	
29	68.14	68.24	0.10	46 05356	L	COAL	C-3.VBRKN
29	68.24	68.71	0.47	46 05357		MUDSTONE	SLTY.M.GY.BRKN UPPER 25CM SAMPLED.
29	68.71	68.78	0.07	46		MUDSTONE	SLTY.M.GY.BRKN
30	68.78	71.01	2.23	*48		MUDSTONE	SLTY.DK.GY.LAM.BRKN LISTRIC SHEAR SURFACES. THIN QTZ FRAC A T RANDOM ORIENTATIONS. ABUNDANT SLTY L M.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	71.01	71.83	0.82	*50		MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE BUT CARB IN TOP 10CM WITH V. M INOR PLANT FRAG.
31	71.83	73.05	1.22	*45		MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE. SLTY LAM HAVE SHARP, PLANAR C ONFATS.
32	73.05	73.31	0.26	48		MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE. POLISHED SHEAR SURFACES. PARAL LEL TO BDG.
32	73.31	74.26	0.95	51		MUDSTONE	CARB.BLK.LAM.BRKN ABUNDANT PLANT FOSSILS PARALLEL TO BDG (EQUISETITES LYELLI, PTEROPHYLLUM RECTA ANGULARE, PITYOPHYLLUM NORDENSKIOLDII, S PHENOPTERIS BRULENSIS AND OTHER FRAGMEN TS). MINOR COAL STRINGERS AND SOME PLAN TS COALIFIED. LISTRIC SHEAR SURFACES.
32	74.26	75.13	0.87	*55		MUDSTONE	SLTY.DK.GY.LAM.BRKN VERY COMPETENT. MINOR LISTRIC SHEAR SUR FACES.
33	75.13	75.88	0.75	55		MUDSTONE	SLTY.DK.GY.LAM.SSD.BRKN PLANT FRAGMENTS PARALLEL TO BDG PLANES (SPHENOPTERIS BRULENSIS). MINOR SLTST L AM.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	75.88	76.49	0.61	*55			SILTSTONE	CLYY.DK.GY.LAM.BRKN MUDST AND SLTST INTERLAM HAVE SHARP PLANAR TO WAVY CONTACTS.
33	76.49	76.87	0.38	*45			SILTSTONE	CLYY.DK.GY.LAM.BRKN AS ABOVE. GRADATIONAL UPPER CONTACT.
33	76.87	77.20	0.33	45			SANDSTONE	FG.LT.GY.LAM.BRKN MINOR DK GY MUDST LAM.
34	77.20	78.14	0.94	*45			SILTSTONE	CLYY.DK.GY.LAM.BRKN COMPETENT UNIT.
34	78.14	79.03	0.89	50			MUDSTONE	SLTY.DK.GY.LAM.BRKN GRADATIONAL UPPER CONTACT.
35	79.03	79.43	0.40	53			MUDSTONE	SLTY.DK.GY.LAM.VBRKN RUBBLE. LISTRIC SHEAR SURFACES.
35	79.43	79.58	0.15	55			ROCK LOSS	
35	79.58	80.59	1.01	*58			MUDSTONE	SLTY.DK.GY.LAM.BRKN RIPPLE X-LAMINATIONS. HIGHLY POLISHED LISTRIC SHEAR SURFACES PREDOMINANTLY PARALLEL TO BDG. ABUNDANT SLTY LAMINAE. MINOR BRECCIATION IN UPPER 10CM OF UNIT.
36	80.59	81.19	0.60	52			MUDSTONE	SLTY.DK.GY.LAM.BRKN SLTY LAMINAE.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	81.19	83.15	1.96	*43			MUDSTONE	SLTY.DK.GY.LAM.BRKN WELL DEFINED LT GY SLTY LAM. MINOR BRECCIATION. MINOR PLANT HASH PARALLEL TO BEDDING PLANES (NOT IDENTIFIABLE). MINOR POLISHED SURFACES PARALLEL TO BDG. SLIGHT INCREASE IN SILTINESS TOWARDS TOP OF UNIT.
37	83.15	84.27	1.12	*58			SILTSTONE	CLYY.DK.GY.VTHNB.BRKN ABUNDANT LT GY SLTY LAM WITH SHARP WAVY TO PLANAR CONTACTS. GRADATIONAL LOWER CONTACT. SMALL SCALE FLASER AND LENTICULAR BEDDING.
37	84.27	84.55	0.28	53			MUDSTONE	BLK.MAS.BRKN LOWER 8 CM IS COALIFIED. MINOR THIN COAL LAMINAE OCCUR IN UPPER .20 M OF UNIT.
37	84.55	85.11	0.56	*50			SILTSTONE	CLYY.DK.GY.LAM.SSD.BRKN SSD AND SUPERATENUOUS FOLDS INDICATE TO PS UP.
37	85.11	85.16	0.05	55			MUDSTONE	SLTY.DK.GY.LAM.SLD
38	85.16	86.34	1.18	*64			MUDSTONE	SLTY.DK.GY.LAM.VBRKN LISTRIC SHEAR SURFACES PARALLEL TO BDG.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	86.34	86.43	0.09	59			ROCK LOSS	
38	86.43	87.28	0.85	*55			MUDSTONE	SLTY. DK. GY. LAM. VBRKN MINOR PLANT WASH PARALLEL TO BDG PLANES (CZEKANOWSKI RIGIDA). PLANTS PARTLY CO ALIFIED. SLTY LAMINAE. HIGHLY POLISHED S NEAR SURFACES PARALLEL TO BDG PLANES.
39	87.28	88.20	0.92	54	05358		MUDSTONE	SLTY. M. GY. BRKN SLIGHTLY CARBONACEOUS WITH COALY STRING ERS NEAR BASE. LOWER 25CM SAMPLED.
39	88.20	88.61	0.41	53	05359	K/L	COAL	C-3. VBRKN
39	88.61	88.66	0.05	53	05359	K/L	COAL	C-6. SLD BONE COAL. PYRITE CUBES WITHIN.
39	88.66	88.76	0.10	53	05359	K/L	ROCK LOSS	
39	88.76	88.92	0.16	53	05359	K/L	COAL	C-3. VBRKN
40	88.92	89.39	0.47	52	05359	K/L	COAL	C-2. BRKN
40	89.39	89.46	0.07	52	05359	K/L	COAL	C-4. 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: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	89.46	89.88	0.42	52	05359	K/L	COAL	C-2. BRKN
40	89.88	89.92	0.04	52	05360	K/L	MUDSTONE	SLTY. M-DK. GY. SLD
40	89.92	90.11	0.19	51	05360	K/L	ROCK LOSS	
40	90.11	90.23	0.12	51	05360	K/L	COAL LOSS	
40	90.23	90.58	0.35	51	05360	K/L	COAL	C-2. VBRKN
40	90.58	90.64	0.06	51	05360	K/L	MUDSTONE	CARB. DK. GY. SLD
40	90.64	90.66	0.02	51	05360	K/L	ROCK LOSS	
40	90.66	91.20	0.54	50	05360	K/L	COAL LOSS	
40	91.20	91.39	0.19	50	05360	K/L	COAL	C-2. BRKN
41	91.39	91.70	0.31	50	05360	K/L	COAL	C-2. BRKN
41	91.70	91.75	0.05	50	05360	K/L	COAL	C-3. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	91.75	91.95	0.20	49 05361	K/L	ROCK LOSS	
41	91.95	92.46	0.51	49 05361	K/L	COAL	C-2.BRKN
41	92.46	92.53	0.07	49 05361	K/L	MUDSTONE	CARB.M-DK.GY.SLD
41	92.53	92.59	0.06	49 05361	K/L	ROCK LOSS	
41	92.59	92.80	0.21	48 05361	K/L	COAL	C-2.BRKN
41	92.80	92.97	0.17	48 05361	K/L	COAL LOSS	
41	92.97	93.25	0.28	48 05361	K/L	COAL	C-4.BRKN C-2 BANDS THROUGHOUT.
41	93.25	93.35	0.10	48 05361	K/L	ROCK LOSS	
41	93.35	93.44	0.09	48 05361	K/L	MUDSTONE	CLYY.M.GY.SLD
41	93.44	93.51	0.07	48 05361	K/L	COAL	C-3.BRKN
42	93.51	93.54	0.03	48 05361	K/L	COAL	C-4.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	93.54	93.61	0.07	47 05361	K/L	MUDSTONE	CARB.DK.GY.VBRKN
42	93.61	93.68	0.07	47 05361	K/L	COAL LOSS	
42	93.68	93.80	0.12	47 05361	K/L	COAL	C-4.VBRKN
42	93.80	95.43	1.63	46 05362		MUDSTONE	SLTY.M-DK.GY.BRKN CARB NEAR TOP. SILTIER TOWARDS BASE. UP PER 25CM SAMPLED.
43	95.43	96.16	0.73	*45		MUDSTONE	SLTY.DK.GY.LAM.BRKN MOTTLED BDG. MINOR PLANT HASH PARALLEL TO BDG PLANE (HILSSONIA TENUICAILIS AND OTHER FRAGMENTS).
43	96.16	96.54	0.38	45		MUDSTONE	SLTY.DK.GY.VBRKN HIGHLY FRACTURED WITH ABUNDANT RANDOMLY ORIENTED QTZ FRACTURES. COAL STRINGERS UP TO 1 CM CUT BY FRACTURES. MINOR PLA NT HASH. LISTRIC SHEAR SURFACES.
43	96.54	96.74	0.20	45		MUDSTONE	DK.GY.MAS.BRKN MINOR PLANT HASH.
43	96.74	96.84	0.10	*45		MUDSTONE	CARB.DK.GY.LAM.BRKN SOFT AND POORLY CONSOL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	96.84	97.59	0.75		52		MUDSTONE	SLTY. DK. GY. MAS. SLD MINOR LISTRIC SHEAR SURFACES, QTZ VEINS UP TO 1 CM IN TOP 5 CM ORIENTED AT 80 D EGREES, MINOR PLANT MASH.
44	97.59	98.94	1.35	#68			MUDSTONE	DK. GY. LAM. BRKN HIGHLY FRAG. ABUND. LISTRIC SHEAR SURFAC ES.
44	98.94	99.07	0.13	84			MUDSTONE	CARB. DK. GY. MAS. SHRD EXTREMELY SHEARED WITH ABUNDANT RANDOML Y ORIENTED LISTRIC SHEAR SURFACES.
44	99.07	99.44	0.37	#89			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN SSD INDICATES TOPS UP. SLTY LAMINAE HAV E WAVY TO PLANAR CONTACTS. MUDST/SLTST CONTACTS ARE SHARP.
45	99.44	101.69	2.25	#89			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN SSD INDICATES TOPS UP. BEDDING CONTACTS ARE WAVY. LISTRIC SHEAR SURFACES. MINO R COALIFIED PLANT MASH/IVALVES PRESENT (STAFFINELLA?).
46	101.69	102.09	0.40	90			MUDSTONE	BLK. MAS. BRKN FEATURELESS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	102.09	103.69	1.60	#90			MUDSTONE	SLTY. DK. GY. LAM. BRKN PYRITE BANDS UP TO .75 CM. MINOR SLTST L AM. HIGHLY POLISHED SLIP SURFACES. RELA TIVELY FEATURELESS.
47	103.69	104.90	1.21	84	05363		MUDSTONE	CARB. DK. GY. BRKN PYRITE WITHIN. LOWER 25CM SAMPLED.
47	104.90	104.93	0.03	81	05364	K	COAL	C-4. SHRD
47	104.93	104.95	0.02	81	05364	K	MUDSTONE	CARB. DK. GY. SLD MOSTLY CARB. SHALE.
47	104.95	104.98	0.03	81	05364	K	COAL	C-3. BRKN
47	104.98	105.03	0.05	81	05364	K	COAL	C-3. BRKN
47	105.03	105.05	0.02	81	05364	K	MUDSTONE	CARB. DK. GY. SLD
47	105.05	105.15	0.10	80	05364	K	COAL	C-3. VBRKN BANDED WITH BONE COAL.
47	105.15	105.74	0.59	79	05364	K	COAL LOSS	
47	105.74	105.87	0.13	77	05364	K	ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	105.87	106.05	0.18	77	05364 K	COAL LOSS	
47	106.05	106.24	0.19	76	05364 K	MUDSTONE	CARB. DK. GY. SLD
47	106.24	106.31	0.07	75	05364 K	MUDSTONE	CARB. DK. GY. BRKN
48	106.31	106.37	0.06	75	05364 K	COAL	C-3. VBRKN
48	106.37	106.40	0.03	75	05364 K	MUDSTONE	CARB. DK. GY. VBRKN COALY STRINGERS THROUGHOUT.
48	106.40	106.45	0.05	75	05364 K	COAL	C-2. BRKN
48	106.45	106.87	0.42	74	05364 K	COAL LOSS	
48	106.87	108.49	1.62	69	05365	MUDSTONE	SLTY. M-DK. GY. BRKN CARBONACEOUS. PLANT FRAGS THROUGHOUT, E SPECIALLY IN UPPER HALF. UPPER 25CM SAM PLED.
49	108.49	108.82	0.33	*65		MUDSTONE	SLTY. DK. GY. LAM. BRKN LT GY SLTY LAM HAVE PLANAR SHARP Contac TS WITH MUDST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	108.82	109.03	0.21	64		MUDSTONE	SLTY. DK. GY. LAM. BRKN HIGHLY POLISHED SLIP SURFACES. BRECCIAT ED.
49	109.03	109.17	0.14	64		SANDSTONE	FG. LT. GY. MAS. BRKN HIGHLY FRACTURED. QTZ FILLED FRACTURES AT RANDOM ORIENTATIONS. QTZ CEMENTED. S COURED UPPER AND LOWER CONTACTS.
49	109.17	109.50	0.33	63		MUDSTONE	SLTY. DK. GY. LAM. BRKN LT GY SLTY LAM. ABUNDANT LYSTRIC SHEAR SURFACES.
49	109.50	109.67	0.17	62		MUDSTONE	SLTY. DK. GY. LAM. BRKN BRECCIATED. AS ABOVE.
49	109.67	110.58	0.91	60		MUDSTONE	SLTY. DK. GY. LAM. BRKN LT GY SLTY LAM.
49	110.58	110.93	0.35	58		ROCK LOSS	
50	110.93	111.53	0.60	57		SANDSTONE	VFG. M. GY. MAS. BRKN QTZ CEMENTED. QTZ FILLED FRACTURES 0.5 CM THICK. FINES UP TO DK GY SLTST OVER LAST 10 CM.

\* DENOTES MEASURED. BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	111.53	111.92	0.39	*55		SANDSTONE	VFG. M. GY. LAM. BRKN OCCASIONAL DK GY MUDST LAM; QTZ VEIN OR IENTATION 45 DEGREES; GRAD UPPER CONTACT AS MUDST LAM INCREASE IN THICKNESS AND NUMBER.
50	111.92	112.85	0.93	*65		SILTSTONE	CLYY. DK. GY. LAM. BRKN DK GY MUDST LAM HAVE SHARP SLIGHTLY WAVY CONTACTS WITH SLTST.
50	112.85	112.93	0.08	66		ROCK LOSS	
51	112.93	113.05	0.12	66		MUDSTONE	DK. GY. MAS. BRKN FEATURELESS.
51	113.05	113.48	0.43	67		MUDSTONE	SLTY. DK. GY. LAM. VBRKN ABUNDANT HIGHLY POLISHED SLIP SURFACES AND RANDOMLY ORIENTED QTZ VEINING. GRAD UPPER CONTACT. LT GY SLTST LAM.
51	113.48	113.81	0.33	68		ROCK LOSS	
51	113.81	115.00	1.19	*70		SILTSTONE	CLYY. DK. GY. LAM. BRKN DK GY MUDST LAM HAVE SHARP PLANAR CONTACTS WITH CLYY SLTST.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	115.00	115.91	0.91	68		SANDSTONE	VFG. DK. GY. MAS. BRKN FEATURELESS. COARSENS UP TO FG SS. QTZ CEMENTED.
52	115.91	116.52	0.61	66		SANDSTONE	FG. DK. GY. MAS. BRKN AS ABOVE. QTZ VEIN ORIENTATIONS 30 & 35 DEGREES. SHARP UPPER CONTACT.
52	116.52	116.60	0.08	*65		MUDSTONE	SLTY. DK. GY. LAM. BRKN DK GY MUDST LAM ARE PLANAR TO SLIGHTLY WAVY. HIGHLY POLISHED SLIP SURFACES PARALLEL TO BDG.
53	116.60	116.83	0.23	*65		MUDSTONE	SLTY. DK. GY. LAM. BRKN SLTY LAMINAE. HIGHLY POLISHED SLIP SURFACES PARALLEL TO BDG. GRADATIONAL UPPER CONTACT.
53	116.83	117.83	1.00	62		SANDSTONE	VFG. DK. GY. LAM. BRKN QTZ VEIN ORIENTATIONS 25 AND 30 DEGREES
53	117.83	118.35	0.52	61		SANDSTONE	VFG. DK. GY. LAM. BRKN AS ABOVE.
54	118.35	118.95	0.60	*60		SANDSTONE	VFG. DK. GY. LAM. BRKN AS ABOVE. MINOR DK GY MUDST LAM.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	118.95	119.10	0.15	62		SANDSTONE	YFG. DK. GY. LAM. BRKN AS ABOVE. NUMEROUS QTZ VEINS <0.5 CM AT 30 DEGREE ORIENTATION.
54	119.10	120.40	1.30	*65		MUDSTONE	SLTY. DK. GY. LAM. BRKN LT GY SLTST LAM HAVE PLANAR TO SLIGHTLY WAVY CONTACTS WITH MUDST.
55	120.40	120.80	0.40	68		MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE. QTZ FILLED FRAC. & SHEARING NEAR TOP.
55	120.80	121.14	0.34	70	J	MUDSTONE	CARB. DK. GY. MAS. YSHRD VERY SHEARED WITH ABUNDANT LISTRIC SHEAR SURFACES IN RANDOM ORIENTATIONS. J SEAM(?). NOTE: COASTER LITHOLOGY ABSENT ABOVE SEAM.
55	121.14	121.20	0.06	71	J	ROCK LOSS	
55	121.20	121.38	0.18	71		MUDSTONE	SLTY. DK. GY. LAM. BRKN MINOR SLTY. LAM. IN OTHERWISE FEATURELESS MUDST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	121.38	122.60	1.22	*74		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN SOFT SEDIMENT DEFORMATION INDICATES TOPS UP. LISTRIC SHEAR SURFACES (MINOR) AND QZ FILLED MICRO FRACTURES NEAR TOP OF UNIT. WAVY AND DISTURBED BDG.
56	122.60	123.61	1.01	*70		MUDSTONE	SLTY. DK. GY. LAM. SSD. VBRKN SSD INDICATES TOPS UP. QZ FILLED FRACTURES RANDOMLY ORIENTED. BEDDING IS WAVY AND MOTTLED. MINOR LISTRIC SHEAR SURFACES NEAR TOP OF UNIT.
56	123.61	124.68	1.07	66		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE.
57	124.68	126.38	1.70	*60		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN LY GY SLTST LAM HAVE WAVY CONTACTS. QZ FILLED MICRO FRACTURES AT RANDOM ORIENTATIONS. HIGHLY POLISHED SLIP SURFACES PARALLEL TO BDG.
57	126.38	126.72	0.34	65		MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE.
58	126.72	128.87	2.15	*70		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN WORM BURROW INDICATES TOPS UP. ABUNDANT SLTY LAM HAVE WAVY TO PLANAR CONTACTS WITH MUDST. SOME SSD AND MOTTLED BDG. MINOR QZ VEINING AT RANDOM ORIENTATIONS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	128.87	129.42	0.55	*55			MUDSTONE	SLTY.DK.GY.LAM.BRKN MINOR LT GY SLTST LAM. MINOR VERTICAL Q TZ FILLED MICRO FRACTURES AND POLISHED SLIP SURFACES.
59	129.42	130.80	1.38	*55			MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE.
59	130.80	132.68	1.88	*60			SILTSTONE	M. GY. LAM. BRKN GRAD. CONTACT WITH LOWER TUFFACEOUS UNI T. DK GY MUDST LAM HAVE PLANAR CONTACTS WITH SLTST. MNR QTZ FILLED MICRO FRACT URES. AT. RANDOM ORIENTATION.
60	132.68	132.85	0.17	67			SANDSTONE	SLTY.LT.GY.VBRKN TUFFACEOUS RUBBLE.
60	132.85	132.87	0.02	68			ROCK LOSS	
61	132.87	133.53	0.66	*70			SANDSTONE	SLTY.LT.GY.LAM.XBDG.VBRKN RIPPLE X-LAM. TUFFACEOUS SS. 1CM QTZ FIL LED FRAC. AT 10 DEGREES ORIENTATION. MIND R DK GY SLTY LAM.
61	133.53	134.53	1.00	70			SANDSTONE	SLTY.LT.GY.LAM.XBDG.VBRKN AS ABOVE.
61	134.53	134.61	0.08	70			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	134.61	134.72	0.11	70			BENTONITE	LT. GY. VBRKN
61	134.72	135.00	0.28	69			MUDSTONE	SLTY.DK.GY.LAM.SLD MOTTLED & WAVY BDG. QTZ FILLED MICRO FR AC AT RANDOM ORIENT.
62	135.00	135.60	0.60	69			MUDSTONE	SLTY.DK.GY.LAM.BRKN SLTY LAM. MINOR RANDOMLY ORIENTED QTZ-F ILLED FRAC.
62	135.60	136.73	1.13	*69			MUDSTONE	SLTY.DK.GY.LAM.BRKN SLTY. LAM WITH WAVY TO PLANAR CONTACTS.
63	136.73	138.23	1.50	*70			MUDSTONE	SLTY.DK.GY.LAM.WRNBUR.BRKN WRNBUR SHOWS TOPS UP. RIPUP CLASTS. POL ISHED SLIP SURFACES.
63	138.23	138.51	0.28	73			MUDSTONE	SLTY.DK.GY.VBRKN RUBBLE.
63	138.51	138.55	0.04	74			ROCK LOSS	
63	138.55	138.80	0.25	74			MUDSTONE	SLTY.DK.GY.LAM.BRKN SLTY. LAM.
64	138.80	138.83	0.03	74			MUDSTONE	SLTY.M.GY.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	138.83	140.38	1.55	77	05366	MUDSTONE	SLTY. M-DK. GY. BRKN CARBONACEOUS WITH ABUNDANT COALY STRINGERS THROUGHOUT. LOWER 22CM SAMPLED.
64	140.38	140.41	0.03	80	05366	MUDSTONE	CARB. DK. GY. SLD
64	140.41	140.64	0.23	80	05367 I	COAL	C-2. SHRD
65	140.64	140.86	0.22	81	05367 I	COAL	C-2. PWRD SHEARED.
65	140.86	141.02	0.16	82	05367 I	COAL	C-3. VBRKN SHEARED.
65	141.02	141.43	0.41	83	05367 I	COAL	C-2. SHRD
65	141.43	141.56	0.13	83	05367 I	COAL LOSS	
65	141.56	142.05	0.49	84	05368	MUDSTONE	CARB. DK. GY. BRKN UPPER 25CM SAMPLED.
65	142.05	142.66	0.61	86		SANDSTONE	MG. LT-M. GY. BRKN CONTORTED QTZ VEINING IN LOWER 25 CM.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	142.66	143.21	0.55	88		CONGLOMERATE	M. GY. MAS. BRKN MATRIX SUPPORTED. ROUNDED CHERT PEBBLES CO. 5CM TO 1CM. MED GR LT GY SS MATRIX. ABUNDANT QTZ VEINS UPTO 2CM THICK PERPENDICULAR TO CORE. GRADATIONAL UPPER CONTACT.
66	143.21	143.70	0.49	*90		SANDSTONE	MG. M. GY. LAM. BRKN MINOR FAINT LAM. GRADATIONAL UPPER CONTACT.
66	143.70	143.83	0.13	90		CONGLOMERATE	M. GY. MAS. BRKN MATRIX SUPPORTED. AS ABOVE CONGLOMERATE.
66	143.83	144.06	0.23	90		SANDSTONE	MG. M. GY. LAM. BRKN AS ABOVE SS.
66	144.06	144.16	0.10	90		CONGLOMERATE	M. GY. MAS. BRKN AS ABOVE CONGL. CLASTS UP TO 2.5 CM.
66	144.16	144.41	0.25	*90		CONGLOMERATE	M. GY. MAS. SLD AS ABOVE CONGL. LOWER 6CM LAMINATED WITH CLAST SIZE INCREASING UPWARDS. ABUNDANT QTZ VEINING.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	144.41	145.83	1.42	90			CONGLOMERATE	M. GY. MAS. BRKN AS ABOVE. MOSTLY CLAST SUPPORTED. GRADATIONAL UPPER CONTACT INTO SS WITH OCCASIONAL PEBBLES.
67	145.83	146.01	0.18	90			SANDSTONE	FG. M. GY. MAS. BRKN OCCASIONAL SUBROUNDED-SUBANGULAR CHERT PEBBLES <0.5CM (LONG AXIS). QTZ VEIN ORIENTATION 22 DEGREES.
67	146.01	146.36	0.35	*90			SANDSTONE	FG. M. GY. MAS. SLD BOTTOM 10CM BRECCCIATED WITH QTZ VEIN IN FILLS. 0.25CM WIDE QTZ VEIN AT 20 DEGREES ORIENTATION.
68	146.36	146.94	0.58	90			SANDSTONE	FG. M. GY. MAS. BRKN 1CM WIDE QTZ VEIN AT 23 DEGREES ORIENTATION. FINESUP TO FEATURELESS SLTST.
68	146.94	147.30	0.36	*90			SILTSTONE	DK. GY. LAM. BRKN HIGHLY FRAC WITH 3CM WIDE QTZ VEINS AT 20 DEGREES ORIENTATION. COARSENS TO VFG QTZ CEMENTED SS. ABUNDANT LISTRIC SHEAR SURFACES.
68	147.30	147.95	0.65	83			SILTSTONE	CLYY. DK. GY. VBRKN RUBBLE. HIGHLY SHEARED WITH LISTRIC SHEAR SURFACES.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	147.95	148.10	0.15	77			ROCK LOSS	
68	148.10	148.12	0.02	76			SILTSTONE	CLYY. DK. GY. VBRKN RUBBLE.
69	148.12	148.39	0.27	74			SILTSTONE	CLYY. DK. GY. VBRKN HIGHLY POLISHED SLIP SURFACES.
69	148.39	150.05	1.66	*60			SILTSTONE	CLYY. DK. GY. LAM. VBRKN HIGHLY FRACTURED WITH QTZ VEINS 0.5CM AND LESS AT RANDOM ORIENTATIONS AND QTZ VEINS >1.0CM ALMOST PARALLEL TO BDR. LISTRIC SHEAR SURFACES.
69	150.05	150.15	0.10	48			ROCK LOSS	
70	150.15	150.77	0.62	43			SILTSTONE	CLYY. DK. GY. VBRKN HIGHLY FRACTURED WITH QTZ FILL AND ABUNDANT LISTRIC SHEAR SURFACES.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	150.77	152.04	1.27	*30			SILTSTONE	CLYY.DK.GY.LAM.WRMBU.BRKN NUMEROUS WRMBURS INDICATE BEDS OVERTURNED. SSD. CONTACTS BETWEEN SLTST AND MUDST LAMARE WAVY AND GR ADATIONAL. QTZ VEINS 1CM WIDE AT 35 AND 45 DEGREE ORIENTATION.
71	152.04	152.54	0.50	58			MUDSTONE	SLTY.DK.GY.LAM.VSHRD RUBBLE. QTZ VEINS AND LISTRIC SHEAR SURFACES ABUNDANT.
71	152.54	153.14	0.60	*75			SILTSTONE	CLYY.DK.GY.LAM.WRMBU.SLD ABUNDANT SSD AND WORM BURROWS INDICATE BEDS OVERTURNED. WAVY GRADATIONAL CONTACTS.
71	153.14	153.91	0.77	68			SANDSTONE	VFG.DK.GY.MAS.SLD FEATURELESS. QTZ CEMENTED. EXTREMELY COMPACT. QTZ VEIN 1CM WIDE AT 33 DEGREE ORIENTATION.
72	153.91	154.76	0.85	60			SANDSTONE	DK.GY.VBRKN AS ABOVE.
72	154.76	154.86	0.10	55			ROCK LOSS	
72	154.86	156.22	1.36	*48			SILTSTONE	CLYY.DK.GY.LAM.BRKN GRADATIONAL UPPER CONTACT. MINOR MUDST LAMINAE. POLISHED SLIP SURFACES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	156.22	157.30	1.08	44			MUDSTONE	DK.GY.MAS.BRKN HIGHLY SHEARED & FRACTURED. MUDST COARSENS TO SLTST. QTZ VEIN 1CM WIDE AT 45 DEGREE ORIENTATION.
73	157.30	158.20	0.90	*41			MUDSTONE	SLTY.DK.GY.LAM.BRKN SLTST LAM PLANAR TO MOTTLED. ABUNDANT POLISHED SHEAR SURFACES.
74	158.20	160.00	1.80	*38			SILTSTONE	DK.GY.LAM.BRKN MINOR LAMINATIONS. ABUNDANT QTZ FILLED FRACTURES AT 65 DEGREE. ABUNDANT LISTRIC SHEAR SURFACES. COARSENS SLIGHTLY TO HARDS BASE OF UNIT. BOTTOM 20CM HIGHLY FRACTURED WITH QTZ VEINS UP TO 2CM.
74	160.00	160.23	0.23	43			MUDSTONE	SLTY.DK.GY.VBRKN RUBBLE. QTZ VEINED. .11CM QTZ AT TOP.
75	160.23	160.35	0.12	44			SILTSTONE	DK.GY.VBRKN HIGHLY SHEARED AND BROKEN.
75	160.35	161.32	0.97	47			SILTSTONE	DK.GY.MAS.BRKN MAY BE FAINTLY LAMINATED. ABUNDANT LISTRIC SHEAR SURFACES. DOMINANT FRACTURE SET NEAR VERTICAL. COARSENS SLIGHTLY NEAR BASE.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	161.32	162.03	0.71		52		SANDSTONE	VFG. DK. GY. MAS. BRKN HIGHLY FRACTURED WITH RANDOM QTZ VEIN O RIENTATION. LISTRIC SHEAR SURFACES.
76	162.03	163.35	1.32		57		SANDSTONE	VFG. DK. GY. MAS. BRKN AS ABOVE.
76	163.35	164.07	0.72		63		SANDSTONE	VFG. DK. GY. MAS. BRKN AS ABOVE. FINES TOWARDS BASE TO SLTST.
76	164.07	164.17	0.10	*65			SILTSTONE	CLYY. DK. GY. LAM. SLD HAYV BDG CONTACTS BETWEEN DK GY MUDST A ND LIGHTER SLTST. POLISHED SURFACES. PAR ALLEL TO BDG.
77	164.17	164.60	0.43	*45			SILTSTONE	CLYY. DK. GY. LAM. BRKN PLANAR TO HAYV MUDST LAMINAE. POLISHED SLIP SURFACES. MINOR SMALL SCALE LENTIC ULAR. BDG.
77	164.60	164.93	0.33	38			SILTSTONE	CLYY. DK. GY. LAM. VSHRD RUBBLE. AS ABOVE.
77	164.93	165.59	0.66	*30			SILTSTONE	CLYY. DK. GY. LAM. WRMBU. SLD ABUNDANT VERTICAL WORM BURROWS UP TO 4C M LONG. APPROACHING FOLD AXIS.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	165.59	166.30	0.71	*10			SILTSTONE	CLYY. DK. GY. LAM. SLD BCA'S ARE 10 TO 0 DEGREES INDICATING PA RASITIC FOLD AXIS. BDG IS HAYV AND CONT ACTS GRADATIONAL. MINOR RIPUP CLASTS OF SLTST IN CLYY LAMINAE.
78	166.30	166.65	0.35	*06			SILTSTONE	CLYY. DK. GY. LAM. BRKN AS ABOVE. 1CM QTZ VEIN AT 20 DEGREES OR IENTATION.
78	166.65	167.48	0.83	*10			SILTSTONE	CLYY. DK. GY. LAM. BRKN HAYV TO PLANAR LAMINATIONS HAVE GRADATI ONAL CONTACTS. POLISHED SHEAR PLANES.
78	167.48	168.12	0.64	41			SILTSTONE	CLYY. DK. GY. LAM. WRMBU. BRKN AS ABOVE. ABUNDANT WRMBUR.
79	168.12	168.79	0.67	*68			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN HAYV TO PLANAR SLTY. LAM. CORE TWIST OFF AT BASE OF UNIT.
79	168.79	169.25	0.46	66			SANDSTONE	VFG. DK. GY. MAS. VBRKN RUBBLE.
79	169.25	169.28	0.03	65			ROCK LOSS	
79	169.28	169.48	0.20	65			SANDSTONE	VFG. DK. GY. MAS. VBRKN RUBBLE.

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	169.48	170.00	0.52	63			SANDSTONE	VFG. DK. GY. MAS. BRKN AS ABOVE. TOP 20CM EXTREMELY FRACTURED WITH QTZ INFILL AT ALL ORIENTATIONS.
80	170.00	172.14	2.14	59			SANDSTONE	VFG. DK. GY. MAS. BRKN AS ABOVE. BOTTOM .75 M INTENSELY FRACTURED WITH QTZ INFILL AT ALL ORIENTATIONS.
81	172.14	172.34	0.20	55			SANDSTONE	VFG. DK. GY. MAS. VBRKN AS ABOVE. RUBBLE.
81	172.34	173.29	0.95	53			CONGLOMERATE	DK. GY. MAS. BRKN CHERT PEBBLE CONGL WITH SUBROUNDED GREY WHITE AND BLACK PEBBLES. CLAST SIZE < 0.5CM TO 1.5CM, AVERAGE 1CM. MATRIX SUPPORTED NEAR TOP AND CLAST SUPPORTED AT BASE. SHARP UPPER CONTACT.
81	173.29	173.77	0.48	*50			SILTSTONE	DK. GY. LAM. BRKN ABUNDANT QTZ VEINING AT 45 DEGREES. MINOR FAINT MUDST. LAM PARTICULARLY NEAR TOP. MINOR QTZ VEINING.
82	173.77	174.17	0.40	50			SANDSTONE	SLTY. VFG. DK. GY. MAS. BRKN ABUNDANT QTZ VEINING IN BOTTOM 10CM AT RANDOM ORIENTATIONS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	174.17	174.43	0.26	*50			SANDSTONE	SLTY. VFG. DK. GY. MAS. SLD QTZ VEIN PARALLEL TO BDC. 10CM QTZ AT TOP.
82	174.43	174.60	0.17	61			MUDSTONE	SLTY. DK. GY. MAS. VBRKN ABUNDANT LISTRIC SHEAR SURFACES.
82	174.60	174.68	0.08	*68			SILTSTONE	SSY. DK. GY. MAS. BRKN QTZ CEMENTED.
82	174.68	175.78	1.10	64			MUDSTONE	SLTY. DK. GY. LAM. BRKN FAINT MINOR SLTY LAM. MINOR QTZ FILLED MICRO FRACTURES.
82	175.78	175.80	0.02	61			COAL	C-2. BLK WELL CLEATED.
83	175.80	175.95	0.15	60	05369		MUDSTONE	CARB. DK. GY. VBRKN COALY BANDS WITHIN. 5369. ± 0.15 CM ONLY.
83	175.95	176.61	0.66	58	05370 I	OVT	COAL	C-1. VBRKN.
83	176.61	177.44	0.83	53	05370 I	OVT	COAL	C-1. VBRKN BECOMES SOLID LOWER HALF.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	177.44	178.23	0.79	48	05370	I OVT	COAL	C-1.BRKN NEARLY SOLID.
84	178.23	178.70	0.47	45	05370	I OVT	COAL	C-1.BRKN HIGH ANGLE MUDDY BANDS WITHIN.
84	178.70	178.80	0.10	43	05370	I OVT	COAL	C-2.BRKN C-4 BANDS WITHIN.
84	178.80	179.66	0.86	40	05370	I OVT	COAL LOSS	
84	179.66	179.80	0.14	37	05370	I OVT	ROCK LOSS	
84	179.80	179.82	0.02	36	05371	I OVT	MUDSTONE	CARB.DK.GY.SLD CONTORTED BAND.
84	179.82	179.88	0.06	36	05371	I OVT	COAL	C-3.SLD
84	179.88	180.03	0.15	35	05371	I OVT	COAL LOSS	
84	180.03	180.12	0.09	35	05371	I OVT	COAL	C-1.BRKN
84	180.12	180.16	0.04	34	05371	I OVT	MUDSTONE	SLTY.M.GY.SLD
84	180.16	180.20	0.04	34	05371	I OVT	ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	180.20	180.72	0.52	32	05371	I OVT	COAL LOSS	
84	180.72	180.78	0.06	31	05371	I OVT	COAL	C-2.BRKN
85	180.78	181.11	0.33	29	05371	I OVT	COAL	C-2.VBRKN
85	181.11	181.28	0.17	28	05371	I OVT	COAL	C-2.VBRKN
85	181.28	181.45	0.17	27	05371	I OVT	MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
85	181.45	181.68	0.23	26	05371	I OVT	COAL	C-2.SLD
85	181.68	181.77	0.09	25	05371	I OVT	MUDSTONE	CARB.DK.GY.BRKN
85	181.77	181.84	0.07	24	05371	I OVT	ROCK LOSS	
85	181.84	182.50	0.66	22	05371	I OVT	COAL LOSS	
85	182.50	183.17	0.67	18	05372	I OVT	COAL	C-2.VBRKN
85	183.17	184.08	0.91	13	05372	I OVT	COAL	C-2.VBRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	184.08	184.17	0.09	10	05372	I OVT	COAL	C-3. SHRD
85	184.17	184.63	0.46	08	05373		MUDSTONE	CARB. DK. GY. BRKN CARB. NEAR TOP, SILTY TOWARDS BASE. UPPE R 25CM SAMPLED.
87	184.63	185.53	0.90	*04			MUDSTONE	SLTY. DK. GY. LAM. BRKN V. FAINT SLTY LAM, OTHERWISE FEATURELES S.
87	185.53	186.29	0.76	*15			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE. MINOR BRECCIATION FOR 5CM, 25 CM FROM TOPOF UNIT.
88	186.29	187.07	0.78	*20			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE.
88	187.07	187.55	0.48	*20			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE. BOTTOM 10CM IS RUBBLE.
88	187.55	188.06	0.51	*20			MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE. HELMINTHOPSIS PRESENT.
88	188.06	188.17	0.11	*21			MUDSTONE	SLTY. DK. GY. LAM. YBRKN AS ABOVE. HELMINTHOPSIS PRESENT.
88	188.17	188.87	0.70	*20			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN SSD INDICATES BEDS OVERTURNED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	188.87	190.93	2.06	*05			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE. HELMINTHOPSIS PRESENT. SSD IN DICATES OVERTURNED BEDS.
91	190.93	191.16	0.23	11			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE. HELMINTHOPSIS PRESENT.
91	191.16	192.76	1.60	*15			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE.
92	192.76	193.13	0.37	*18			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE. BOTTOM 10CM IS HIGHLY BRECCIA TED RUBBLE.
92	193.13	193.23	0.10	23			MUDSTONE	SLTY. LT. GY. LAM. BRKN HIGHLY BRECCIATED. TUFFACEOUS.
92	193.23	194.19	0.96	*34			MUDSTONE	SLTY. LT. GY. LAM. XBDG. BRKN AS ABOVE. HIGHLY BRECCIATED.
92	194.19	194.73	0.54	33			MUDSTONE	SLTY. LT. GY. LAM. XBDG. YBRKN AS ABOVE. HIGHLY FRACTURED.
93	194.73	196.88	2.15	*30			SILTSTONE	CLYY. LT. GY. LAM. XBDG. BRKN AS ABOVE. COARSENS SLIGHTLY TO BASE. X- LAM INDICATES BEDS OVERTURNED.
94	196.88	198.05	1.17	*25			SILTSTONE	CLYY. LT. GY. LAM. XBDG. YBRKN AS ABOVE. T.D. = 201.77 M. END OF HOLE.

\* DENOTES MEASURED BCA  
NEWPAGE























# Gulf Canada Corporation Coal Division

# 723

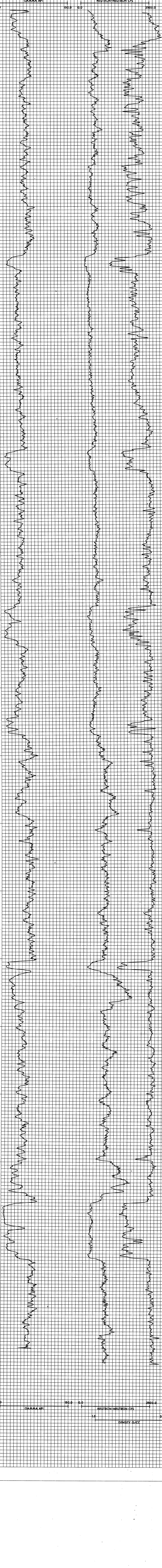
## Geophysical Log

**Datasource:** KPNLRDDH86022      **Province:** BC      **Northing:** 6343010.00      **Lat:** 571355  
**Log Date:** 86-09-16      **Zone:** 9      **Eastng:** 506733.00      **Long:** 1285319  
**Company:** CENTURY      **Measuring Point:**      **Elevation:** 1634.9

**Geologist:** MACLEOD  
**Scale:** 1 to 100.0  
**Depth Range:** 0.0 to 205.0  
**True Thickness:** NO

**Comments:**  
 1. LOGGED THROUGH THE RODS  
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9030A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



**KPNLRDDH86023**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86023

DATE - 02/13/87

- HISTORY -

START DATE - 15/09/86

END DATE - 16/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1396.65

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6345300.00

EASTING - 503627.25

LATITUDE - 571510

LONGITUDE - 1285624

- ORIENTATION -

LENGTH - 108.81

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 10.67

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* O INDICATES NO VALUE

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	10.67	10.67	25			OVERBURDEN	CASING
1	10.67	11.63	0.96	*25			MUDSTONE	SLTY.M-DK.GY.MAS.VBRKN ABUNDANT PYRITE.
1	11.63	11.77	0.14	25			ROCK LOSS	
1	11.77	12.53	0.76	25			MUDSTONE	SLTY.M-DK.GY.MAS.SHRD AS ABOVE. BEDDING FAINTLY APPEARS TO BE AT APPROX 25 DEGREES. LISTRIC SURFACES
2	12.53	13.77	1.24	25			MUDSTONE	SLTY.M-DK.GY.MAS.SHRD ABUNDANT PYRITE. LISTRIC SURFACES.
2	13.77	14.43	0.66	25			MUDSTONE	SLTY.M-DK.GY.MAS.BRKN PYRITE BLEBS. MINOR LISTRIC SURFACES.
2	14.43	14.49	0.06	25			ROCK LOSS	
3	14.49	15.94	1.45	25			MUDSTONE	SLTY.M-DK.GY.MAS.VBRKN MINOR INDISTINCT SLTY BANDS, A FEW LIST RIC SURFACES. SPARSE QTZ VEINING.
4	15.94	16.47	0.53	25			MUDSTONE	SLTY.M-DK.GY.MAS.SLD PYRITE BLEBS AT TOP OF INTERVAL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	16.47	17.80	1.33	24			SILTSTONE	CLTY.M-DK.GY.MAS.SLD FRACTURE AT 15 DEGREES TO CORE ANGLE. UNEXPLAINED 1-2CM PODS OF DIFFERING SEDIMENT WITH SLIGHTLY COARSER SEDIMENT AT THE CORE (INFILLED BIVALVE OR COLLOIDAL MUDBALL AS IN DDH86026??).
5	17.80	19.34	1.54	24			MUDSTONE	SLTY.M-DK.GY.MAS.SLD CARBONATE REPLACED BIVALVE PIECES (<2CM). SOME PYRITE. PODS OF COARSER GRAINED SEDS (AS ABOVE).
5	19.34	19.65	0.31	24			MUDSTONE	M-DK.GY.MAS.SLD MINOR PYRITE.
6	19.65	21.40	1.75	24			MUDSTONE	M-DK.GY.MAS.BRKN APPEARS TO BE BREAKING APART INTO NODULES (NODULAR WEATHERING).
6	21.40	21.45	0.05	24			ROCK LOSS	
7	21.45	22.00	0.55	24			MUDSTONE	M-DK.GY.MAS.VBRKN MINOR LISTRIC SURFACES AND SILTIER TOWARD BASE.
7	22.00	22.11	0.11	24			MUDSTONE	M-DK.GY.MAS.BRKN LARGE LISTRIC SURFACE SUB PARALLEL TO CORE.

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	22.11	22.72	0.61	24			SANDSTONE	SLTY. FG. M. GY. BRKN SWIRLED MUDST. QTZ WITH ANGULAR SS FRAGMENTS MAKES UP THE UPPER CONTACT WITH THE OVERLYING MUDST. (APPROX 1CM THICK). PYRITE AT BASE.
7	22.72	23.20	0.48	*24			MUDSTONE	SLTY. M-DK. GY. MAS. BRKN. MINOR PYRITE.
8	23.20	23.85	0.65	23			MUDSTONE	SLTY. DK. GY. SLD PLANT FRAGMENTS. CARB REPLACED BIVALVES
8	23.85	24.28	0.43	22	05382		MUDSTONE	CARB. DK. GY. SHRD LITRISTIC SURFACES ABUNDANT (MIXED WITH SHEARED COAL). LOWER 14CM SAMPLED.
8	24.28	24.33	0.05	22	05382		ROCK LOSS	
8	24.33	24.44	0.11	22	05382		MUDSTONE	CARB. DK. GY. BRKN COALY & CONTAINS PYRITE.
8	24.44	24.74	0.30	22	05383 A		COAL	C-4. VBRKN VERY BROKEN, SHEARED & POWDERED THROUGH OUT. DEFINING BANDS OF VARIATION IN GRADE IMPOSSIBLE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	24.74	24.93	0.19	21	05383 A		COAL	C-3. SLD SHEARED.
9	24.93	25.35	0.42	21	05383 A		COAL	C-2. BRKN
9	25.35	25.87	0.52	20	05383 A		COAL	C-4. SHRD VERY BROKEN.
9	25.87	26.08	0.21	20	05383 A		MUDSTONE	CARB. DK. GY. BRKN COALY.
9	26.08	26.16	0.08	19	05383 A		COAL	C-3. VBRKN SHEARED.
9	26.16	26.34	0.18	19	05383 A		MUDSTONE	CARB. DK. GY. VBRKN HIGHLY SHEARED AND LITRISTIC. QTZ & PYRITE THROUGHOUT.
9	26.34	26.42	0.08	19	05384 A		COAL	C-2. PWRD
10	26.42	26.63	0.21	19	05384 A		COAL	C-3. VBRKN

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	26.63	27.08	0.45	18 05384	A	COAL	C-2.VBRKN
10	27.08	27.22	0.14	18 05384	A	COAL	C-5.PWRD MIXTURE OF SHEARED MUD & COAL.
10	27.22	27.74	0.52	17 05384	A	COAL	C-2.VBRKN PARTIALLY POWDERED.
10	27.74	27.80	0.06	17 05384	A	COAL	C-3.SLD BONEY COAL & QTZ WITHIN.
10	27.80	27.87	0.07	17 05384	A	COAL	C-3.SLD BONEY COAL & QTZ WITHIN.
10	27.87	28.30	0.43	17 05385		MUDSTONE	CARB.DK.GY.BRKN COALY STRINGERS & BANDS THROUGHOUT.
11	28.30	29.96	1.66	*15		MUDSTONE	CARB.DK.GY.BRKN ABUNDANT COALY STRINGERS SOME DISTURBED BDG. MINOR LISTRIC SURFACES.
11	29.96	30.35	0.39	12		ROCK LOSS	
12	30.35	30.95	0.60	*10		MUDSTONE	CARB.DK.GY.BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	30.95	32.06	1.11	11		MUDSTONE	CARB.DK.GY.BRKN AS ABOVE. MINOR PPT OF CARBONATE BETWEE N AND THROUGH COAL STRINGERS.
12	32.06	32.49	0.43	11		ROCK LOSS	
13	32.49	34.11	1.62	12		MUDSTONE	CARB.DK.GY.VBRKN 1-4CM BANDS OF COAL (C-2) RUNNING SUBPA RALLEL TO CORE DUE TO LOW BCA'S. LISTRI C SURFACES.
13	34.11	34.33	0.22	12		ROCK LOSS	
14	34.33	36.06	1.73	13		MUDSTONE	CARB.DK.GY.VBRKN AS ABOVE. SOME IRREGULAR CARBONATE VEIN ING WITH MUDST INCLUSIONS.
14	36.06	36.36	0.30	13		ROCK LOSS	
15	36.36	37.52	1.16	14		MUDSTONE	CARB.DK.GY.BRKN MINOR COAL STRINGERS, CARBONATIZED PLAN T FRAGMENTS.
15	37.52	38.02	0.50	14		MUDSTONE	CARB.DK.GY.BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	38.02	39.19	1.17	*15			MUDSTONE	CARB. DK. GY. BRKN AS ABOVE. CARBONATE PPT ALONG STRINGERS
16	39.19	39.81	0.62	16			MUDSTONE	SLTY. DK. GY. BRKN WELL CEMENTED, HARD. SMELL OF SULFER WH EN STRUCK. ABUNDANT CARBONATE AS A CEMENTING AGENT.
16	39.81	40.37	0.56	17			ROCK LOSS	
17	40.37	40.82	0.45	18	05386		MUDSTONE	CARB. DK. GY. BRKN PARASITIC FOLD WITHIN LOW ANGLE BCA INT O COAL. LOWER 25CM SAMPLED.
17	40.82	40.86	0.04	18	05387 A.		COAL LOSS	
17	40.86	41.96	1.10	19	05387 A.		COAL	C-3-VBRKN SHEARED & POWDERED THROUGHOUT. HARD TO TELL VARIATIONS IN GRADE.
17	41.96	42.24	0.28	20	05388		MUDSTONE	CARB. DK. GY. SLD MINOR C-2 BANDS & STRINGERS AT TOP OF UNIT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	42.24	44.17	1.93	*21			MUDSTONE	SLTY. DK. GY. SLD ABUNDANT WITHIN COAL STRINGERS. THIN CARBONATE STRINGERS. MINOR LISTRIC SURFACES
19	44.17	46.01	1.84	*43			MUDSTONE	SLTY. M-DK. GY. BRKN PLANT FRAGMENTS, NILSONIA CANADENSIS. MINOR CARBONATE AND ONE 10CM ZONE OF QTZ VEINING. LISTRIC SURFACES.
19	46.01	46.17	0.16	36			ROCK LOSS	
20	46.17	46.42	0.25	35			MUDSTONE	SLTY. M-DK. GY. BRKN MINOR CARBONATE VEINING.
20	46.42	46.62	0.20	33			ROCK LOSS	
20	46.62	46.84	0.22	32			BRECCIA	DK. GY. BRKN ANGULAR MUDST FRAGMENTS ENCASED IN QTZ.
20	46.84	47.06	0.22	30			ROCK LOSS	
20	47.06	47.49	0.43	28			MUDSTONE	SLTY. M-DK. GY. SHRD LISTRIC SURFACES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	47.49	48.33	0.84	24			MUDSTONE	CARB. DK. GY. SHRD LISTRIC SURFACES. VERY MINOR QTZ VEINING.
21	48.33	50.03	1.70	*15			MUDSTONE	CARB. DK. GY. BRKN COALY STRINGERS AND CARBONATE VEINING. POSSIBLE PARASITIC FOLD. PLANT FRAGMENT S (NILSSONIA CANADENSIS, CZEKANOWSKIA O F RIGIDA(?) AND NILSSONIA SP).
22	50.03	50.54	0.51	20			MUDSTONE	CARB. DK. GY. SLD COAL STRINGERS AND MINOR COAL FRAGMENTS
22	50.54	52.02	1.48	24			MUDSTONE	CARB. DK. GY. SLD MINOR COAL STRINGERS. LISTRIC SURFACES AT 45 AND 62 DEGREES. MINOR CARBONATE VEINING.
23	52.02	53.36	1.34	*30			MUDSTONE	CARB. DK. GY. SLD COAL STRINGERS. CARBONATE VEINING. MINOR SLY. BANDS. CARBONATIZED PLANT FRAGMENTS.
23	53.36	53.68	0.32	31			MUDSTONE	CARB. DK. GY. SLD ABUNDANT COAL STRINGERS. MINOR CARBONATE VEINING.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	53.68	55.13	1.45	32			MUDSTONE	CARB. DK. GY. BRKN THIN COALY STRINGERS AND COAL BANDS THROUGHOUT.
24	55.13	55.21	0.08	33	05389		COAL	C-3. SLD
24	55.21	55.27	0.06	33	05389		MUDSTONE	CARB. DK. GY. SLD CONTORTED C-2 THROUGHOUT.
24	55.27	55.60	0.33	33	05389		MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
25	55.60	56.16	0.56	33	05390 A		COAL	C-3. YBRKN ABUNDANT MUDST & C-2 BANDS WITHIN. BEDDING COMMONLY RUNNING ALONG CORE.
25	56.16	57.09	0.93	34	05390 A		COAL	C-3. YBRKN ABUNDANT MUDST & C-2 BANDS WITHIN. BEDDING COMMONLY RUNNING ALONG CORE.
25	57.09	57.28	0.19	35	05390 A		COAL LOSS	
25	57.28	57.40	0.12	35	05391 A		MUDSTONE	CLYY. H. 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: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	57.40	57.80	0.40	35 05391	A	MUDSTONE	CLYY.M.GY.BRKN
26	57.80	57.88	0.08	35 05391	A	COAL LOSS	
26	57.88	58.11	0.23	35 05391	A	COAL	C-3.SLD ABUNDANT BANDS OF C-2 & BONE COAL. LOW BCA'S.
26	58.11	58.27	0.16	36 05391	A	MUDSTONE	SLTY.M.GY.SLD
26	58.27	58.34	0.07	36 05391	A	COAL LOSS	
26	58.34	58.49	0.15	36 05391	A	COAL	C-3.SLD BANDED.
26	58.49	58.73	0.24	*36 05391	A	MUDSTONE	CARB.M-DK.GY.BRKN
26	58.73	58.76	0.03	34 05391	A	COAL	C-6.SLD BONE COAL.
26	58.76	59.19	0.43	31 05391	A	COAL	C-2.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: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	59.19	59.33	0.14	27 05391	A	COAL	C-2.VBRKN
27	59.33	59.70	0.37	23 05391	A	COAL	C-3.VBRKN
27	59.70	59.83	0.13	*20 05391	A	COAL	C-5.SLD BANDED BCA'S VERY LOW AND VARIABLE..
27	59.83	60.11	0.28	20 05391	A	MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
27	60.11	60.20	0.09	20 05392	A	ROCK LOSS	
27	60.20	60.86	0.66	19 05392	A	COAL	C-2.VBRKN MINOR BONEY COAL BANDS WITHIN.
28	60.86	61.30	0.44	18 05392	A	COAL	C-2.BRKN
28	61.30	61.36	0.06	18 05392	A	COAL	C-4.SLD
28	61.36	61.49	0.13	18 05393		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT.
28	61.49	62.85	1.36	17 05393		MUDSTONE	CARB.DK.GY.SLD COALY STRINGERS THROUGHOUT, UPPER 12CM SAMPLED.

\* DENOTES MEASURED BCA

1004 2307

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	62.85	64.52	1.67	*15			MUDSTONE	CARB. DK. GY. LAM. SLD INTERLAMINATED SLTST. ABUNDANT DISSEMINATED PYRITE. MINOR PYRITE BLEBS. COAL STRINGERS SILTY TOWARD BASE.
29	64.52	64.87	0.35	20			MUDSTONE	SLTY. DK. GY. SLD VERY MINOR COAL STRINGERS. VERY SILTY AT BASE.
30	64.87	65.87	1.00	23			MUDSTONE	SLTY. DK. GY. SLD PROGRESSIVELY SILTIER.
30	65.87	66.69	0.82	*28			SILTSTONE	M-DK. GY. LAM. SLD INTERLAMINATED MUDST.
31	66.69	66.89	0.20	29			MUDSTONE	SLTY. M-DK. GY. SLD SHARP UPPER CONTACTS.
31	66.89	67.39	0.50	29			SANDSTONE	FG. LT-M. GY. MAS. SLD SPARSE LAMINATED MUDST.
31	67.39	68.05	0.66	*30			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD MINOR INDISTINCT MUDST LAMINAE.
31	68.05	68.51	0.46	32			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD
32	68.51	68.82	0.31	33			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD INTERLAMINATED MUDST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	68.82	68.97	0.15	*34			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD
32	68.97	69.86	0.89	34			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD INTERLAMINATED MUDST. TOPS UP (LOAD CASES).
32	69.86	70.51	0.65	33			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD 2 SLTST LAMINAE.
33	70.51	70.98	0.47	32			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD 1 CIM CARBONATE VEIN.
35	70.98	72.43	1.45	32			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD MINOR INDISTINCT MUDST LAMINAE (10CM ZONE).
34	72.43	73.76	1.33	30			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD EXCELLENT ANKERITE XL'S ALONG A FRACTURE AT 44 DEGREES TO CORE LENGTH.
34	73.76	74.16	0.40	29			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD CONTAINS IRREGULAR SILTY MUDST RIPUP CLASTS (<3CM).
34	74.16	74.36	0.20	29			SANDSTONE	MG. VPR. LT-M. GY. MAS. 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: DDM86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	74.36	76.48	2.12	28		SANDSTONE	MG. PR. LT-M. GY. MAS. SLD VERY HARD, WELL CEMENTED. VERY SPARSE M UDST LAMINAE TOPS UP (LOAD CAST).
36	76.48	76.84	0.36	27		SANDSTONE	MG. PR. LY-M. GY. MAS. SLD <.3CM CARBONATE VEINING.
36	76.84	78.50	1.66	26		SANDSTONE	MG. MOD. LY-M. GY. MAS. SLD FOUR CARBONATE VEINS (<.3CM). ONE PSEUD O. LISTRIC SURFACE. VERY HARD.
37	78.50	78.67	0.17	25		SANDSTONE	MG. MOD. LY-M. GY. MAS. SLD SHARP UPPER CONTACT THAT IS LISTRIC.
37	78.67	79.36	0.69	*25		MUDSTONE	SLTY. M. GY. LAM. SLD INTERLAMINATED SLTST.
37	79.36	79.87	0.51	*24		SILTSTONE	SSY. M. GY. LAM. SSD. SLD MUDST. LAMINATIONS.
37	79.87	80.52	0.65	25		SANDSTONE	FG. M. GY. SSD. SLD MINOR MUDST. LAMINATIONS. TOPS UP (LOAD CASTS).
38	80.52	81.80	1.28	25		SANDSTONE	YFG. M. GY. SSD. BRKN AS ABOVE. POSSIBLE MINOR 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: DDM86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	81.80	82.00	0.20	*26		MUDSTONE	SLTY. M-DK. GY. LAM. SLD SILTY LAMINATIONS. VERY MINUTE CARBONAT E PPT.
38	82.00	82.18	0.18	26		SANDSTONE	MG. PR. LY-M. GY. MAS. SLD FRACTURE AT 52 DEGREES.
39	82.18	82.79	0.61	27		SANDSTONE	MG. PR. LY-M. GY. MAS. SLD
39	82.79	83.07	0.28	27		SANDSTONE	MG. PR. LY-M. GY. MAS. BRKN NUMEROUS FRACTURE THAT ARE ONLY PARTIAL LY FILLED WITH CARBONATE. (40CM ZONE) A PPEARS YUGGY.
40	83.07	83.67	0.60	28		SANDSTONE	MG. PR. LY-M. GY. MAS <.2CM CARBONATE VEIN AT 50 DEGREES TO C ORE.
40	83.67	84.97	1.30	29		SANDSTONE	FG. VPR. LY-M. GY. MAS. BRKN MINOR IRREGULAR BLOTCHES OF MUD MIXED W ITH SAND. BIOTRB? NUMEROUS GOUGE SURFAC ES. (WHITE POWDER).
41	84.97	86.18	1.21	*30		SANDSTONE	FG. VPR. LY-M. GY. MAS. BRKN VERY MINOR MUDST BANDS. MINOR CARBONATE VEINING AND GOUGE SURFACES.

\* DENOTES MEASURED BCA

FORM  
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	86.18	86.38	0.20	27		SILTSTONE	SSY.M.GY.MAS.BIOTR.SLD IRREGULAR MUDST WISPS. POSSIBLE WORM FE CAL PELLETS.
41	86.38	86.87	0.49	*26		SILTSTONE	SSY.M.GY.LAM.SLD MINOR DISCONTINUOUS CARBONATE VEINING A T BASE. INDISTINCT MUDST LAMINAE.
42	86.87	86.97	0.10	28		SILTSTONE	SSY.M.GY.BRKN IRREGULAR, MINOR CARBONATE VEINING. 2 L ISTRIC SURFACES.
42	86.97	87.64	0.67	31		SANDSTONE	FG.PR.LT-M.GY.MAS.BRKN ANKERITE VEINING SUB PARALLEL TO CORE. MINOR GOUGED SURFACES (POWDERED WHITE M ATERIAL). PYRITE.
42	87.64	87.84	0.20	*34		SILTSTONE	SSY.M.GY.BRKN DISTURBED BDG. LISTRIC SURFACES.
42	87.84	88.40	0.56	*36		SANDSTONE	SLTY.FG.PR.LT-M.GY.MAS.SLD TRACES OF MUDST LAMINAE.
42	88.40	88.60	0.20	35		SILTSTONE	SSY.M.GY.BIOTR.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	88.60	90.58	1.98	*34		SANDSTONE	FG.PR.M.GY.MAS.BIOTR.SLD HELMINTHOPSIS BURROWS? SILTY TOWARD BAS E.
44	90.58	90.93	0.35	33		SILTSTONE	M.GY.MAS.SLD MINOR INDISTINCT MUDST LAMINAE.
44	90.93	92.58	1.65	32		SANDSTONE	FG.PR.M.GY.MAS.BIOTR.SLD HELMINTHOPSIS BURROWS MINOR MUDST TRACE S.
45	92.58	93.19	0.61	31		SANDSTONE	VFG.PR.M.GY.MAS.SLD SPARSE INDISTINCT MUDST TRACES. HELMINT HOPSIS.
45	93.19	93.40	0.21	*31		SILTSTONE	SSY.M-DK.GY.BIOTR.SLD INTERMIXED MUD, VERY DISTURBED BDG.
45	93.40	93.51	0.11	32		SANDSTONE	FG.M.GY.MAS.SLD TRACES OF MUDST.
45	93.51	94.63	1.12	*34		SILTSTONE	SSY.M.GY.MAS.SLD AS ABOVE. BLACK GRANULES WHICH MAY BE W ORM FECAL PELLETS (POSSIBLY DISTORTED H ELMINTHOPSIS BURROWS). ONE ANKERITE FIL LED FRACTURE AT 63 DEGREES TO CORE.
46	94.63	96.03	1.40	*30		SANDSTONE	FG.M.GY.MAS.SLD ONE MUDST BAND (<2CM) THAT IS BIOTRB.

\* DENOTES MEASURED BCA



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: BDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	96.03	96.11	0.08	30		SILTSTONE	DK. GY. VTHNB. SLD INTERBEDDED MUDST. FOOT WALL OF NORMAL FAULT WITH APPROX 20-30 CM DISPLACEMENT.
46	96.11	96.24	0.13	29		SANDSTONE	FG. H. GY. MAS. SLD SAME LITHOLOGY AS THE START OF THIS BOX. HANGING WALL OF FAULT. FAULT AT 25 DEGREES TO CORE LENGTH.
46	96.24	96.32	0.08	29		SILTSTONE	DK. GY. VTHNB. SLD INTERBEDDED MUDST.
46	96.32	96.53	0.21	29		SILTSTONE	DK. GY. VTHNB. SLD AS ABOVE.
47	96.53	98.61	2.08	29		SILTSTONE	M-DK. GY. MAS. BIOTR. SLD TRACES OF MUDST LAMINAE. WORM FECAL PELLETS?
48	98.61	98.93	0.32	28		SILTSTONE	M-DK. GY. MAS. BIOTR. SLD HELMINTHOPSIS BURROWS. SEDIMENT DISTURBED.
48	98.93	99.26	0.33	28		SILTSTONE	M-DK. GY. MAS. BIOTR. VSHRD ABUNDANT WHITE POWDER GOUGE MATERIAL. M. INGR ANKERITE VEINING.
48	99.26	99.47	0.21	27		SILTSTONE	M-DK. GY. MAS. BIOTR. VSHRD 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: BDH86023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	99.47	100.47	1.00	27		MUDSTONE	SLTY. M-DK. GY. MAS. BIOTR. SLD MINOR DEFORMED SILTY BANDS. HELMINTHOPSIS IS AND LARGER (3-4CM LONG, .5-1CM WIDE) BURROWS (ANNELID?). PYRITE BLESS.
49	100.47	102.24	1.77	*26		MUDSTONE	SLTY. M-DK. GY. MAS. BIOTR. SLD AS ABOVE.
49	102.24	102.52	0.28	26		MUDSTONE	SLTY. M-DK. GY. MAS. BIOTR. SLD AS ABOVE.
50	102.52	104.62	2.10	26		MUDSTONE	SLTY. DK. GY. MAS. BIOTR. SLD AS ABOVE. SMALL PLANT FRAGMENTS TOWARD BASE.
51	104.62	105.22	0.60	26		MUDSTONE	SLTY. DK. GY. MAS. SLD AS ABOVE. T.D. = 108.81 M. END OF HOLE.

\* DENOTES MEASURED BCA  
NEWPAGE









# Gulf Canada Corporation Coal Division

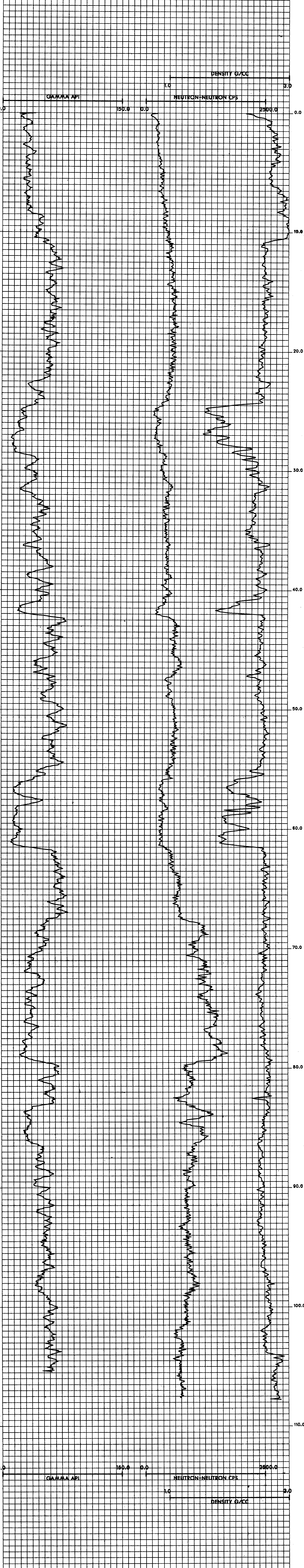
# 723

Geophysical Log

Datasource: <b>KPNLRDDH86023</b> Log Date: 86-09-15 Company: CENTURY Geologist: SAVOIE	Province: BC    Northing: 6345300.00    Lat: 571510 Zone: 9    Easting: 503627.00    Long: 1285624 Measuring Point:    Elevation: 1396.6
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Scale: 1 to 100.0 Depth Range: 0.0 to 113.0 True Thickness: NO	Comments: 1. LOGGED THROUGH THE RODS 2.
--	---

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9030A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



**KPNLRDDH86024**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH86024

DATE - 02/13/87

- HISTORY -

START DATE - 15/09/86

END DATE - 17/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - BARKER

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1438.85

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6344707.00

EASTING - 503600.19

LATITUDE - 571450

LONGITUDE - 1285625

- ORIENTATION -

LENGTH - 121.91

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

0.00

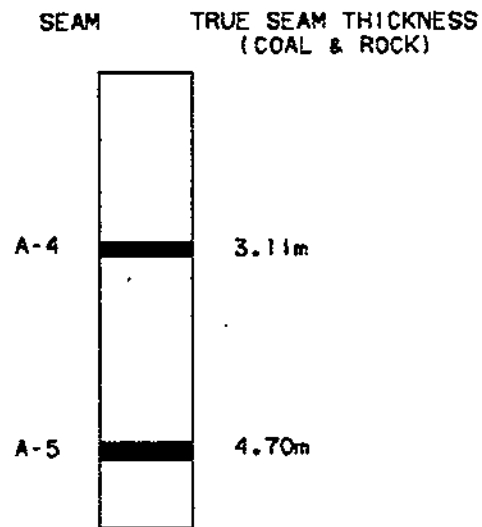
LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====





**NOTE:**

SCHEMATIC PROFILE.  
 NO THICKNESSES SHOWN  
 FOR SEAMS CONTAINING  
 LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**  
**MOUNT KLAPPAN ANTHRACITE PROJECT**  
 1986 DIAMOND DRILL HOLES  
 DDH86024

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	50			OVERBURDEN	CASING
1	3.05	3.53	0.48	50			ROCK LOSS	
1	3.53	5.18	1.65	*50			MUDSTONE	SLTY.DK.GY.LAM.BRKN VERY UNIFORM VERY FINE SILTY LAMINAE TH ROUGHOUT.
1	5.18	5.37	0.19	47			MUDSTONE	SLTY.DK.GY.MAS.SLD AS ABOVE, BUT NO SILTY LAMINAE IN THIS SMALL PIECE.
2	5.37	7.39	2.02	*43			SILTSTONE	SSY.VPR.DK.GY.LAM.SSD.BRKN LAYERS BECOME COARSER DOWN HOLE-SILTY M UD LAYERS AT TOP GRADING TO BANDS FG SS AND MUD AT BASE. TOPS UP. XBDG. SSD OC C BIOTRB OR SLUMPING.
3	7.39	7.75	0.36	45			SILTSTONE	DK.GY.MAS.BIOTR.VBRKN PREDOMINANTLY MASSIVE. BIOTURBATED SAND /MUD BAND WITH SOME SSD AT TOP.
3	7.75	7.92	0.17	45			ROCK LOSS	
3	7.92	9.03	1.11	46			SILTSTONE	DK.GY.MAS.BRKN PREDOMINANTLY MASSIVE UNIFORM DARK GY S LTST. ROUND BLACK SPECKS - HELMINTHOSI S(?) THROUGHOUT.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	9.03	10.19	1.16	48			SILTSTONE	VPR.DK.GY.VTHNB.WRMBU.BRKN V. FAINT BEDDING. RARE VERT WRMBURS BHM IN DIA NEAR TOP. HELMINTHOSIS THROUGH OUT. SSD SHOWS TOPS UP.
4	10.19	10.89	0.70	49			SILTSTONE	SSY.VPR.DK.GY.LAM.SSD.BRKN INTERBEDDED V. FINE MUD LAMINAE AND MID E SAND BANDS. SSD AND RARE XBDG. TOPS U P.
5	10.89	11.19	0.30	*50			SILTSTONE	VPR.M.GY.LAM.BIOTR.SLD BIOTURBATED. HELMINTHOSIS THROUGHOUT. MINOR VERT.WRMBURS. TOPS UP.
5	11.19	12.60	1.41	*35			SANDSTONE	FG.VPR.M.GY.LAM.WRMBU.BRKN NUMEROUS BLACK MUD LAMINAE NEAR BASE. S SD AND VERT WRMBURS SHOW TOPS UP. NUMER OUS JOINT IN SOLID CORE PIECES. SILTYIER DOWNWARD.
6	12.60	14.21	1.61	*50			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.VBRKN BEDDING IS FAINT WITH MUCH BIOTURBATION . TALC ON FRAC SURFACES. FINER GRAINED WITH MORE UNIFORM BEDDING AT BASE.
6	14.21	14.80	0.59	50			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	14.80	14.86	0.06	49			SILTSTONE	VPR.M.GY.LAM.BRKN FINE SANDY LAMINAE.
7	14.86	16.60	1.74	49			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.BIOTR.BRKN FINE SILTY LAMINAE THROUGHOUT. MUCH BIO GENIC ACTIVITY (BURROWS & MOTTLING) THR OUGHOUT. SSD. TOPS UP.
8	16.60	17.17	0.57	48			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.BRKN FINE SILTY LAMINAE THROUGHOUT, BUT MORE UNIFORM WITH MUCH LESS BIOTURBATION. O CC HDRIZ WRMBURS. MORE SILT OVERALL THA N ABOVE.
8	17.17	17.26	0.09	48			ROCK LOSS	
8	17.26	18.53	1.27	*48			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.BRKN LITH AS ABOVE.
9	18.53	20.09	1.56	*35			SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.VBRKN LITH AS ABOVE. OCC ROUNDED MUDST RIPUP CLASTS 1-15MM IN DIA. COALY PLANT WASH THROUGHOUT.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	20.09	20.31	0.22	37			ROCK LOSS	
9	20.31	20.51	0.20	38			SILTSTONE	DK.GY.LAM.VBRKN LITH AS ABOVE BUT NO SAND LAYERS IN THI S PIECE.
10	20.51	22.19	1.68	40			SILTSTONE	SSY.VPR.M.GY.VTHNB.SSD.VBRKN INTERBEDDED FG SS AND DARK SLTST. SSD S HOWS DEWATERING OF FG-MG SS BY OVERLYN G FINE MUDST. TOPS UP(?) ONE COAL LENS 3MM X 30MM.
10	22.19	22.53	0.34	42			ROCK LOSS	
11	22.53	22.81	0.28	43			SILTSTONE	DK.GY.MAS.SLD CONTINUATION OF SLTST FROM ABOVE BUT WI TH NO SAND LAYERS.
11	22.81	23.01	0.20	43			SANDSTONE	FG.VPR.LT.GY.MAS.BRKN F-MG SS WITH NUMEROUS ROUNDED MUDST & S LTST RIPUP CLASTS 3-30MM IN DIA. ALMOST CONGLOMERATIC.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	23.01	24.27	1.26	*45		SANDSTONE	MG. VPR. LT. GY. VTHNB. BRKN F-MG SS. FAINT BEDDING VISIBLE. TWO SLT ST RIPUP CLASTS. MODERATE QTZ VEINING 5 -10MM WIDE. BCA'S = 23-48 DEGREES.
12	24.27	24.75	0.48	49		SANDSTONE	FG. VPR. LT. GY. VTHNB. BRKN LITH. AS ABOVE. MG.
12	24.75	25.17	0.42	50		SANDSTONE	PBLY. MG. VPR. M. GY. MAS. VBRKN NUMEROUS CHERT, MUDST AND COAL RIPUP CL ASTS THROUGHOUT. MUCH QTZ VEINING.
12	25.17	26.09	0.92	53		BRECCIA	MH. MAS. BRKN EXTREME QTZ VEINING. BRECCIATED PBLY SS PIECES 10CM ACROSS. NUMEROUS VUGS IN QTZ.
13	26.09	26.24	0.15	55		BRECCIA	MH. SLD QTZ BRECCIA WITH PBLY. SS. PIECES AS ABOV E. VUGS IN QTZ.
13	26.24	26.74	0.50	57		CONGLOMERATE	VPR. M. GY. MAS. SLD PREDOMINANTLY MATRIX SUPPORTED. SUBROUN DED POLYMIC TIC. CLASTS 2-20 MM IN DIA. 15MM WIDE. QTZ VEIN.
13	26.74	27.96	1.22	*60		CONGLOMERATE	SSY. VPR. M. GY. THNB. BRKN AS ABOVE CONGLOM WITH SAND BANDS. 5-12CM WIDE. 20CM QTZ VEIN AT TOP.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	27.96	28.24	0.28	60		CONGLOMERATE	VPR. M. GY. MAS. SLD PREDOMINANTLY CLAST SUPPORTED. POLYMIC TIC. MINOR QTZ VEINING.
14	28.24	30.04	1.80	60		CONGLOMERATE	VPR. M. GY. MAS. SLD AS ABOVE.
15	30.04	31.16	1.12	60		CONGLOMERATE	VPR. M. GY. VTHNB. SLD AS ABOVE. SANDY MATRIX CONTENT INCREASE S. DOWNWARD.
15	31.16	31.97	0.81	*60		SANDSTONE	PBLY. MG. VPR. M. GY. VTHNB. SLD INTERBEDDED PBLY. SAND LAYERS AND CONGLO MERATE BANDS.
16	31.97	32.31	0.34	60		SANDSTONE	PBLY. MG. VPR. M. GY. VTHNB. SLD INTERBEDDED PBLY SS AND CONGLOM LAYERS.
16	32.31	33.89	1.58	*60		CONGLOMERATE	SSY. VPR. M. GY. VTHNB. BRKN AS ABOVE BUT CONGLOM LAYERS ARE MORE PR EDOMINANT. MATRIX SUPPORTED. SAND LAYER S. THROUGHOUT.
17	33.89	35.00	1.11	60		CONGLOMERATE	VPR. M. GY. MAS. BRKN AS ABOVE BUT NO SAND LAYERS. MATRIX SUPP ORTED.
17	35.00	35.74	0.74	60		CONGLOMERATE	VPR. M. GY. MAS. SLD AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	35.74	37.50	1.76	*60			CONGLOMERATE	SSY. YPR. M. GY. VTHNB. SLD INTERBEDDED CONGLOM BANDS AND PBLY SS AND OCC COALY RIPUP CLASTS IN SAND. MOD QTZ VEINING.
18	37.50	37.71	0.21	52			MUDSTONE	SLTY. YPR. DK. GY. LAM. SLD SHARP UPPER CONTACT. V FINE UNIFORM SILT LAMINAE THROUGHOUT. VERTICAL BURROW(?) OR FEEDING TRACE 3CM LONG, 1MM IN DIA INFILLED BY WORM PELLETS(?).
19	37.71	38.04	0.33	*50			MUDSTONE	SLTY. YPR. DK. GY. LAM. SLD FINE UNIFORM SILT LAMINAE THROUGHOUT. AS ABOVE.
19	38.04	39.63	1.59	*50			MUDSTONE	SLTY. YPR. DK. GY. LAM. XBDG. BRKN AS ABOVE. XBDG SHOWS TOPS UP.
20	39.63	41.07	1.44	53			MUDSTONE	SLTY. YPR. DK. GY. LAM. XBDG. SLD AS ABOVE.
20	41.07	41.56	0.49	54			MUDSTONE	SLTY. YPR. DK. GY. LAM. XBDG. SLD AS ABOVE.
21	41.56	43.56	2.00	56			MUDSTONE	SLTY. YPR. DK. GY. LAM. SLD AS ABOVE. OCC PLANT FOSSILS - SPHENOPTERIS BRULENSIS FG SS BAND NEAR BASE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	43.56	44.12	0.56	58			MUDSTONE	SLTY. YPR. DK. GY. LAM. BRKN AS ABOVE WITH SLIGHTLY MORE SILT.
22	44.12	45.41	1.29	*60			MUDSTONE	SLTY. YPR. DK. GY. LAM. BRKN AS ABOVE. MOD QTZ VEINING. NUMEROUS COALIFIED PLANT FOSSILS.
23	45.41	46.25	0.84	61	05374		MUDSTONE	CARB. M-DK. GY. BRKN CARB COALY STRINGERS THROUGHOUT. LOWER 25CM SAMPLED.
23	46.25	46.52	0.27	61	05375	A-4	COAL	C-3. PHRD POWDERING POSSIBLY DUE TO SHEARING.
23	46.52	46.62	0.10	61	05375	A-4	COAL LOSS	
23	46.62	46.70	0.08	61	05375	A-4	ROCK LOSS	
23	46.70	46.73	0.03	62	05375	A-4	MUDSTONE	SLTY. M. GY. BRKN
23	46.73	46.75	0.02	62	05375	A-4	MUDSTONE	CARR. DK. GY. BRKN
23	46.75	46.95	0.20	62	05375	A-4	COAL	C-4. BRKN
23	46.95	47.00	0.05	62	05375	A-4	MUDSTONE	CARB. SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	47.00	47.10	0.10	62 05375	A-4	ROCK LOSS	
23	47.10	47.30	0.20	62 05375	A-4	COAL LOSS	
23	47.30	47.41	0.11	62 05375	A-4	COAL	C-4. BRKN PARTIALLY SHEARED CONTAINING LISTRIC SU REACES.
23	47.41	47.46	0.05	62 05375	A-4	COAL LOSS	
23	47.46	47.65	0.19	62 05375	A-4	ROCK LOSS	
23	47.65	47.68	0.03	62 05375	A-4	MUDSTONE	SLTY. M. GY. SLD
23	47.68	47.86	0.18	62 05375	A-4	COAL	C-2. VBRKN PARTIALLY POWDERED POSSIBLY DUE TO SHEA RING.
24	47.86	48.06	0.20	62 05375	A-4	COAL	C-3. VBRKN PARTIALLY SHEARED.
24	48.06	48.09	0.03	63 05375	A-4	COAL LOSS	
24	48.09	48.16	0.07	63 05375	A-4	ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	48.16	48.17	0.01	63 05375	A-4	MUDSTONE	CARB. DK. GY. SLD
24	48.17	48.40	0.23	63 05375	A-4	COAL	C-4
24	48.40	48.43	0.03	63 05375	A-4	MUDSTONE	CARB. DK. GY. SLD QTZ WITHIN.
24	48.43	48.63	0.20	63 05375	A-4	COAL	C-4. BRKN CONTAINS ABUNDANT THIN C-1 BANDS THROUG HOUT.
24	48.63	48.73	0.10	63 05375	A-4	MUDSTONE	CARB. DK. GY. BRKN
24	48.73	48.92	0.19	63 05375	A-4	COAL	C-4. BRKN AS ABOVE, CONTAINS ABUNDANT THIN C-1 BA NDS.
24	48.92	49.01	0.09	63 05375	A-4	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
24	49.01	49.07	0.06	63 05375	A-4	COAL	C-4. SLD
24	49.07	49.31	0.24	63 05375	A-4	COAL	C-2. BRKN

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	49.31	49.35	0.04	64	05375	A-4	COAL	C-3.SLD
24	49.35	49.43	0.08	64	05375	A-4	COAL	C-2.BRKN
24	49.43	49.52	0.09	64	05375	A-4	COAL	C-1.VBRKN
24	49.52	49.55	0.03	64	05375	A-4	MUDSTONE	SLTY. M. GY. SLD VERY HARD.
24	49.55	49.72	0.17	64	05375	A-4	COAL	C-2.VBRKN
24	49.72	49.76	0.04	64	05375	A-4	COAL	C-4.SLD
25	49.76	50.14	0.38	64	05376		MUDSTONE	DK. GY. MAS. BRKN MINOR COALY STRINGERS & PLANT HASH THROUGHOUT. UPPER 25CM SAMPLED.
25	50.14	50.74	0.60	64			ROCK LOSS	
25	50.74	51.75	1.01	*65			MUDSTONE	DK. GY. MAS. BRKN PLANT HASH THROUGHOUT. PYRITE BLEBS. RA RE COAL WISPS. 1CM. PYRITE BAND AT BASAL CONTACT.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	51.75	52.15	0.40	65			SANDSTONE	FG. PR. M. GY. MAS. SLD NUMEROUS MUDST RIPUP CLASTS 1-3MM IN DIA A AT TOP OF INTERVAL.
26	52.15	53.73	1.58	65			SANDSTONE	FG. MOD. LT. GY. MAS. SLD MINOR RIPPED UP MUD LENSES & STRINGERS. UNIFORM SS.
26	53.73	54.05	0.32	65			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. WRMBU. SLD ABUNDANT SILTY LAMINAE. NUMEROUS HORIZ WRMBURS 1-2MM IN DIA.
27	54.05	55.20	1.15	65			SANDSTONE	FG. PR. M. GY. LAM. WRMBU. SLD DARK WISPY SILT LAMINAE WITH NUMEROUS H ORIZ WRMBURS THROUGHOUT. TOPS UP.
27	55.20	55.96	0.76	*65			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD FINER GRAINED THAN ABOVE WITH WIDER SIL T BANDS WHICH GRADE FROM VEG. SS UPWARD TO FINE DARK MUD.
28	55.96	57.72	1.76	63			SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. BRKN LITH AS ABOVE BUT SLIGHTLY COARSER SAND OVERALL. WIDER BANDING.
28	57.72	58.13	0.41	62			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: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	58.13	59.46	1.33	61			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. VBRKN FINER GRAINED THAN ABOVE. OCC VERT WRMB URS 5-10MM IN DIA.
29	59.46	60.51	1.05	59			ROCK LOSS	
29	60.51	60.82	0.31	58			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. VBRKN LITH AS ABOVE.
29	60.82	61.05	0.23	58			ROCK LOSS	
30	61.05	62.61	1.56	57			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. BRKN LAYERS FINE UPWARD FROM SILT TO FINE DA RK MUD. VERT & HORIZ WRMBURS 5-10MM IN DIA. TOPS UP. PYRITE BLEBS 2CM IN DIA.
31	62.61	63.90	1.29	*55			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. SLD BIVALVE ESCAPE STRUCTURES 1CM IN DIA. A BUNDANT HELMINTHOPSIS THROUGHOUT. OCC P LANT HASH. LAYERS FINE UPWARDS.
31	63.90	64.63	0.73	59			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. SLD AS ABOVE. BIVALVE ESCAPE STRUCTURES MOR E ABUNDANT. HELMINTHOPSIS THROUGHOUT.
32	64.63	66.58	1.95	*65			SILTSTONE	VPR. M. GY. VTHNB. WRMBU. SLD AS ABOVE. MOTTLED LOWER CONTACT FROM SL UMP/SCOUR ACTION(?)

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	66.58	66.62	0.04	52			SANDSTONE	MG. PR. M. GY. MAS. SLD
33	66.62	66.84	0.22	*50			SANDSTONE	MG. PR. M. GY. THNB. SLD F-MG SS. FAINT BEDDING. RARE MUDST RIPU P. CLASTS 2-3MM IN DIA.
33	66.84	68.38	1.54	53			SANDSTONE	FG. MOD. LT. GY. MAS. WRMBU. BRKN OCC HISPY SILT LENSES FROM SCOUR FILL & DRAPES. ONE 3CM WIDE QTZ VEIN. HORIZ W RMBURS 2-3MM ON SILT LENSES.
34	68.38	69.27	0.89	57			SANDSTONE	FG. MOD. LT. GY. MAS. SLD AS ABOVE. NUMEROUS ROUND DARK BLACK SPE CKS (WORM PELLETS?) DISPERSED THROUGHOU T SAND.
35	69.27	70.21	0.94	*60			SILTSTONE	VPR. DK. GY. LAM. WRMBU. BRKN NUMEROUS QTZ-COATED ORGANIC STRINGERS & LENSES THROUGHOUT. LAYERS GRADING FROM FG SS UP TO DK MUD AT BASE OF INTERVAL VERT WRMBURS AT BASE. 6CM QTZ VEIN AT TOP.
36	70.21	70.42	0.21	60			SILTSTONE	SSY. VPR. M. GY. LAM. WRMBU. SLD MORE SAND THAN ABOVE. BIOTURBATION AND VERT WRMBURS.

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	70.42	71.99	1.57	*60			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. HRMBU. SLD SILT LAMINAE WITH 5MM WIDE VERT WRMBURS NEAR TOP OF INTERVAL. SILT LAYERS BECO ME HISPIER DOWNWARD. SOME PLANT HASH.
37	71.99	73.48	1.49	60			SANDSTONE	FG. VPR. LT. GY. LAM. BRKN HISPY SILT LAYERS - DRAPES.
37	73.48	73.84	0.36	60			SANDSTONE	FG. VPR. M. GY. MAS. SLD NO SILT LAYERS, CORE TWIST OFF AT TOP.
38	73.84	74.87	1.03	*60			SANDSTONE	FG. VPR. M. GY. LAM. SLD DARK ORGANIC RICH(?) LAMINAE BECOMING M ORE COMMON DOWNWARD.
38	74.87	75.81	0.94	60			SILTSTONE	DK. GY. LAM. XBDG. BRKN PLANT HASH THROUGHOUT MORE MASSIVE LAYE RS, BIOTURBATION & BURROWS AT UPPER CON TACT.
38	75.81	76.36	0.55	60			ROCK LOSS	
39	76.36	77.00	0.64	60			SILTSTONE	VPR. DK. GY. LAM. XBDG. VBRKN V. FINELY LAM'D. MUCH SCOURING & CROSS BEDDING. TOPS UP. ONE 14CM WIDE BRECCIA TED BAND. SLTST CLASTS WITH QTZ INFILL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	77.00	78.23	1.23	60			SILTSTONE	DK. GY. MAS. SLD PREDOMINANTLY MASSIVE, V. UNIFORM, HARD
40	78.23	80.08	1.85	*60			SILTSTONE	M. GY. LAM. BIOTR. SLD OCC HORIZ WRMBURS & BIOTURBATION. HELMI NTHOPSIS IN LIGHTER SILTY BANDS.
40	80.08	80.22	0.14	61			SILTSTONE	M. GY. LAM. BIOTR. SLD AS ABOVE.
41	80.22	82.35	2.13	62			SILTSTONE	PR. DK. GY. VTHNB. HRMBU. SLD FAINT BEDDING. VERT WRMBURS 5-10MM IN D IA. HELMINTHOPSIS THROUGHOUT.
42	82.35	83.11	0.76	64			SILTSTONE	PR. DK. GY. VTHNB. HRMBU. BRKN LITH AS ABOVE. MINOR PLANT HASH. BURROW S & BIOTRBN AS ABOVE. NO HELMINTHOPSIS
42	83.11	83.59	0.48	64			ROCK LOSS	
42	83.59	84.64	1.05	*65			SILTSTONE	PR. DK. GY. VTHNB. HRMBU. VBRKN LITH AS ABOVE. MINOR QTZ VEINING. PLANT HASH.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	84.64	84.94	0.30	63			ROCK LOSS	
43	84.94	86.88	1.94	*60			SILTSTONE	SSY. VPR. M. GY. VTHNB. XBDG. BRKN. BECOMES MORE SANDY DOWNWARD. (SCOURS, X BDG AND HORIZ WRMBURS SHOW) TOPS UP. HELMINTHOPSIS, GASTROPODS 1/2-1MM WIDE, TINY BIVALVE PIECES, STAR SHAPED SHELL/TE ST(?) 5 POINTS, 3MM ACROSS. GASTRO PODS ? 5MM ACROSS?
44	86.88	88.94	2.06	*65			SILTSTONE	SSY. VPR. M. GY. LAM. WRMBU. SLD. MINOR MUDST RIPUP CLASTS NEAR TOP. FINE BLACK LAMINAE COMPRISED OF TINY ROUND SPECKS-WORM PELLETS?
45	88.94	89.97	1.03	63			SILTSTONE	SSY. VPR. M. GY. LAM. SLD. SWIRLED BEDDING. SLUMP?
45	89.97	90.97	1.00	62			SILTSTONE	SSY. VPR. M. GY. VTHNB. SLD. MORE UNIFORM BEDDING. PLANT WASH IN SANDIER BANDS. MINOR QTZ/CARBONATE VEINING
46	90.97	93.00	2.03	*60			SILTSTONE	M. GY. VTHNB. SLD. LESS SAND THAN ABOVE. HELMINTHOPSIS THR OUGHOUT. SLUMPED NEAR TOP OF INTERVAL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	93.00	93.74	0.74	*70			SILTSTONE	M. GY. VTHNB. SLD. V. FAINT BEDDING. ALMOST MASSIVE. V. UNIFORM. ONE 5CM WIDE QTZ VEIN WITH GREEN CHLORITE LAYERS.
47	93.74	94.99	1.25	*60			SANDSTONE	FG. MOD. LT. GY. VTHNB. SLD. FAINT BEDDING. -OCC WISPY ORGANIC-RICH D. RAPES. QTZ VEINS 2-4MM WIDE.
48	94.99	96.05	1.06	60			SANDSTONE	FG. MOD. LT. GY. SLD. LITH AS ABOVE.
48	96.05	96.68	0.63	60			SANDSTONE	FG. MOD. LT. GY. THNB. SLD. LITH AS ABOVE WITH NO WISPS.
49	96.68	97.80	1.12	60			SANDSTONE	FG. MOD. LT. GY. THNB. SLD. AS ABOVE WITH FOUR QTZ VEINS 1-5CM WIDE. 27CM QTZ VEIN AT TOP.
49	97.80	98.75	0.95	60			SANDSTONE	FG. MOD. LT. GY. THNB. SLD. LITH AS ABOVE. RARE QTZ.
49	98.75	98.96	0.21	60	05377		MUDSTONE	CARB. VPR. DK. GY. LAM. SLD. SWIRLED MIXTURE OF MUDST AND COAL STRINGS SURROUNDED BY QTZ. THIS COMPRISES MOST OF NEXT BOX.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	98.96	99.11	0.15	60 05378	A-5	COAL LOSS	
50	99.11	99.67	0.56	60 05378	A-5	COAL	C-6.SLD BONEY COAL, CONTAINING ABUNDANT QTZ THROUGHOUT AND MINOR PYRITE. MINOR C-2 BANDS THROUGHOUT.
50	99.67	100.04	0.37	60 05378	A-5	COAL	C-5.SLD PYRITE QTZ AND C-2 BANDS THROUGHOUT.
50	100.04	100.14	0.10	60 05378	A-5	COAL	C-4.SLD
50	100.14	100.21	0.07	60 05378	A-5	COAL	C-2.PWRD
50	100.21	100.30	0.09	60 05378	A-5	COAL	C-3.SLD
50	100.30	100.52	0.22	60 05378	A-5	COAL	C-2.BRKN MINOR BONEY COAL BANDS WITHIN.
50	100.52	100.91	0.39	60 05379	A-5	MUDSTONE	M-DK.GY.SLD
51	100.91	101.26	0.35	60 05379	A-5	MUDSTONE	M-DK.GY.SLD 3-4CM QTZ BANDS IN LOWER HALF.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	101.26	101.57	0.31	60 05379	A-5	COAL	C-3.SLD MINOR QTZ STRINGERS WITHIN.
51	101.57	102.27	0.70	60 05379	A-5	MUDSTONE	SLTY.M-DK.GY.SLD 4CM QTZ VEINS WITHIN.
51	102.27	102.39	0.12	60 05380	A-5	COAL	C-3.SLD BANDED.
51	102.39	102.81	0.42	60 05380	A-5	COAL	C-3 PARASITIC FOLD IN COAL. BEDS 0 DEGREES BCA QTZ, MUDST & COAL (C-3) RUNNING LEN. GTH OF CORE.
51	102.81	102.91	0.10	60 05380	A-5	COAL LOSS	
51	102.91	102.99	0.08	60 05380	A-5	COAL	C-5.VBRKN SHEARED WITH LISTRIC SURFACES.
52	102.99	103.72	0.73	60 05380	A-5	COAL	C-3.BRKN ABUNDANT BONEY COAL AND QTZ STRINGERS CONTORTED THROUGHOUT, PARTIALLY SHEARED.
52	103.72	104.38	0.66	60 05380	A-5	COAL	C-2.BRKN PARTIALLY SHEARED.

\* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	104.38	104.71	0.33	60	05381		MUDSTONE	CARB. DK. GY. SLD COALY BANDS & QTZ VEINS IN UPPER 10CM. COALY STRINGERS THROUGHOUT.
53	104.71	105.00	0.29	60			MUDSTONE	DK. GY. LAM. SSD. SLD DISRUPTED FINE LAMINAE. SLUMPED(?)
53	105.00	106.77	1.77	60			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. WRMBU. SLD VFG AT TOP GRADING TO FG. SS AT BASE. DARK SLTY. LAMINAE WITH HORIZ. WRMBURS. THRO UGHOUT. MASSIVE SS AT BASE.
54	106.77	107.82	1.05	60			SANDSTONE	FG. MOD. LT. GY. MAS. SLD DCC IRREGULAR MUDST RIPUP CLASTS. TINY BLACK SPECKS ORGANIC MAT'L(?) THROUGHOU T.
54	107.82	107.96	0.14	60			SILTSTONE	DK. GY. MAS. SLD PYRITE BLEBS. PLANT MASH.
54	107.96	108.06	0.10	60			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN AS ABOVE. SS.
54	108.06	108.63	0.57	60			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	108.63	110.47	1.84	60			SANDSTONE	FG. VPR. M. GY. MAS. BRKN PREDOMINANTLY MASSIVE. BLACK SPECKS THR OUGHOUT. ORGANIC MAT'L OR WORM PELLETS( ?) FINER GRAINED & LAM'D. AT BASE.
56	110.47	111.01	0.54	60			SANDSTONE	FG. VPR. M. GY. MAS. SLD SS BRECCIA W/QTZ INFILL.
56	111.01	112.41	1.40	60			SANDSTONE	SLTY. FG. VPR. GY. YTHNB. SLD MORE SILT THAN ABOVE. 15MM WIDE PYRITE BAND. MODERATE QTZ VEINING. SILTY LAMIN AE THROUGHOUT.
57	112.41	112.72	0.31	60			SANDSTONE	FG. MOD. M. GY. MAS. SLD QTZ VEINING THROUGHOUT. 26CM QTZ VEIN A T TOP.
57	112.72	113.43	0.71	60			SANDSTONE	FG. MOD. M. GY. LAM. SLD ORGANIC-RICH STRINGERS & QTZ VEINS THRO UGHOUT. 11CM QTZ VEIN AT TOP.
57	113.43	113.97	0.54	60			SANDSTONE	FG. MOD. LT. GY. LAM. SLD ORGANIC STRINGERS. 9CM QTZ VEIN AT TOP.
57	113.97	114.48	0.51	*60			SANDSTONE	FG. MOD. LT. GY. LAM. SLD AS ABOVE.
58	114.48	115.01	0.53	58			SANDSTONE	FG. MOD. LT. GY. MAS. SLD 1CM THICK GREEN CHLORITE VEIN AT TOP.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	115.01	116.36	1.35	*55			SANDSTONE	FG.MOD.LT.GY.LAM.SLD TINY BLACK SPECKS COMPRISE THE FINE LAM INAE. WORM PELLETS? TWO 2CM WIDE QTZ/CH LORITE VEINS. 15CM QTZ VEIN AT TOP.
59	116.36	117.04	0.68	*55			SANDSTONE	FG.MOD.LT.GY.LAM.BRKN INTENSE QTZ VEINING. FINE ORGANIC(?) LA MINAE AS ABOVE.
59	117.04	118.24	1.20	*55			SANDSTONE	FG.MOD.LT.GY.VTHNB.WRMBU.BRKN INTENSE QTZ VEINING FAINT SILTY BEDDING . 1-15CM DIA. BIVALVE BURROWS AT BOTTOM OF BOX.
60	118.24	118.45	0.21	55			SILTSTONE	DK.GY.VTHNB.WRMBU.SLD CONTINUATION OF BIVALVE ESCAPE BURROWS AT TOP. BEDDING FINES UPWARD.
60	118.45	118.68	0.23	55			BRECCIA	MH.VBRKN QTZ BRECCIA WITH SLTST CLASTS.
60	118.68	118.94	0.26	55			SANDSTONE	SLTY.FG.PR.M.GY.LAM.WRMBU.SLD INTERLAYERED FG SS AND DARK SLTST. NUME ROUS 3MM WIDE VERT BURROWS.
60	118.94	119.36	0.42	55			SANDSTONE	FG.WEL.LT.GY.MAS.SLD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	119.36	119.73	0.37	55			SILTSTONE	M.GY.LAM.SLD FINE LAMINAE. OCC MUDST RIPUP CLAST.
60	119.73	119.96	0.23	55			BRECCIA	MH.SLD QTZ BRECCIA WITH SLTST CLASTS.
61	119.96	120.34	0.38	55			SILTSTONE	VPR.DK.GY.LAM.BRKN AS ABOVE SLTST.
61	120.34	120.98	0.64	55			BRECCIA	MH.SLD QTZ BRECCIA WITH SLTST CLASTS. "AXIS" O F FOLDED QTZ VEIN AT TOP OF INTERVAL. 4 00' = I.O. END OF HOLE. DRILLER'S MARK (121.91 M).

\* DENOTES MEASURED BCA  
NEWPAGE







GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86024

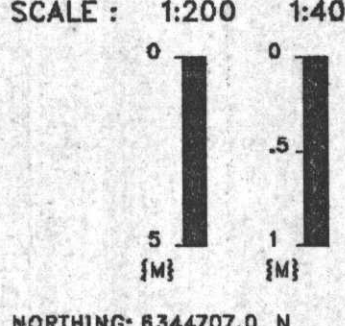
723

GEOLOGIST : BARKER

DATE : FEB 26/87

DRAWING NO. :

LITHOLOGIC SYMBOLS

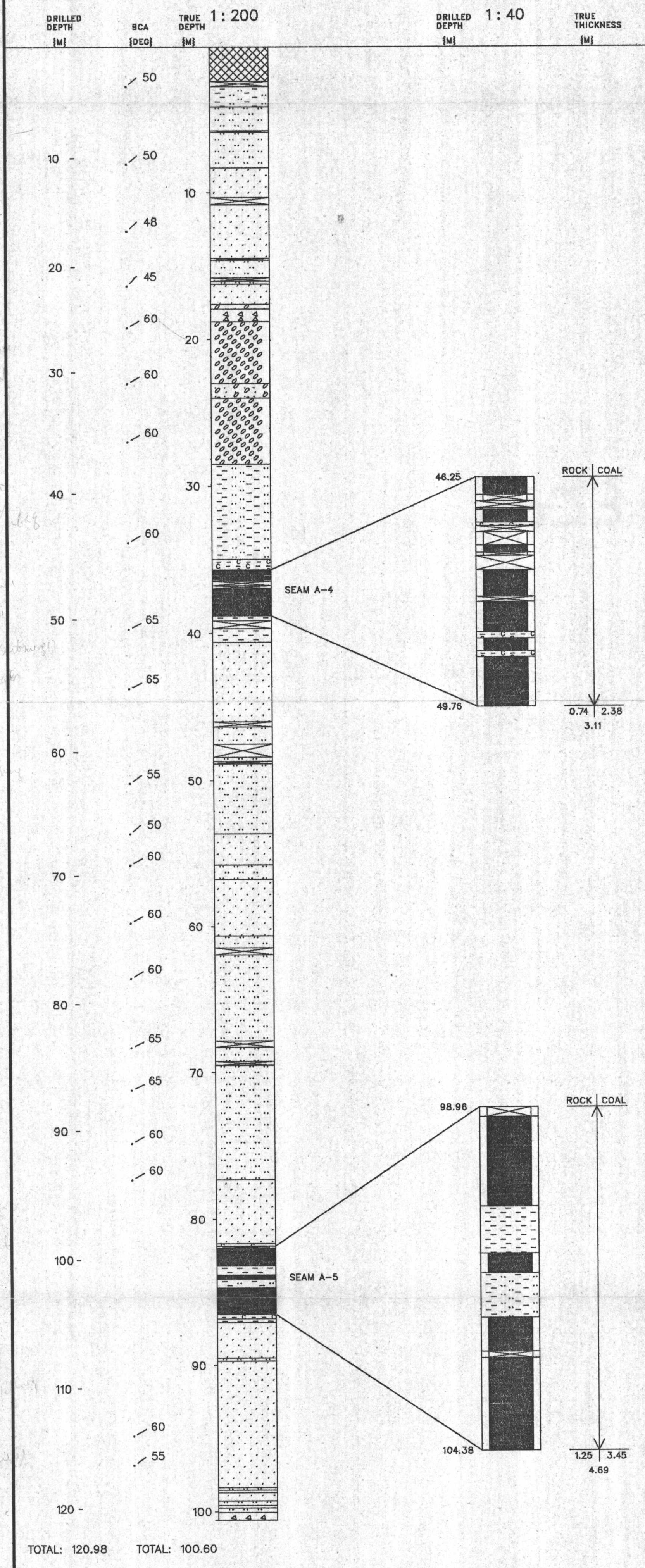


	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

NORTHING: 8344707.0 N  
 EASTING: 503600.1 E

INCLINATION: 90.0°

SEAM DETAIL



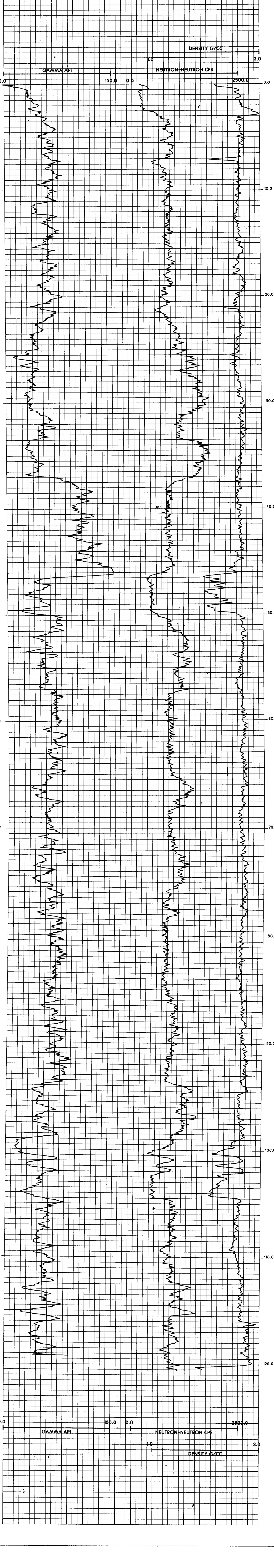


# Gulf Canada Corporation Coal Division

# 723

Geophysical Log

Datasource: <b>KPNLRDDH86024</b> Log Date: 86-09-17 Company: CENTURY Geologist: BARKER	Province: BC    Northing: 6344710.00    Lat: 571450 Zone: 9    Easting: 503600.00    Long: 1285625 Measuring Point: Elevation: 1438.8	
Scale: 1 to 100.0 Depth Range: 0.0 to 125.0 True Thickness: NO	Comments: 1. LOGGED THROUGH THE RODS 2.	
Logs Plotted:		
Description 1. GAMMA API 2. NEUTRON-NEUTRON CPS 3. DENSITY G/CC	Axis Range 0.0 to 150.0 0.0 to 2500.0 1.0 to 3.0	Axis Length 10.0 10.0 10.0
	Smoothing Points 31 9 15	Tool 9055A 9055A 9030A
		Comments IN PIPE IN PIPE IN PIPE



KPNLRDDH86025

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86025

DATE - 02/13/87

- HISTORY -

START DATE - 16/09/86

END DATE - 18/09/86

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.C.

SURVEYOR - TRONNES

REMARKS - SITE Y. COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1656.94

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6342860.00

EASTING - 506215.00

LATITUDE - 571351

LONGITUDE - 1285349

- ORIENTATION -

LENGTH - 230.72

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

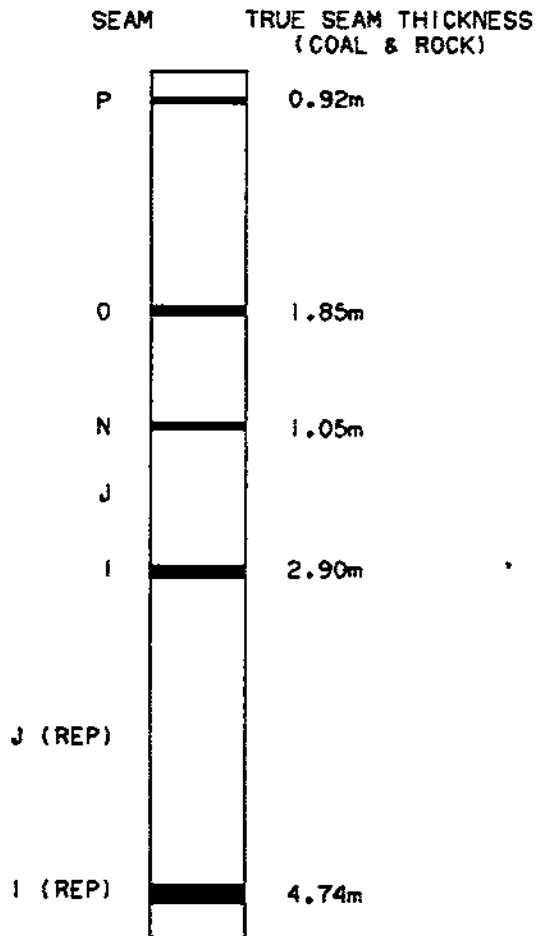
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

=====



**NOTE:**

SCHEMATIC PROFILE.  
NO THICKNESSES SHOWN  
FOR SEAMS CONTAINING  
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
DDH86025

GULF CANADA CORPORATION  
11/03/87  
KLAP: [205057] 870063025.L06



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	64			OVERBURDEN	CASING
1	3.05	3.91	0.86	64			SANDSTONE	MG.LT-M.GY.MAS.BRKN ANKERITE XL'S GROWING ALONG FRACTURES. HEAVILY FRACTURED. WELL CEMENTED.
1	3.91	4.28	0.37	64			ROCK LOSS	
1	4.28	4.93	0.65	64			SANDSTONE	MG.LT-M.GY.MAS.BRKN AS ABOVE. FRACTURES AT 25 DEGREES TO CO RE.
2	4.93	6.13	1.20	64			SANDSTONE	MG.LT-M.GY.MAS.BRKN AS ABOVE. POSSIBLE FAULT PLANE AT BASE OF INTERVAL.
2	6.13	6.58	0.45	*64			MUDSTONE	CARB.DK.GY PLANT FOSSILS - SPHENOPTERIS BRULENSIS, NILSSONIA? UPPER KLAPPAN.
2	6.58	6.95	0.37	66			ROCK LOSS	
3	6.95	7.01	0.06	66			MUDSTONE	CARB.DK.GY.VBRKN

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	7.01	7.03	0.02	66		P	COAL	C-3.VBRKN RUBBLE.
3	7.03	7.93	0.90	68		P	COAL LOSS	
3	7.93	8.00	0.07	70		P	COAL	C-2.VBRKN RUBBLE.
3	8.00	9.23	1.23	72			MUDSTONE	SLTY.M-DK.GY MINOR PLANT FRAGS WITHIN. ESPECIALLY IN UPPER PORTION LAMINATED AT BASE.
3	9.23	9.41	0.18	*75			SILTSTONE	CLYY.M-DK.GY.LAM.SLD LAMINATED SLTST & MUDST.
4	9.41	9.56	0.15	73			MUDSTONE	SLTY.M-DK.GY.LAM.SLD INTERLAMINATED SILTY SS.
4	9.56	9.66	0.10	71			SANDSTONE	MG.LT-M.GY.THNB.SLD
4	9.66	9.70	0.04	*70			MUDSTONE	M-DK.GY.LAM
4	9.70	10.08	0.38	70			ROCK LOSS	
4	10.08	10.88	0.80	*70			SANDSTONE	MG.LT-M.GY.MAS VERY SPARSE INDISTINCT MUDST LAMINAE. O NE SUB ROUNDED MUDST CLAST (<1CM).

\* DENOTES MEASURED BCA

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87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	10.88	11.70	0.82	71			SANDSTONE	MG. LT-M. GY. MAS MINOR 2-3CM SLTST BANDS. HAIRLINE ANKERITE FILLED FRACTURES.
5	11.70	13.35	1.65	72			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN 80CM ZONE OF INTERVAL IS HEAVILY FRACTURED AT APPROX 25 DEGREES TO CORE LENGTH.
5	13.35	13.70	0.35	73			ROCK LOSS	
6	13.70	13.72	0.02	74			MUDSTONE	SLTY. M-DK. GY. VTHNB. SLD
6	13.72	13.84	0.12	74			SANDSTONE	MG. LT-M. GY. MAS. SLD MUDST BANDS THAT HAVE BROKEN AND BALLED UP INTO STRINGS OF MUDST BLEBS.
6	13.84	14.34	0.50	*74			SANDSTONE	MG. LT-M. GY. MAS. VBRKN MINOR WELL ROUNDED MUDST CLASTS. POSSIBLE CORE TRIST OFF AND LOSS.
6	14.34	14.75	0.41	73			ROCK LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	14.75	15.45	0.70	71			SANDSTONE	MG. LT-M. GY. MAS. VBRKN MOSTLY RUBBLE WITH ANKERITE VEINING ATTACHED. CORELOSS.
6	15.45	16.88	1.43	69			ROCK LOSS	
6	16.88	16.94	0.06	67			MUDSTONE	SLTY. M-DK. GY. SLD RAPID CHANGE IN LITHOLOGY, NO CONTACT SEEN. HELMINTHOPSIS BURROWS.
7	16.94	17.34	0.40	66			MUDSTONE	SLTY. M-DK. GY. VBRKN ABUNDANT HELMINTHOPSIS BURROWS. VERY BROKEN UP.
7	17.34	18.77	1.43	64			ROCK LOSS	
7	18.77	19.02	0.25	62			MUDSTONE	SLTY. M-DK. GY. VBRKN 15CM OF ACTUAL CORE WITH 10-20CM OF RUBBLE MIXED IN WITH DRILL MUD.
7	19.02	19.72	0.70	61			MUDSTONE	M-DK. GY. MAS. BRKN CORE DISETEGRATING RAPIDLY, MINOR SILTY BANDS. ABUNDANT HELMINTHOPSIS.
7	19.72	20.56	0.84	59			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	20.56	21.46	0.90	57			MUDSTONE	DK. GY. MAS. VBRKN CORE DISENTEGRATING QUICKLY.
8	21.46	21.92	0.46	55			MUDSTONE	CARB. DK. GY. MAS. BRKN MINOR COAL STRINGERS AND ONE PYRITE BLE B.
9	21.92	24.00	2.08	52			MUDSTONE	CARB. DK. GY. MAS. SLD CARBONATIZED PLANT FRAGMENT ON BDG SURF ACE. MINOR DISSEMINATED PYRITE IN THE T OP 10CM OF THE INTERVAL.
10	24.00	24.32	0.32	49			MUDSTONE	M-DK. GY. MAS. SLD MINOR PLANT FRAGMENTS.
10	24.32	25.09	0.77	48			MUDSTONE	M-DK. GY. MAS. SLD SILTY TOWARD BASE, MINOR PLANT FRAGMENT S.
10	25.09	25.56	0.47	*46			SILTSTONE	M. GY. LAM. BIOTR. SLD DISTURBED BDG.
10	25.56	25.68	0.12	47			SILTSTONE	M. GY. BIOTR. BRKN AS ABOVE. SANDIER TOWARD BASE.
10	25.68	26.28	0.60	48			ROCK LOSS	
10	26.28	26.46	0.18	48			SANDSTONE	FG. YPR. LT-M. GY. MAS. BRKN GRADATIONAL CONTACT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	26.46	27.46	1.00	50			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD VERY HARD. VERY MINOR HAIR LINE ANKERIT E VEINING. 3 OR 4 SLTST RIPUP CLAST (<1 CM. SUB ROUNDED).
11	27.46	28.11	0.65	52			SANDSTONE	MG. PR. LT-M. GY. MAS. VBRKN ONE LISTRIC SURFACE WITH VERTICAL MOVEM ENT. MINOR ANKERITE CEMENTED TO PIECES OF RUBBLE.
11	28.11	28.36	0.25	53			COAL LOSS	
11	28.36	28.56	0.20	53			ROCK LOSS	
11	28.56	28.77	0.21	54			COAL LOSS	
12	28.77	28.98	0.21	54			ROCK LOSS	
12	28.98	29.19	0.21	55			COAL LOSS	

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	29.19	29.42	0.23	55			ROCK LOSS	
12	29.42	29.88	0.46	56			COAL LOSS	
12	29.88	29.98	0.10	57			SANDSTONE	MG. PR. LT-M. GY. MAS. VBRKN RUBBLE.
12	29.98	30.09	0.11	57			ROCK LOSS	
12	30.09	30.39	0.30	58			SANDSTONE	MG. PR. LT-M. GY. MAS. VBRKN PREDOMINANTLY RUBBLE. ANKERITE VEINS. VERTICAL LISTRIC SURFACES.
12	30.39	30.91	0.52	59			ROCK LOSS	
12	30.91	31.04	0.13	59			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN
12	31.04	31.19	0.15	60			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD SLTST AND MUDST GLASTS (<2CM, WELL ROUNDED TO SUB ANGULAR).

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	31.19	31.38	0.19	60			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD GRADATIONAL UPPER CONTACT.
12	31.38	31.94	0.56	*61			SANDSTONE	SLTY. VFG. PR. LT-DK. GY. VTHNB. SSD. BRKN MUDST BANDS (SOME DISCONTINUOUS). TOPS UP LOAD CAST.
13	31.94	32.38	0.44	*65			SILTSTONE	M-DK. GY. LAM. SSD. BRKN INTERLAMINATED MUDST. TOPS UP (LOAD CAS TS).
13	32.38	32.60	0.22	61			SILTSTONE	M-DK. GY. LAM. SSD. BRKN CHURNED UP BDG. VBRKN AT BASE. POSSIBLE CORE LOSS (FAULT?). INTERMIXED MUD.
13	32.60	32.94	0.34	*56			SANDSTONE	FG. LT-M. GY. THNB. BRKN TRACES OF SLTST LAMINAE. CORE BREAKS ALONG BDG PLANES. ANKERITE VEINING PARALLEL AND PERPENDICULAR TO BDG.
13	32.94	33.10	0.16	59			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN INTERLAMINATED MUDST.
13	33.10	33.24	0.14	59			SANDSTONE	FG. LT-M. GY. MAS. SLD GRADATIONAL CONTACT.
13	33.24	33.39	0.15	60			SANDSTONE	FG. LT-M. GY. MAS. BRKN

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	33.39	33.42	0.03	60		SANDSTONE	FG.LT-M.GY.VBRKN RUBBLE.
13	33.42	33.62	0.20	60		ROCK LOSS	
13	33.62	33.67	0.05	61		SILTSTONE	M.GY.LAM.SLD CRUDELY INTERLAMINATED MUDST. CORE THIS T OFF AT TOP, SHARP BASAL CONTACT.
13	33.67	33.70	0.03	61		SANDSTONE	FG.LT-M.GY.SLD
14	33.70	35.20	1.50	*63		SANDSTONE	LT-M.GY.MAS.SLD MINOR ERRATICALLY SPACED SLTST LAMINAE. TOPS UP (FLAME STRUCTURE). <1CM QTZ VEIN IN PARALLEL TO BDD WITH HORIZONTAL STRIATIONS ON THE BASE OF THE VEIN.
14	35.20	35.40	0.20	*69		SANDSTONE	FG.LT-M.GY.MAS.SLD INCREASE IN DISCONTINUOUS MUDST LAMINATIONS.
14	35.40	35.46	0.06	68		SILTSTONE	SSY.M.GY.LAM.SLD INTERLAMINATED MUDST. MINOR DISSEMINATED PYRITE.
14	35.46	35.77	0.31	67		SANDSTONE	FG.LT-M.GY.MAS.SLD TRACES OF SLTST LAMINAE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.77	36.06	0.29	*65		SANDSTONE	FG.LT-M.GY.MAS.XBDG.SLD MINOR SLTY/MUDST WISPS AND LAMINAE. MINOR SMALL SCALE XBED. TOPS UP.
15	36.06	36.62	0.56	*64		SANDSTONE	MG.LT-M.GY.MAS.SLD SPARSE BANDS OF MUDST. FRACTURE AT 22 DEGREES THAT IS COATED WITH A THIN VENEER OF QTZ. 2 OTHER HAIRLINE QTZ VEIN.
15	36.62	36.86	0.24	63		SANDSTONE	FG.LT-M.GY.MAS.SLD GRADATIONAL LOWER CONTACT.
15	36.86	37.26	0.40	63		SILTSTONE	SSY.M.GY.LAM.SLD MINOR BANDS AND LAMINAE OF MUDST. 2CM OF BAND THAT IS BIOTRB.
15	37.26	37.77	0.51	62		SANDSTONE	SLTY.FG.VPR.M.GY.YTHNB.SLD THIN BANDS OF MUDST.
16	37.77	38.23	0.46	61		SANDSTONE	SLTY.FG.VPR.LT-M.GY.YTHNB.SSD.SLD NUMEROUS CLAM BURROWS, TOPS UP. INTERBEDDED SILTY MUD BANDS. MINOR BAND OF DISSEMINATED PYRITE.
16	38.23	38.60	0.37	61		SANDSTONE	MG.PR.LT-M.GY.MAS.SLD TOPS UP AS ABOVE BURROWS. MINOR SLTST BAND AND (<1CM). POSSIBLE MINOR FAULT SURFACE AT BASE (20 DEGREES TO CORE LENGTH). VERY BROKEN AT BASE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	38.60	38.70	0.10	60			SILTSTONE	M.GY.LAM.VBRKN INTERLAMINATED MUDST.
16	38.70	39.08	0.38	*60			SANDSTONE	FG.PR.LT-M.GY.MAS.SSD.SLD NUMEROUS SLTST BAND THAT DISAPPEAR TOWA RD BASE. TOPS UP LOAD CASTS.
16	39.08	39.53	0.45	60			SANDSTONE	FG.PR.LT-M.GY.MAS.SLD 2 SLTST BANDS.
17	39.53	40.73	1.20	60			SANDSTONE	MG.VPR.LY-M.GY.MAS.SLD FRACTURE AT 25 DEGREES TO CORE.
17	40.73	41.43	0.70	60			SANDSTONE	FG.VPR.LY-M.GY.MAS.SLD VERY HARD; GRADATIONAL BASAL CONTACT. M UDST.BAND IN BOTTOM 20CM.
18	41.43	42.47	1.04	*60			SANDSTONE	FG.VPR.LY-DK.GY.THNB.SLD NUMEROUS MUDST.LAMINAE TOPS UP (LOAD CASTS).
18	42.47	43.16	0.69	61			SANDSTONE	SLTY.VFG.LY-M.GY.MAS.BIOTR.SLD HOMOGENOUS. SAND AND SLTST MIXED BY ORG ANISMS.
18	43.16	43.39	0.23	61			SANDSTONE	SLTY.LY-M.GY GOUGE MATERIAL. GOOD PLACE TO PUT A FAU LT (FP BETWEEN 40-50 DEGREES).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	43.39	43.46	0.07	61			SANDSTONE	MG.M.GY.VBRKN RUBBLE.
18	43.46	44.51	1.05	61			COAL LOSS	
19	44.51	44.61	0.10	62			SANDSTONE	MG.M.GY.VBRKN RUBBLE.
19	44.61	45.72	1.11	62			SANDSTONE	SLTY.FG.M-DK.GY.VTHNB.VBRKN INTERBEDDED MUDST. BIOTRB. NUMEROUS BUR ROWS. BCA'S FAIRLY CONSTANT.
19	45.72	46.35	0.63	63			SANDSTONE	SLTY.VFG.M.GY.MAS.SLD HOMOGENOUS. MINOR DISSEMINATED PYRITE.
20	46.35	46.75	0.40	63			SANDSTONE	MG.M.GY.MAS.SLD DISTORTED BAND OF MUDST WITH PLANT IMPR INTS. MINOR ANKERITE VEIN. MINOR PYRITE
20	46.75	47.21	0.46	63			SILTSTONE	SSY.M.GY.LAM.XBDG.SLD INTERLAMINATED MUDST. DISTURBED BDG. 5M ALL SCALE XBDG. TOPS UP (LOAD CAST)
20	47.21	48.30	1.09	*64			SILTSTONE	SSY.M.GY.LAM.XBDG.SLD AS ABOVE.
21	48.30	48.42	0.12	64			SILTSTONE	SSY.M.GY.LAM.BIOTR.BRKN BURROW, TOPS UP.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	48.42	48.85	0.43	64			ROCK LOSS	
21	48.85	48.90	0.05	64			SILTSTONE	M.GY.VBRKN GOUGE MATERIAL, POSSIBLE FAULT.
21	48.90	50.26	1.36	64			SILTSTONE	M.GY.LAM.SLD INTERLAMINATED MUDST. DISTURBED BDG (MI NOR BIOTRB). HELMINTHOPSIS BURROWS (LOC M BAND).
21	50.26	50.68	0.42	64			SILTSTONE	M.GY.LAM.SLD INTERLAMINATED MUDST. DISTURBED BDG.
22	50.68	52.62	1.94	63			MUDSTONE	M-DK.GY.MAS.SLD MINOR SILTY BANDS AND LAMINAE. PYRITE B LEBS. 30CH. ZONE OF HELMINTHOPSIS.
23	52.62	53.20	0.58	63			MUDSTONE	M-DK.GY.MAS.SLD MINOR SILTY LAMINAE. HELMINTHOPSIS.
23	53.20	54.67	1.47	*63			MUDSTONE	M-DK.GY.MAS.SLD AS ABOVE. TOPS UP. MINOR BURROW AND LOA D STRUCTURE.
24	54.67	56.19	1.52	*65			MUDSTONE	M-DK.GY.MAS.SLD MINOR SILTY LAMINAE.
24	56.19	56.74	0.55	*65			MUDSTONE	M-DK.GY.MAS.SLD AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	56.74	58.63	1.89	*64			MUDSTONE	DK.GY.MAS.SLD ABUNDANT PYRITE BLEBS. FRACTURE AT 25 D EGRES.
26	58.63	59.09	0.46	66			MUDSTONE	DK.GY.MAS.SLD PYRITE BLEBS.
26	59.09	60.56	1.47	67			MUDSTONE	DK.GY.MAS.SLD ABUNDANT PYRITE BLEBS.
27	60.56	61.42	0.86	69			MUDSTONE	M-DK.GY.MAS.BRKN SILTY IN PLACES.
27	61.42	61.74	0.32	70			SILTSTONE	SSY.M.GY.SLD
27	61.74	61.97	0.23	71			ROCK LOSS	
27	61.97	62.22	0.25	71	10102		MUDSTONE	CARB,DK.GY.VBRKN COALY STRINGERS THROUGHOUT.
27	62.22	62.26	0.04	71	10103	0	COAL	C-6.SLD
27	62.26	62.36	0.10	71	10103	0	COAL	C-3.SLD ABUNDANT PYRITE AT BASE OF UNIT.
27	62.36	62.46	0.10	71	10103	0	COAL	C-2.SLD

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	62.46	62.47	0.01	72	10103	0	MUDSTONE	CARB. DK. GY. SLD
27	62.47	62.85	0.38	72	10103	0	ROCK LOSS	
27	62.85	63.12	0.27	72	10103	0	COAL LOSS	
27	63.12	63.26	0.14	73	10103	0	COAL	C-2. SLD
28	63.26	64.06	0.80	73	10103	0	COAL	C-2. VBRKN
28	64.06	64.09	0.03	74	10103	0	MUDSTONE	CARB. DK. GY. SLD
28	64.09	64.16	0.07	74	10103	0	COAL	C-6. SLD BONE COAL, C-1 STRINGERS WITHIN.
28	64.16	65.21	1.05	*75	10104		MUDSTONE	CARB. DK. GY. BRKN ABUNDANT COALY PLANT FRAGS THROUGHOUT. PERIODIC LOW ANGLE QTZ VEINS. BCA APPROXIMATE. UPPER 25CM SAMPLED.
29	65.21	65.45	0.24	73			MUDSTONE	DK. GY. VBRKN MINOR COAL FRAGMENTS.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	65.45	66.81	1.36	70			MUDSTONE	DK. GY. SLD SILTY TOWARD BASE. PLANT FRAGMENTS (NILESSONIA, TENUICALIS).
29	66.81	67.05	0.24	*68			SANDSTONE	FG. LT-M. GY. THNB. SLD SILTY/MUDST BAND AT TOP OF INTERVAL.
30	67.05	67.65	0.60	68			SANDSTONE	FG. VPR. LT-M. GY. LAM. VBRKN NUMEROUS SILTY MUDST LAMINAE. TOPS UP (LOAD CAST). FRACTURE AT 17 DEGREES.
30	67.65	68.37	0.72	*67			SILTSTONE	LT-DK. GY. LAM. SLD INTERLAMINATED FG. SS. TOPS UP (LOAD CAST). MINOR BURROWING.
30	68.37	68.77	0.40	67			SANDSTONE	FG. LT-DK. GY. LAM. SLD INTERLAMINATED MUDST NUMEROUS BURROWS. TOPS UP.
31	68.77	69.01	0.24	67			SANDSTONE	MG. LT-DK. GY. VTHNB. VBRKN INTERBEDDED SILTY MUD. VERY BROKEN CORE. DISTORTED. BDG.
31	69.01	69.25	0.24	67			SILTSTONE	M-DK. GY. BRKN COMPRESSED FAULT GOUGE MATERIAL.
31	69.25	69.36	0.11	67			CLAYSTONE	LT. GY. BRKN POSSIBLE "CREST" ZONE. SHARP BASAL CONTACT.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	69.36	70.43	1.07	67			SILTSTONE	CLYY, M-DK. GY. MAS. BRKN LARGE BIVALVES FERGANOCONCHA. SAME BIVALVES SEEN AROUND SEAM H ALONG HAUL ROAD
31	70.43	71.43	1.00	66			ROCK LOSS	
32	71.43	72.03	0.60	66			SILTSTONE	M-DK. GY. MAS. VBRKN AS ABOVE. SLIPPAGE SURFACE WITH VERTICAL STRIATIONS.
32	72.03	73.19	1.16	66			SILTSTONE	M-DK. GY. MAS. SLD MINOR PYRITE. BIVALVES AS ABOVE (<4CM).
33	73.19	73.67	0.48	66			SILTSTONE	M-DK. GY. MAS. SLD AS ABOVE.
33	73.67	73.75	0.08	66			SILTSTONE	LT-M. GY. VBRKN FAULT GOUGE MATERIAL.
33	73.75	74.41	0.66	66			SILTSTONE	M. GY. MAS. SLD BIVALVES APPEAR TO BE SMALLER (<1CM). 5 CM ZONE OF RUBBLE.
33	74.41	74.95	0.54	66			SILTSTONE	M. GY. MAS. VBRKN ABUNDANT LARGE BIVALVES.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	74.95	75.95	1.00	65			ROCK LOSS	
34	75.95	77.28	1.33	65			SILTSTONE	M. GY. VBRKN GOUGE MATERIAL. SLTST FRAGMENTS HELD TOGETHER BY MUD.
34	77.28	77.44	0.16	65			SILTSTONE	SSY. M. GY. SLD TRACES OF DEFORMED MUDST LAMINATIONS. VERY SHARP UPPER AND ESPECIALLY BASAL CONTACTS.
34	77.44	77.58	0.14	65			SANDSTONE	MG. LT-M. GY. THNB. SLD VERY MINOR MUDST TRACES.
34	77.58	77.66	0.08	65			SILTSTONE	M. GY. VTHNB. SLD THIN SS LAMINAE.
34	77.66	77.70	0.04	65			SANDSTONE	MG. LT-M. GY. MAS. SLD
35	77.70	77.84	0.14	*65			SANDSTONE	MG. LT-M. GY. MAS. SLD SEVERAL BANDS OF SLTST. SHARP BASAL CONTACT.
35	77.84	78.17	0.33	66			SILTSTONE	SSY. LT-M. GY. LAM. VBRKN CRUDELY INTERLAMINATED MUDST. LAST 15CM BECOMES A MELANGE OF MUDST AND SLTST.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	78.17	79.62	1.45	70			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD SEVERAL LESS THAN 5CM ZONES OF ROUNDED MUDST/SLTST RIPUP CLASTS.
36	79.62	81.10	1.48	*76			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD INDISTINCT MUDST LAMINAE THROUGHOUT.
36	81.10	81.51	0.41	74			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD MUDST/SLTST LAMINAE.
37	81.51	83.59	2.08	*72			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD NUMEROUS MUDST BANDS.
38	83.59	84.03	0.44	75			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD AS ABOVE. TOPS UP (LOAD CASTS).
38	84.03	84.18	0.15	76			SILTSTONE	M-DK. GY. VTHNB. XBDG. SLD X BEDDED WISPS OF FG SS.
38	84.18	84.69	0.51	76			SANDSTONE	MG. VPR. LT-DK. GY. VTHNB. BIOTR. SLD DISTURBED MUDST LAMINAE. NUMEROUS CLAM TYPE BURROWS (LONGEST = 13CM WIDTH <1CM >).
38	84.69	85.56	0.87	*78			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD TRACES OF MUDST LAMINAE. ONE LARGE MUDS T CLAST (9CM).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	85.56	85.63	0.07	79			SANDSTONE	MG. PR. LT-M. GY. THNB. SLD ABUNDANT LARGE OBLONG WELL ROUNDED MUDS T CLAST.
39	85.63	87.18	1.55	*81			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD A FEW LARGE MUDST CLAST (LONGEST = 6CM) DISPERSED THROUGH INTERVAL. 4CM BAND C CONTAINING 3, 1CM SLTST BANDS. TOPS UP (LOAD CASTS). BIZZARE CURVED FRACTURE ALONG DNG. LENGTH OF CORE.
39	87.18	87.50	0.32	80			SANDSTONE	MG. PR. LT-M. GY. MAS. BRKN ANKERITE AND QTZ FILLED FRACTURE AT 15 DEGREES.
39	87.50	87.53	0.03	80			SANDSTONE	MG. PR. LT-DK. GY. VTHNB. SLD COALIFIED PLANT FRAGMENT MATS THROUGHOUT.
39	87.53	87.62	0.09	80			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD
40	87.62	88.67	1.05	79			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD INDISTINCT SPARSE MUDST TRACES. SPARSE MUDST RIPUP CLASTS. LISTRIC SURFACE PER PENDICULAR TO CORE LENGTH. MINOR COALY PLANT MATS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	88.67	88.83	0.16	78			SANDSTONE	MG. LT-DK. GY. MAS. BRKN ZONE OF LARGE MUDST CLASTS (LARGEST 6CM).
40	88.83	89.65	0.82	78			SANDSTONE	MG. VPR. LT-M. GY. MAS. SLD TRACES OF MUDST LAMINAE. CURVILINEAR FRACTURE ALONG LENGTH OF CORE.
41	89.65	90.06	0.41	77			SANDSTONE	SLTY. FG. VPR. LT-M. GY. MAS. SLD VERY OBSCURE TRACES OF MUDST.
41	90.06	90.11	0.05	77			SILTSTONE	M. GY. VTHNB. SLD
41	90.11	90.13	0.02	77			SANDSTONE	SLTY. FG. VPR. M. GY. SLD
41	90.13	90.21	0.08	77			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD
41	90.21	90.29	0.08	77			SILTSTONE	M. GY. THNB. SLD
41	90.29	91.64	1.35	76			SANDSTONE	FG. LT-M. GY. MAS. BRKN MUDST LAMINAE (INDISTINCT) SPARSELY SCATTERED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	91.64	91.80	0.16	*75			SILTSTONE	SSY. M. GY. VTHNB. SLD
42	91.80	93.10	1.30	74			SANDSTONE	MG. LT-M. GY. SLD THIN MUDDY BANDS WITHIN.
42	93.10	93.30	0.20	73			SANDSTONE	MG. LT-M. GY. MAS. SLD THIN MUDDY BANDS WITHIN.
42	93.30	93.61	0.31	73	10105		MUDSTONE	CARB. SLD COALY STRINGERS & PLANT FRAGS VERY ABUNDANT MINOR TRACES OF PYRITE.
42	93.61	93.66	0.05	72	10106	N	COAL	C-2. BRKN
43	93.66	94.17	0.51	72	10106	N	COAL	C-2. BRKN
43	94.17	94.28	0.11	71	10106	N	COAL	C-3. VBRKN SHEARED PARTIALLY.
43	94.28	94.36	0.08	71	10106	N	COAL LOSS	
43	94.36	94.58	0.22	71	10106	N	MUDSTONE	CARB. DK. GY. SHRD SHEARED AND COALY.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	94.58	94.69	0.11	71	10106	N	COAL LOSS	
43	94.69	94.72	0.03	71	10106	N	COAL	C-2. SHRD SHEARED & POWDERED.
43	94.72	95.76	1.04	*70	10107		MUDSTONE	M-DK.GY.BRKN CLAYEY AT TOP. UPPER 25CM SAMPLED. GRADING TO SILTY AT BASE. MINOR COALY STRINGS WITHIN AND LISTRIC SURFACES WITHIN
43	95.76	95.80	0.04	71			ROCK LOSS	
44	95.80	96.16	0.36	*72			MUDSTONE	M-DK.GY.LAM.BRKN SILTY LAMINATIONS. LISTRIC SURFACE AT AN OBLIQUE ANGLE TO CORE. ABUNDANT CARBO-NATIZED PLANT FRAGMENTS (NILSSONIA SHAU-MBERGENSIS).
44	96.16	97.01	0.85	70			MUDSTONE	M-DK.GY.LAM.VBRKN AS ABOVE. NILSSONIA TENUICAILIS.
44	97.01	97.64	0.63	69			MUDSTONE	M-DK.GY.MAS.VBRKN DECREASE IN THE AMOUNT OF PLANT FRAGMENTS.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	97.64	97.67	0.03	68			ROCK LOSS	
45	97.67	98.27	0.60	67			MUDSTONE	SLTY.M-DK.GY.MAS.SHRD ABUNDANT LISTRIC SURFACES MOSTLY VERTICAL STRIATIONS.
45	98.27	99.18	0.91	*65			MUDSTONE	SLTY.DK.GY.MAS.SHRD AS ABOVE. ABUNDANT HORIZONTAL STRIATION S. QTZ FILLED HAIRLINE FRACTURES.
46	99.18	99.36	0.18	66			MUDSTONE	SLTY.M-DK.GY.LAM.VBRKN
46	99.36	99.86	0.50	67			ROCK LOSS	
46	99.86	99.88	0.02	67			MUDSTONE	SLTY.M-DK.GY.VBRKN POSSIBLE FAULT AT 40 DEGREES TO CORE. MINOR GOUGE MATERIAL.
46	99.88	101.23	1.35	68			MUDSTONE	SLTY.M-DK.GY.LAM.VBRKN PRONOUNCED BDG PLANE CLVG. TOPS UP (LOAD CAST).
46	101.23	101.88	0.65	70			ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	101.88	102.08	0.20	71			MUDSTONE	M-DK.GY.VBRKH
47	102.08	102.19	0.11	71			MUDSTONE	M-DK.GY.BRKN ABUNDANT OBLIQUE LISTRIC SURFACES.
47	102.19	102.42	0.23	72			MUDSTONE	SLTY.M-DK.GY.SHRD EXTRAORDINARY HORIZONTAL LISTRIC SURFACES ALONG THE LENGTH OF INTERVAL.
47	102.42	103.81	1.39	*73			SILTSTONE	CLYY.M-DK.GY.LAM.WRMBU.SLD VERY MINOR CARBONATE VEINING. INTERLAMINATED MUDST. TOPS UP. VERTICAL BURROW (15 CM).
48	103.81	104.27	0.46	*70			SILTSTONE	CLYY.M-DK.GY.LAM.SLD INTERLAMINATED MUDST. CLVG PARALLEL TO BDG.
48	104.27	104.47	0.20	70			SILTSTONE	CLYY.M-DK.GY.LAM.SHRD RUBBLE THAT APPEARS VERY SHEARED.
48	104.47	104.71	0.24	70			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN VERY MINOR SMALL CARBONATIZED PLANT FRAGMENTS.
48	104.71	104.77	0.06	69			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	104.77	105.50	0.73	69			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN AS ABOVE. SILTY LAMINATIONS. ANKERITE FILLED FRACTURES (<.5CM) AT APPROX 15 DEGREES TO CORE.
49	105.50	106.31	0.81	69			SILTSTONE	CLYY.M.GY.LAM.BIOTR.BRKN CRUDELY INTERLAMINATED MUDST. BDG OBSCURED IN PORTIONS OF THE INTERVAL. VERY MINOR IRREGULAR CARBONATE VEINING. TOPS UP (LOAD CASTS).
49	106.31	107.06	0.75	68			SILTSTONE	CLYY.M.GY.LAM.VBRKN AS ABOVE. HORIZONTAL LISTRIC SURFACES. MINOR VERTICAL BURROWS (<2CM).
49	107.06	107.60	0.54	68			ROCK LOSS	
50	107.60	108.44	0.84	*67			MUDSTONE	SLTY.M.GY.LAM.BRKN TOPS UP LOAD CAST. SILTY LAMINAE. NUMEROUS HORIZONTAL LISTRIC SURFACES PERPENDICULAR TO CORE.
50	108.44	109.41	0.97	66			MUDSTONE	SLTY.M.GY.BRKN SILTY LAMINAE. INDISTINCT. IRREGULAR CARBONATE VEINING.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	109.41	111.42	2.01	*65			MUDSTONE	SLTY. M-DK. GY. LAM. BRKN PLANT IMPRINTS. NILSSONIA SHAUMBERGENSI S. MICRO-CRYSTALLINE QTZ IN MINOR VEINS . ONE 2CM CARB MUD ZONE, 10CM ZONE AT B ASE WITH DISSEMINATED PYRITE.
51	111.42	111.68	0.26	59			ROCK LOSS	
52	111.68	113.23	1.55	*55			MUDSTONE	SLTY. M-DK. GY. LAM. VBRKN CRUDELY INTERLAMINATED SLTST. SLTST AND THE CARBONATE VEINING HAVE A PECULIAR YELLOWISH TINGE.
53	113.23	113.66	0.43	56			MUDSTONE	CARB. DK. GY. LAM. VSHRD INTENSELY SHRD. A FEW SOLID PIECES. REM NANT CARBONATE VEINING. PECULIAR YELLOW ISH TINGE PERSISTS. VERY SOFT.
53	113.66	114.81	1.15	56			BRECCIA	DK. GY. AS ABOVE. ONE 2CM VEIN. COALY FLECKS. C ONSISTENCY OF CHUNKY PEANUT BUTTER. LAR GE FAULT GOUGE AREA??
53	114.81	114.87	0.06	57			BRECCIA	LT. GY SS THAT HAS BEEN RECONSOLIDATED.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	114.87	115.68	0.81	57			BRECCIA	LT. GY AS ABOVE. FAIRLY HARD.
54	115.68	116.11	0.43	58			MUDSTONE	M-DK. GY. VSHRD INTENSELY SHRD.
54	116.11	116.57	0.46	58			ROCK LOSS	
54	116.57	116.77	0.20	58			MUDSTONE	SLTY. M. GY. LAM. VBRKN RYTHMITES. START OF COASTER ZONE.
54	116.77	116.83	0.06	58			MUDSTONE	SLTY. M. GY. LAM. VBRKN AS ABOVE.
54	116.83	117.23	0.40	59			ROCK LOSS	
55	117.23	118.41	1.18	59			MUDSTONE	SLTY. M. GY. LAM. VBRKN RHYTHMITES. CONTINUATION AND END OF "CO ASTER" ZONE.
55	118.41	118.73	0.32	60			ROCK LOSS	
55	118.73	118.79	0.06	60			MUDSTONE	CLYY. M. GY VERY SOFT.
55	118.79	118.82	0.03	60			MUDSTONE	CARB. DK. GY. BRKN COAL FLECKS. CARBONATE VEIN (<.5CM).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	118.82	118.92	0.10	60		J	COAL	C-4. BLK. SLD MINOR CONCHOIDAL FRACTURES.
55	118.92	118.98	0.06	60		J	MUDSTONE	CARB. BLK. VBRKN COAL FLECKS THROUGHOUT.
55	118.98	119.13	0.15	60		J	COAL LOSS	
56	119.13	119.15	0.02	60		J	COAL	C-6. BLK. VBRKN SMALL BAND OF COAL.
56	119.15	120.20	1.05	61			MUDSTONE	CARB. DK. GY. MAS. VSHRD ABUNDANT PLANT FRAGMENTS AND COALY LIST RIC SURFACES.
56	120.20	120.45	0.25	61			ROCK LOSS	
56	120.45	120.85	0.40	61			MUDSTONE	CARB. DK. GY. SHRD
57	120.85	121.35	0.50	62			MUDSTONE	SLTY. DK. GY. VSHRD MINOR QTZ VEINING. ABUNDANT LISTRIC SUR FACES AT AN OBLIQUE ANGLE TO CORE. PRED OMINANTLY ALONG BDG SURFACES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	121.35	121.95	0.60	62			BRECCIA	SLTY. M-DK. GY. SHRD FAULT ZONE. REWELED MUD AND SILT. LIST RIC SURFACES.
57	121.95	122.30	0.35	63			SILTSTONE	M. GY. LAM. BRKN MINOR LISTRIC SURFACE. INTERLAMINATED M UDST. IRREGULAR QTZ VEINING.
58	122.30	123.03	0.73	*63			SILTSTONE	SSY. M. GY. LAM. BRKN INTERLAMINATED FG SS THAT HAS THE SAME YELLOWISH TINGE. TOPS UP (LOAD CAST). M INOR QTZ VEINING.
58	123.03	123.57	0.54	63			ROCK LOSS	
58	123.57	124.11	0.54	64			SILTSTONE	SSY. M. GY. LAM. VBRKN AS ABOVE. QTZ VEINING IS DISCOLORED TO A YELLOWISH WHITE.
58	124.11	124.36	0.25	64			BRECCIA	DK. GY. VBRKN SLTST AND MUDST FRAGMENTS (<1CM) COMPAC TED IN A MUD MATRIX. CORE LOSS?
59	124.36	124.71	0.35	64			BRECCIA	M-DK. GY. VBRKN AS ABOVE. SOME 5-8CM CHUNKS OF LAMINATE D SLTST & SS AT VARIOUS ANGLES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	124.71	125.10	0.39	64			ROCK LOSS	
59	125.10	125.86	0.76	65			BRECCIA	M-DK.GY.VBRKN SLTST & SS FRAGMENTS (INTERLAMINATED) FOUND IN A VARIETY OF SIZES AND ORIENTATIONS WITHIN A SOFT MUD MATRIX. FAULT ZONE. IRREGULAR QTZ VEINING CONTAINING AN IMPURITY THAT PRODUCES A YELLOWISH TINGE.
59	125.86	126.18	0.32	*65			MUDSTONE	SILTY M-DK.GY.LAM.VBRKN INTERLAMINATED SLTST. TOPS UP (LOAD CAST).
59	126.18	126.44	0.26	65			ROCK LOSS	
59	126.44	126.49	0.05	65			BRECCIA	M.GY.VBRKN SLTST FRAGMENTS SET IN MUD.
60	126.49	126.62	0.13	65			SILTSTONE	M.GY.LAM.BRKN INTERLAMINATED VFG SS. IRREGULAR QTZ VEINING.
60	126.62	126.78	0.16	65			SILTSTONE	M.GY.LAM.BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	126.78	128.14	1.36	65			BRECCIA	M.GY.VBRKN A VARIETY OF SS, SLTST & MUDST FRAGMENTS IN A MUD MATRIX THAT HAS THE CONSISTENCY OF EXTRA SMOOTH CHUNKY PEANUT BUTTER. IRREGULAR ALTERED QTZ VEINING (YELLOW TINGE).
61	128.14	128.59	0.45	66			BRECCIA	M.GY.VBRKN SLTST AND MUDST FRAGMENTS AS ABOVE. COARSELY FRAGMENTED AT BASE (POSSIBLE REMNANTS OF 1 SEAM).
61	128.59	128.91	0.32	66			ROCK LOSS	
61	128.91	129.47	0.56	66			SILTSTONE	SSY LT-M.GY.MAS.VBRKN VERY WELL CEMENTED, HARD. ABUNDANT QTZ VEINING.
61	129.47	129.70	0.23	66			SILTSTONE	SSY LT-M.GY.MAS.SLD QTZ FILLED HAIRLINE FRACTURES. VERY SHARP UPPER CONTACT.
61	129.70	130.04	0.34	*66			MUDSTONE	SSY M-DK.GY.LAM.BRKN MUDST WITH INTERLAMINATED SILTY SS. TOPS UP (LOAD CAST). CORE LOSS!

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	130.04	131.20	1.16	66	10108		MUDSTONE	SILTY, M-DK, GY, BRKN BECOMING MUDDY TOWARDS BASE. LOWER 25CM SAMPLED.
62	131.20	131.32	0.12	66	10109	I	COAL LOSS	
62	131.32	131.40	0.08	66	10109	I	COAL	C-3, SHRD VERY BROKEN AND SHEARED.
62	131.40	131.44	0.04	66	10109	I	MUDSTONE	CARB, DK, GY, SLD LISTRIC SURFACES.
62	131.44	131.54	0.10	66	10109	I	COAL LOSS	
62	131.54	131.59	0.05	66	10109	I	COAL	C-3, SHRD VERY SHEARED & PARTIALLY POWDERED.
62	131.59	131.68	0.09	66	10109	I	MUDSTONE	CARB, DK, GY, YBRKN SHEARED & LISTRIC.
62	131.68	131.86	0.18	66	10109	I	COAL LOSS	
62	131.86	132.04	0.18	66	10109	I	COAL	C-3, YBRKN PARTIALLY SHEARED.
63	132.04	132.61	0.57	66	10109	I	COAL	C-2, SHRD VERY SHEARED & PARTIALLY PHDRED.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	132.61	132.65	0.04	66	10109	I	COAL	C-4, SHRD SHEARED & MUDDY.
63	132.65	132.73	0.08	66	10109	I	COAL	C-4, SHRD SHEARED & MUDDY.
63	132.73	132.97	0.24	66	10109	I	COAL	C-2, SHRD VERY SHEARED & BROKEN.
63	132.97	133.28	0.31	67	10110	I	COAL	C-1, BRKN GOOD CLEAT.
63	133.28	133.30	0.02	67	10110	I	COAL	C-6, SLD BONE COAL.
63	133.30	133.75	0.45	67	10110	I	COAL	C-1, YBRKN GOOD CLEAT.
63	133.75	134.36	0.61	67	10110	I	COAL	C-1, YBRKN MINOR MUDDY BANDS <1 CM.
63	134.36	135.71	1.35	67	10111		MUDSTONE	CARB, M-DK, GY, SLD PLANT FRAGS THROUGHOUT, COALY NEAR TOP. BCA APP. UPPER 25CM SAMPLED.
65	135.71	136.81	1.10	*67			MUDSTONE	M-DK, GY, HAS SLD GRADES INTO SILTY LAMINATIONS TOWARD BASE OF INTERVAL. ONE 15CM VERTICAL WORM BURROW.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	136.81	137.04	0.23	67			SILTSTONE	SSY.M.GY. WISPS OF MUDST. GRADATIONAL CONTACTS. S ANDIER TOWARD BASE.
65	137.04	137.60	0.56	67			SANDSTONE	FG.LT-M.GY.MAS.SLD QTZ FILLED FRACTURE (<.2CM) AT 8 DEGREE S TO CORE.
66	137.60	138.15	0.55	66			SANDSTONE	MG.VPR.LT-M.GY.MAS.SLD LOW ANGLE QTZ FILLED FRACTURE. FRACTURE S HAVE SUGARY TEXTURE.
66	138.15	139.47	1.32	66			SANDSTONE	MG.VPR.LT-M.GY.MAS.BRKN HAND FULL OF SLTST RIP UP CLASTS (LARGE ST APPROX 5 CM.)
67	139.47	140.03	0.56	66			SANDSTONE	MG.VPR.LT-M.GY.MAS.VBRKN HEAVILY FRACTURED SUB PARALLEL TO CORE LENGTH. MICRO CRYSTALLINE QTZ ALONG SOME FRACTURES SENSE OF MOVEMENT ON FRACTURES IS PREDOMINANTLY HORIZONTAL.
67	140.03	141.13	1.10	65			SANDSTONE	CG.VPR.LT-M.GY.MAS.BRKN MINOR WELL ROUNDED SLTST RIPUP CLASTS (LGST 4CM). QTZ FILLED FRACTURES SUB PARALLEL TO CORE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	141.13	141.71	0.58	65			SANDSTONE	CG.VPR.LT-M.GY.MAS.BRKN
68	141.71	141.90	0.19	65			SANDSTONE	CG.VPR.LT-M.GY.MAS.SLD ABUNDANT COMPACTED SLTST/MUDST RIPUP CLASTS.
68	141.90	141.92	0.02	65			SILTSTONE	M.GY.LAM.SLD SHARP UPPER AND BASAL CONTACT.
68	141.92	141.94	0.02	65			SANDSTONE	MG.LT-M.GY.VTHNB.SLD
68	141.94	141.95	0.01	*65			MUDSTONE	SLTY.M.GY.LAM.SLD
68	141.95	142.90	0.95	66			SANDSTONE	MG.LT-M.GY.MAS.SLD 2 DISTINCT MUDST LAMINAE. VERY SMALL MUDST RIPUP CLASTS (<1CM), AT LOWER 20CM OF INTERVAL.
68	142.90	142.99	0.09	67			MUDSTONE	SLTY.M-DK.GY.LAM.SLD SHARP UPPER CONTACT (PASTY).
69	142.99	143.66	0.67	68			MUDSTONE	SLTY.M-DK.GY.VBRKN SILTY WISPS. ABUNDANT HELMINTHOPSIS IN BOTTOM 20CM OF INTERVAL.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	143.66	143.95	0.29	69			ROCK LOSS	
69	143.95	144.00	0.05	70			BRECCIA	DK.GY.VBRKM COMPRESSED MUDST FRAGMENTS.
69	144.00	144.15	0.15	*70			MUDSTONE	DK.GY.MAS.SLD
69	144.15	144.20	0.05	70			BRECCIA	DK.GY.VBRKM COMPRESSED MUDST FRAGMENTS AT 20 DEGREE ANGLE TO CORE.
69	144.20	145.02	0.82	70			MUDSTONE	DK.GY.MAS.SLD 20CM ZONE OF HELMINTHOPSIS BURROWS. SLIGHTLY SILTY IN SECTIONS OF INTERVAL.
70	145.02	145.80	0.78	69			MUDSTONE	DK.GY.MAS.SLD DISINTEGRATES RAPIDLY. VERY MINOR PYRITE BLEBS.
70	145.80	146.24	0.44	69			SILTSTONE	PYP.M-DK.GY.MAS.SLD GRADATIONAL FROM MUDST TO SLTST TO SS. FINING UPWARD SEQUENCE.
70	146.24	146.95	0.71	68			SANDSTONE	FG.M.GY.MAS.SLD 10CM ZONE OF MINOR SLTY LAMINAE. VERY MINOR QTZ VEINING.

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	146.95	147.03	0.08	68			SANDSTONE	FG.M.GY.MAS.SLD SLTST RIPUP CLAST (<2CM) WELL ROUNDED, OBLONG.
71	147.03	147.15	0.12	68			SANDSTONE	FG.PR.LT-M.GY.SLD AS ABOVE. SAND IS OXIDIZED AND HAS YELL OSHISH TINGE.
71	147.15	148.98	1.83	*67			SANDSTONE	FG.PR.LT-M.GY.MAS.SLD MINOR MUDST TRACES.
72	148.98	149.35	0.37	*63			SANDSTONE	FG.PR.LT-M.GY.MAS.SLD ONE BAND OF MUDST THAT VARIES FROM 1CM TO 0.2CM. MINOR QTZ VEIN.
72	149.35	149.48	0.13	63			SANDSTONE	FG.PR.LT-DK.GY.MAS.BIOTR.SLD CLAM BURROW 9CM LONG, 1CM WIDE, VERTICAL.
72	149.48	149.77	0.29	63			SANDSTONE	FG.PR.LT-M.GY.MAS.SLD MINOR QTZ VEIN.
72	149.77	150.12	0.35	64			SANDSTONE	FG.PR.LT-M.GY.THNB.BRKN NUMEROUS SLTST LAMINATIONS. SPARSE OXIDIZED DISCONTINUOUS QTZ VEINING.
72	150.12	150.16	0.04	64			SANDSTONE	FG.PR.LT-M.GY.SLD AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	150.16	150.19	0.03	64			MUDSTONE	SLTY. DK. GY. SLD SHARP CONTACTS.
72	150.19	150.66	0.47	64			SANDSTONE	SLTY. VFG. M. GY. MAS. SLD CARBONATIZED PLANT FRAGMENTS. HAIR LINE SINUOIDAL FRACTURES. MINOR OXIDIZED QTZ VEINING.
72	150.66	150.79	0.13	65			SANDSTONE	SLTY. VFG. M. GY. BIOTR. SLD WISPS OF SLTST. THROUGHOUT.
72	150.79	150.94	0.15	65			SANDSTONE	FG. PR. LT-M. GY. MAS. SLD COARSER WITH DEPTH. FINING UPWARD SEQUE NCE (SMALL SCALE).
73	150.94	152.42	1.48	66			SANDSTONE	MG. PR. LT-M. GY. MAS. SLD IRREGULAR OXIDIZED QTZ VEINING.
73	152.42	152.65	0.23	66			SANDSTONE	SLTY. FG. LT-M. GY. MAS. SLD YELLOWISH OXIDIZED TINGE.
73	152.65	152.92	0.27	67			SANDSTONE	FG. LT-M. GY. MAS. SLD WELL CEMENTED. MINOR WISPS OF MUDST.
73	152.92	153.05	0.13	67			SANDSTONE	SLTY. FG. LT-M. GY. MAS. SLD OXIDIZED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	153.05	153.12	0.07	67			SANDSTONE	SLTY. FG. LT-M. GY. MAS. SLD AS ABOVE. MUDST LAMINAE AT TOP OF INTER VAL.
74	153.12	153.75	0.63	67			SANDSTONE	FG. LT-M. GY. MAS. BRKN MINOR IRREGULAR QTZ VEINING. BOTTOM 20C M. HAS OXIDIZED.
74	153.75	154.63	0.88	*68			SANDSTONE	SLTY. FG. LT-M. GY. VTHNB. SLD ABUNDANT MUDST/SLTST LAMINATIONS. TOPS UP (LOAD CASTS).
74	154.63	154.97	0.34	65			SANDSTONE	VFG. PR. M. GY. LAM. SLD INTERLAMINATED SLTST AND MUDST. VERY SP ARSE QTZ VEINING. GRADES INTO SLTST.
75	154.97	155.16	0.19	*63			SILTSTONE	M. GY. LAM. SLD INTERLAMINATED MUDST. 3CM QTZ VEIN AT B ASE.
75	155.16	155.98	0.82	64			SILTSTONE	M. GY. LAM. BRKN CRUDELY INTERLAMINATED MUDST. ABUNDANT HELMINTHOPIDS BURROWS. SOME CARBONATIZE D PLANT FRAGMENTS.
75	155.98	156.46	0.48	65			ROCK LOSS	

\* DENOTES MEASURED BCA



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	156.46	157.29	0.83	66			SILTSTONE	CLY. M. GY. LAM. BRKN AS ABOVE. 2 ZONES (1CM THICK) OF GOUGE MATERIAL, APPROX 45 DEGREES TO CORE. QTZ VEIN PARALLEL TO BDG.
76	157.29	157.92	0.63	67			MUDSTONE	M-DK. GY. MAS. BRKN MINOR INDISTINCT SLTST LAMINAE.
76	157.92	158.22	0.30	68			ROCK LOSS	
76	158.22	158.33	0.11	69			MUDSTONE	M-DK. GY. VSHRD MINOR FAULT.
76	158.33	158.58	0.25	69			SILTSTONE	SSY. M. GY. LAM. SLD SMALL SCALE DISPLACEMENT ALONG MINOR QTZ FILLED FRACTURES. TOPS UP (SMALL BIYA LVE BURROW).
76	158.58	159.48	0.90	*70			MUDSTONE	M-DK. GY. LAM. BRKN CRUDELY INTERLAMINATED SLTST. VERY SMALL SCALE XBDG. TOPS UP (SMALL VERTICAL BURROW).
77	159.48	159.64	0.16	*68			MUDSTONE	M-DK. GY. LAM. SLD INTERLAMINATED SLTST.
77	159.64	159.81	0.17	68			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	159.81	160.82	1.01	68			MUDSTONE	M-DK. GY. LAM. BRKN CRUDELY INTERLAMINATED SLTST THAT PHASES OUT WITH DEPTH. TOPS UP (LOAD CASTS). ABUNDANT HELMINTHOPSIS BURROWS.
77	160.82	161.71	0.89	68			MUDSTONE	DK. GY. MAS. SLD DISENTEGRATES RAPIDLY INTO ITTY BITTY PIECES.
78	161.71	162.51	0.80	69			MUDSTONE	DK. GY. MAS. SLD AS ABOVE. MONOTONOUS MUD.
78	162.51	163.41	0.90	69			MUDSTONE	DK. GY. MAS. SLD AS ABOVE SOFT.
78	163.41	163.65	0.24	69			MUDSTONE	LT-M. GY. MAS. SLD VERY VERY HARD. PECULIAR ROCK. MUD WITH VERY SMALL GLASSY SHARDS. WELDED TUFF ? RECRYSTALLIZATION BY QTZ RICH SOLUTION ? SHARP BASAL CONTACT, GRADATIONAL UPPER CONTACT.
78	163.65	163.68	0.03	69			SILTSTONE	M. GY. LAM. SLD INTERLAMINATED MUD.
79	163.68	164.28	0.60	69			MUDSTONE	SLTY. M-DK. GY. SLD DISENTEGRATES RAPIDLY. INDISTINCT SILTY LAMINAE. IRREGULAR QTZ VEINING AT BASE

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	164.28	164.76	0.48	69			MUDSTONE	DK.GY.SLD DISENTEGRATES RAPIDLY. PLANT FRAGMENTS ABUNDANT.
79	164.76	164.92	0.16	69			SILTSTONE	CLYY.M.GY.SLD HELMINTHOPSIS.
79	164.92	165.19	0.27	69			MUDSTONE	DK.GY.SLD DISENTEGRATES RATHER EASILY.
79	165.19	165.23	0.04	69			MUDSTONE	DK.GY VERY SOFT (LIKE EXTRA SMOOTH PEANUT BUT TER). FILLED WITH SMALL QTZ SHARDS.
79	165.23	165.50	0.27	69			MUDSTONE	DK.GY.BRKN
79	165.50	165.58	0.08	69			MUDSTONE	DK.GY.BRKN
79	165.58	165.62	0.04	69			SILTSTONE	M.GY.LAM.SLD INTERLAMINATED MUDST.
80	165.62	166.20	0.58	69			MUDSTONE	SLTY.M-DK.GY.BRKN MINOR SLTY LAMINAE. ABUNDANT CARBONATIZ ED PLANT FRAGMENTS.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	166.20	166.35	0.15	69			ROCK LOSS	
80	166.35	166.90	0.55	69			MUDSTONE	DK.GY.MAS.VBRKN SUBVERTICAL FAULT PLANE. TALC AND CHLOR ITE ON SURFACE. HORIZONTAL STRIAE. STRI KE SLIP SENSE OF MOVEMENT.
80	166.90	166.99	0.09	70			BRECCIA	DK.GY.SLD MUDST. FRAGMENTS IN MATRIX OF QTZ.
80	166.99	167.55	0.56	70			MUDSTONE	DK.GY.MAS.VBRKN ABUNDANT TALC AND CHLORITE COATED FRACT. URES.
80	167.55	167.75	0.20	70			ROCK LOSS	
80	167.75	167.77	0.02	70			MUDSTONE	DK.GY VERY VERY SOFT.
80	167.77	167.85	0.08	70			MUDSTONE	DK.GY.MAS.BRKN PYRITE BLEB.
80	167.85	167.90	0.05	70			MUDSTONE	DK.GY VERY VERY SOFT.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	167.90	168.53	0.63	70			MUDSTONE	DK.GY.MAS.BRKN ABUNDANT TALC AND CHLORITE COATED SURFACES AT A VARIETY OF ANGLES.
81	168.53	168.61	0.08	70			BRECCIA	M-DK.GY.SLD ROUNDED SLTST FRAGMENTS IN A MATRIX OF MUD AND QTZ BETWEEN TWO 1CM SLTST BANDS . QTZ IS OXIDIZED.
81	168.61	168.78	0.17	70			MUDSTONE	SLTY.M-DK.GY.BRKN IRREGULAR OXIDIZED QTZ VEINING.
81	168.78	168.96	0.18	70			SILTSTONE	M.GY.BRKN TALC AND CHLORITE COATED FRACTURES. HELMINTHOSIS.
81	168.96	169.81	0.85	*70			MUDSTONE	DK.GY.BRKN AS ABOVE. BAND OF PYRITE 1CM THICK.
82	169.81	171.19	1.38	67			MUDSTONE	DK.GY.MAS.VBRKN ABUNDANT TALC AND CHLORITE COATED SURFACES. WEATHERS VERY EASILY.
82	171.19	171.21	0.02	65			MUDSTONE	DK.GY VERY SOFT. FAULT.
82	171.21	171.25	0.04	*65			SILTSTONE	M.GY.VBRKN CHLORITE. VERY GOUGED UP. BCA APPROXIMATE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	171.25	171.83	0.58	39			ROCK LOSS	
82	171.83	172.18	0.35	*01			SILTSTONE	M.GY.LAM.VBRKN PARASITIC FOLD AXIS AT BASE OF INTERVAL . INTERLAMINATED MUDST. MINOR OXIDIZED QTZ VEINING.
83	172.18	172.24	0.06	*80			MUDSTONE	M-DK.GY.LAM.VBRKN TALC AND CHLORITE.
83	172.24	173.54	1.30	*10			SILTSTONE	SSY.M.GY.LAM.VBRKN INTERLAMINATED MUDST/SLTST. AT LEAST 7 PARASITIC FOLD AXIS. BCA'S VARY FROM 0 TO A MAX OF 45. SOME SECTIONS APPEAR VERY BRECCIATED. TALC AND CHLORITE THROUGHOUT. CORE LOSS??
83	173.54	173.96	0.42	14			ROCK LOSS	
83	173.96	174.09	0.13	*15			SILTSTONE	SSY.M.GY.LAM.VBRKN INTERLAMINATED MUDST.
83	174.09	174.28	0.19	14			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	174.28	174.95	0.67	*10		SILTSTONE	SSY. M. GY. LAM. VBRKN QTZ VEINING. POSSIBLY 2 MORE PARASITIC FOLDS. LISTRIC SURFACES.
84	174.95	175.15	0.20	25		SANDSTONE	FG. LT-M. GY. MAS. SLD ABUNDANT OXIDIZED QTZ VEINING.
84	175.15	175.22	0.07	29		MUDSTONE	M-DK. GY. VERY SOFT. BRECCIATED.
84	175.22	175.98	0.76	43		ROCK LOSS	
84	175.98	176.32	0.34	62		SANDSTONE	FG. LT-M. GY. MAS. VBRKN SHEARED MUDST BAND. MINOR QTZ VEINING ( OXIDIZED).
85	176.32	176.68	0.36	73		SANDSTONE	FG. LT-M. GY. MAS. BRKN IRREGULAR OXIDIZED QTZ VEINING THROUGH IT.
85	176.68	176.77	0.09	81		BRECCIA	LT-M. GY. VBRKN SS FRAGMENTS AND A SOFT GREENISH WHITE FRACTURE FILL MINERAL SET IN MUD.
85	176.77	176.92	0.15	*85		SANDSTONE	FG. LT. GY. VBRKN SS RUBBLE.
85	176.92	177.20	0.28	85		ROCK LOSS	

\* DENOTES MEASURED. BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	177.20	177.68	0.48	84		SANDSTONE	FG. LT-M. GY. VBRKN SLIGHT YELLOWISH OXIDIZED COLOR. SPARSE QTZ VEINING. CORE LOSS A DEFINITE POSS IBILITY.
85	177.68	178.72	1.04	82		ROCK LOSS	
85	178.72	178.99	0.27	80		MUDSTONE	SLTY. M-DK. GY. LAM. BRKN CRUDELY INTERLAMINATED SLTST.
85	178.99	179.21	0.22	80		BRECCIA	DK. GY. VBRKN MUDST FRAGMENTS SET IN MUD. FAULT ZONE. QTZ BLEB (2-3CM).
85	179.21	179.41	0.20	79		ROCK LOSS	
86	179.41	180.21	0.80	78		SILTSTONE	M. GY. LAM. VBRKN RUBBLE. INTERLAMINATED MUDST. NUMEROUS ZONES OF BRECCIATION. QTZ VEINS.
86	180.21	181.36	1.15	76		ROCK LOSS	
86	181.36	181.60	0.24	74		SILTSTONE	M. GY. VBRKN RUBBLE.

\* DENOTES MEASURED. BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	181.60	182.25	0.65	73			MUDSTONE	SLTY. M. GY. LAM. VBRKN RYTHMITES. "COASTER" ZONE. CORE LOSS. S ONE BRECCIATION.
87	182.25	182.58	0.33	72			ROCK LOSS	
87	182.58	183.36	0.78	71			MUDSTONE	SLTY. M. GY. LAM. VBRKN RYTHMITES. THE CLASSIC "COASTERS" ABOVE J. SEAM.
88	183.36	183.47	0.11	70	10112		MUDSTONE	CARB. DK. GY. SLD POORLY CONSOLIDATED. COALY AND CONTORTE D.
88	183.47	183.72	0.25	69	10113	J. REP.	COAL	C-1. SLD
88	183.72	183.89	0.17	69	10113	J. REP.	COAL LOSS	
88	183.89	183.96	0.07	69	10113	J. REP.	COAL	C-5. SLD
88	183.96	184.53	0.57	68	10114		MUDSTONE	CARB. M-DK. GY. SLD PLANT FRAGS. WITHIN UPPER 25CM SAMPLED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	184.53	185.36	0.83	66			MUDSTONE	CARB. DK. GY. SLD ABUNDANT PLANT FRAGS, MANY COALIFIED LOCALLY. VERY COALY IN PLACES.
89	185.36	185.98	0.62	65			MUDSTONE	BLK. BRKN ABUNDANT COAL STRINGERS (LGST .5CM). .5 CM QTZ VEIN AT TOP OF INTERVAL. ABUNDANT PLANT FRAGMENTS.
89	185.98	186.80	0.82	*63			MUDSTONE	SLTY. DK. GY. BRKN (TRILSSONIA TENUICAULIS, CZEKAROWSKI RIGIDA, PITYOPHYLLUM NORDENSKIOLDII, PTEROPHYLLUM, RECTANGULARE). PLANTS EVERYWHERE ! THIN COAL STRINGERS.
89	186.80	186.99	0.19	63			SILTSTONE	M. GY. MAS. SLD VERY HARD. CALCAREOUS. WELL CEMENTED.
89	186.99	187.23	0.24	63			MUDSTONE	DK. GY. BRKN ABUNDANT PLANT FRAGMENTS AS QUOTED ABOVE (2).
90	187.23	187.43	0.20	63			SILTSTONE	M. GY. LAM. SLD CRUDELY INTERLAMINATED MUD THAT UNDERLIES THE PROGRADING DELTA. MINOR BIOTRB. TOPS UP.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	187.43	189.31	1.88	#63			SILTSTONE	M.GY.LAM.SLD WISPY INTERLAMINATED MUDST. MINOR BIOTR B. TOPS UP.
91	189.31	190.41	1.10	63			SILTSTONE	M.GY.BIOTR.SLD INDISTINCT INTERLAMINATED MUDST. BDG OB SCURRED BY BIOTRB.
91	190.41	191.34	0.93	64			SILTSTONE	CLYY.M.GY.BIOTR.SLD AS ABOVE, BURROWED OXIDIZED SAND BANDS.
92	191.34	192.76	1.42	#64			SILTSTONE	M.GY.LAM.BIOTR.BRKN THIN SPARSE QTZ VEINING. WISPS OF MUD. PLANT FRAGMENTS AND A COAL STRINGER AT BASE OF INTERVAL. CORE TWIST OFF NEAR T OP OF INTERVAL. TOPS UP.
92	192.76	192.86	0.10	64			SANDSTONE	FG.LT-M.GY.VBRKN SS RUBBLE. SEEMS OUT OF PLACE. CORE LOS S?
92	192.86	193.46	0.60	65			ROCK LOSS	
92	193.46	193.64	0.18	65			SILTSTONE	CLYY.M.GY.LAM.BIOTR.BRKN MINOR QTZ VEINING. INDISTINCT MUDST LAM INAE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	193.64	194.70	1.06	#65			SILTSTONE	M.GY.LAM.BIOTR.BRKN INDISTINCT MUDST LAMINAE.
93	194.70	194.99	0.29	65			ROCK LOSS	
93	194.99	195.41	0.42	64			BRECCIA	M.GY.VBRKN MUDST FRAGMENTS IN A MUD MATRIX WITH SH. ORT IRREGULAR QTZ VEINS.
93	195.41	195.83	0.42	64			SILTSTONE	M-DK.GY.LAM.BRKN MINOR QTZ VEINING. INDISTINCT MUDST LAM INAE.
93	195.83	196.07	0.24	64			ROCK LOSS	
94	196.07	196.17	0.10	64			BRECCIA	M.GY.VBRKN MUDST FRAGMENTS IN MUD MATRIX. VERY SOF T.
94	196.17	196.32	0.15	64			SILTSTONE	M-DK.GY.LAM.VBRKN INDISTINCT MUDST LAMINAE.
94	196.32	196.84	0.52	64			ROCK LOSS	
94	196.84	196.88	0.04	63			MUDSTONE	DK.GY.VSHRD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	196.88	197.03	0.15	63			SILTSTONE	M-DK. GY. LAM. SLD INDISTINCT MUDST LAMINAE. QTZ VEIN.
94	197.03	198.31	1.28	63			SILTSTONE	M-DK. GY. LAM. BIOTR. SLD AS ABOVE. TOPS UP (VERTICAL BURROWS). PARSE HAIRLINE QTZ VEINING (OXIDIZED).
95	198.31	200.11	1.80	*62			SILTSTONE	M-DK. GY. LAM. WRMBU. SLD AS ABOVE.
95	200.11	200.41	0.30	63			SILTSTONE	M-DK. GY. LAM. WRMBU. SLD AS ABOVE.
96	200.41	202.49	2.08	*65			SILTSTONE	M. GY. LAM. BRKN AS ABOVE.
97	202.49	203.09	0.60	66			SILTSTONE	M-DK. GY. LAM. SLD AS ABOVE.
97	203.09	204.42	1.33	*67			SILTSTONE	M. GY. LAM. SLD INDISTINCT MUDST LAMINAE. MINOR QTZ VEI N. TOPS UP (LOAD CAST).
98	204.42	205.12	0.70	65			SILTSTONE	M. GY. LAM. BRKN AS ABOVE. SSSY TOWARD BASE.
98	205.12	206.02	0.90	63			SANDSTONE	FG. LT-M. GY. MAS. SLD IRREGULAR QTZ VEINING THROUGHOUT. GRADU ATIONAL CONTACT. OXIDIZED.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB6025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
98	206.02	206.26	0.24	62			SANDSTONE	FG. MOD. LT-M. GY. MAS. SLD QTZ VEINING. ONE THIN MUDST BAND (<1CM)
99	206.26	208.27	2.01	59			SANDSTONE	FG. MOD. LT-M. GY. MAS. SLD NUMEROUS WISPS OF MUDST. QTZ VEINING IN THE TOP 50CM OF THE INTERVAL (<1CM). A FEW SLTST BANDS.
100	208.27	208.81	0.54	*56			SANDSTONE	FG. MOD. LT-M. GY. MAS. SLD VERY MINOR WISPS OR TRACES OF MUDST.
100	208.81	209.24	0.43	56			SANDSTONE	FG. MOD. LT-M. GY. MAS. SLD AS ABOVE. 4CM BAND OF VERY LOW ANGLE XB DG. SHARP BASAL CONTACT.
100	209.24	209.56	0.32	56			SANDSTONE	FG. PR. LT. GY. MAS. SLD GRADATIONAL FROM LT-M GY TO LT GY AND T UFFACEOUS UPWARDS. ABUNDANT SPOTTY MUDS T TRACES.
100	209.56	209.60	0.04	56			SANDSTONE	FG. VPR. LT-M. GY. SLD WELL ROUNDED SLTST RIPUP CLASTS. EROSION NAL SCURED BASE. SHARP CONTACT. INFLUX OF SEDIMENT UNAFFECTED BY ASH FALL.
100	209.60	210.16	0.56	56			SANDSTONE	VFG. LT. GY. MAS. SLD TUFFACEOUS SAND. INDISTINCT MUDST TRACE S.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
101	210.16	210.40	0.24	57			SANDSTONE	VFG. LT. GY. MAS. SLD AS ABOVE. VERY LOW ANGLE XBDG EVIDENT.
101	210.40	210.42	0.02	57			CLAYSTONE	LT. GY. SLD VERY SOFT.
101	210.42	210.79	0.37	57			SANDSTONE	VFG. LT. GY. MAS. SLD MINOR MUDST TRACES.
101	210.79	210.94	0.15	57			BRECCIA	LT-M. GY. VBRKN SS FRAGMENTS IN SOFT MUD MATRIX. MINOR OXIDIZED QTZ VEINING.
101	210.94	211.13	0.19	57			ROCK LOSS	
101	211.13	211.64	0.51	57			SANDSTONE	VFG. LT-M. GY. MAS. BRKN MINOR QTZ VEINS.
101	211.64	211.85	0.21	57			BENTONITE	HH VERY SOFT. DIRTY WHITE IN BOTTOM 10CM. 2CM QTZ VEIN AT TOP OF INTERVAL.
101	211.85	212.20	0.35	57			SILTSTONE	M. GY. LAM. HRMBU. BRKN TOPS UP. VERTICAL BURROWS (2-3CM LONG, 1CM WIDE). MINOR OXIDIZED QTZ VEINING. INTERLAMINATED 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: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
102	212.20	212.74	0.54	57			SILTSTONE	CLYY. M-DK. GY. LAM. VBRKN CRUDELY INTERLAMINATED MUDST (THEY BLEND TOGETHER).
102	212.74	213.07	0.33	58			ROCK LOSS	
102	213.07	214.28	1.21	58			MUDSTONE	SLTY. M-DK. GY. BRKN MINOR HAZY SILTST BANDS. 2 BURROWS (2-3 CM LONG, 1CM WIDE). TOPS UP.
102	214.28	214.72	0.44	58			ROCK LOSS	
103	214.72	215.12	0.40	58			MUDSTONE	SLTY. M-DK. GY. SLD
103	215.12	216.24	1.12	59	10115		MUDSTONE	SLTY. DK. GY. SLD BECOMING CARB AND CONTAINING ABUNDANT C OALY STRINGERS IN LOWER 20CM. LOWER 25CM SAMPLED.
103	216.24	216.36	0.12	59	10116	I REP	COAL	C-2. 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: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
103	216.36	216.40	0.04	59	10116	I REP	COAL	C-4. SHRD MUDDY & SHEARED.
103	216.40	216.56	0.16	59	10116	I REP	COAL	C-2. VBRKN
104	216.56	216.68	0.12	59	10116	I REP	COAL	C-3. BRKN
104	216.68	216.77	0.09	59	10116	I REP	COAL	C-4. BRKN C-2 BANDS THROUGHOUT.
104	216.77	216.89	0.12	59	10116	I REP	ROCK LOSS	
104	216.89	217.26	0.37	59	10116	I REP	COAL LOSS	
104	217.26	217.87	0.61	59	10116	I REP	COAL	C-2. BRKN MINOR MUDDY BANDS WITHIN.
104	217.87	217.95	0.08	59	10117	I REP	MUDSTONE	SLTY. M. GY. SLD
104	217.95	218.09	0.14	59	10117	I REP	COAL	C-3. BRKN MINOR MUDDY AND C-1 BANDS WITHIN.
104	218.09	218.18	0.09	60	10117	I REP	COAL LOSS	
104	218.18	218.20	0.02	60	10117	I REP	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: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
104	218.20	218.27	0.07	60	10117	I REP	MUDSTONE	CARB. SLD
104	218.27	218.92	0.65	60	10117	I REP	COAL	C-2. BRKN APPROACHING C-1.
105	218.92	219.16	0.24	60	10117	I REP	COAL	C-1. SHRD VERY BROKEN.
105	219.16	219.24	0.08	60	10117	I REP	COAL	C-3. BRKN
105	219.24	219.39	0.15	60	10117	I REP	COAL	C-2. VBRKN
105	219.39	219.45	0.06	60	10117	I REP	COAL	C-3. SHRD MIXED WITH MUD DUE TO SHEARING.
105	219.45	219.88	0.43	60	10118	I REP	COAL LOSS	
105	219.88	221.00	1.12	60	10118	I REP	COAL	C-1. SHRD VERY BROKEN, SHEARED AND POWDERED. PARTIAL MIXING OF MUD DUE TO SHEARING.
106	221.00	221.72	0.72	61	10118	I REP	COAL	C-1. VBRKN AS ABOVE BUT NOT AS SHEARED.
106	221.72	221.81	0.09	61	10119		MUDSTONE	CARB. DK. GY. SLD ABUNDANT COALY PLANT FRAGS & LENSES.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
106	221.81	223.07	1.26	61	10119		MUDSTONE	CARB. DK. GY. BRKN ABUNDANT PLANT FRAGS. COALIFIED NEAR TO P OF UNIT. UPPER 16CM SAMPLED.
107	223.07	224.08	1.01	62			MUDSTONE	DK. GY. MAS. SLD
107	224.08	224.28	0.20	62			MUDSTONE	SLTY. DK. GY. MAS. SLD
107	224.28	224.56	0.28	62			SILTSTONE	M-DK. GY. LAM. SLD INTERLAMINATED MUDST. HORIZONTAL STRIAT ED LITRIC SURFACE.
107	224.56	224.64	0.08	62			SANDSTONE	FG. LT-M. GY. THNB. SLD SHARP CONTACTS.
107	224.64	224.72	0.08	62			SILTSTONE	H-DK. GY. LAM. SLD
107	224.72	224.92	0.20	*62			SANDSTONE	FG. LT-M. GY. MAS. BRKN FRACTURED. QTZ VEINING.
108	224.92	225.68	0.76	62			SANDSTONE	FG. LT-M. GY. MAS. BRKN AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
108	225.68	226.75	1.07	62			SANDSTONE	FG. LT-M. GY. MAS. BRKN SOME SLTST RIPUP CLASTS. FRACTURE AT 25 DEGREES. I.D. = 230.73 M. THIS IS THE END. NOTE: CORE WAS LEFT OUTSIDE IN THE RAIN BEFORE LOGGING AND THIS MAY HAVE RESULTED IN THE YELLOWISH OXIDIZED TING E. DESCRIBED.

\* DENOTES MEASURED BCA

NEWPAGE



















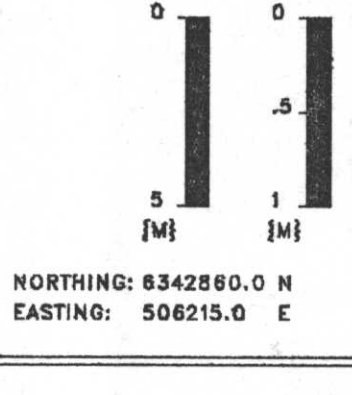
GULF CANADA CORPORATION  
 COAL DIVISION  
 KLAPPAN PROJECT  
 STRATIGRAPHIC LOG  
 KPN LR DDH86025

723

GEOLOGIST : SAVOIE

DATE : FEB 26/87

DRAWING NO. :

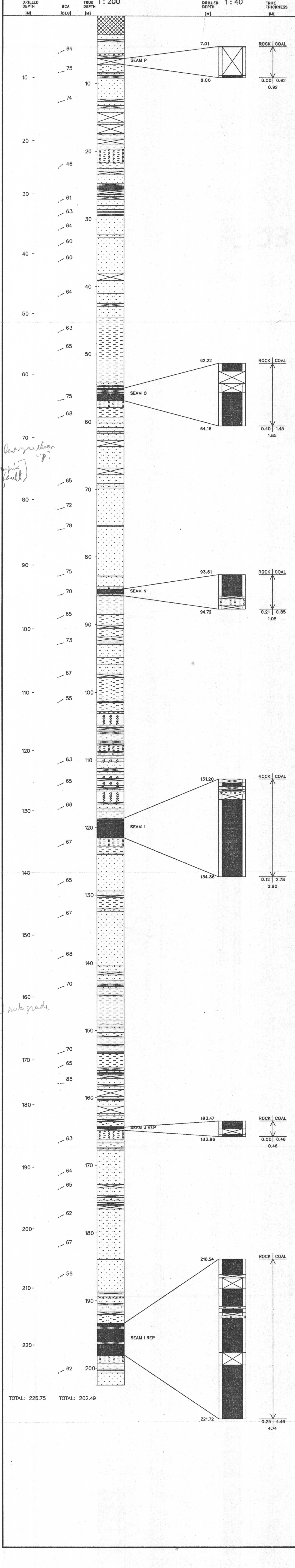


NORTHING: 6342860.0 N  
 EASTING: 506215.0 E  
 INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

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

6 deep fault  
 find clbs  
 666  
 4  
 py  
 46  
 31  
 40  
 40  
 50  
 60  
 70  
 80  
 90  
 100  
 110  
 120  
 130  
 140  
 150  
 160  
 170  
 180  
 190  
 200  
 210  
 220



TOTAL: 226.75 TOTAL: 202.49

clb/sale  
 666  
 100  
 160  
 170  
 180  
 190  
 200  
 210  
 220



# Gulf Canada Corporation Coal Division

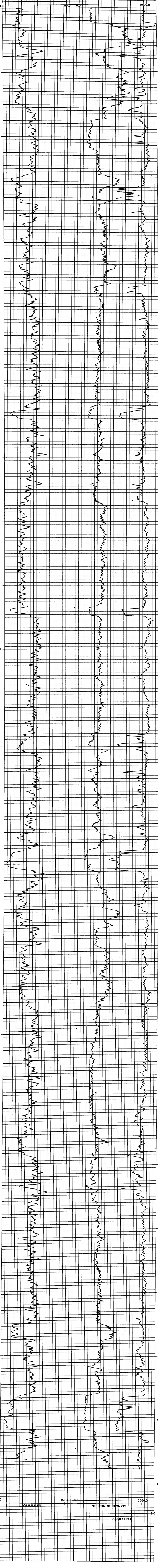
# 723

## Geophysical Log

Datasource: <b>KPNLRDDH86025</b>	Province: BC	Northing: 6342860.00	Lat: 571351
Log Date: 86-09-19	Zone: 9	Easting: 506215.00	Long: 1285349
Company: CENTURY	Measuring Point:		Elevation: 1656.9
Geologist: SAVOIE			

Scale: 1 to 100.0	Comments: 1. LOGGED THROUGH THE RODS 2.
Depth Range: 0.0 to 232.0	
True Thickness: NO	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 150.0	10.0	31	9055A	IN PIPE
2. NEUTRON-NEUTRON CPS	0.0 to 2500.0	10.0	9	9055A	IN PIPE
3. DENSITY G/CC	1.0 to 3.0	10.0	15	9030A	IN PIPE



**KPNLRDDH86026**

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

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH86026

DATE - 02/13/87

- HISTORY -

START DATE - 17/09/86  
END DATE - 18/09/86

CONTRACTOR - J.T. THOMAS  
GEOLOGIST - BARKER

OPERATOR - G.C.C.  
SURVEYOR - TRONNES

REMARKS - COAL LOGGED BY BRAD VANDENBUSSCHE.

- LOCATION -

PROVINCE - BC  
ELEVATION - 1400.07

ZONE - 9  
NORTHING - 6343948.00  
EASTING - 502857.69

LICENCE/LEASE NUMBER -

LATITUDE - 571426  
LONGITUDE - 1285710

- ORIENTATION -

LENGTH - 155.75  
CORE SIZE - 0.0

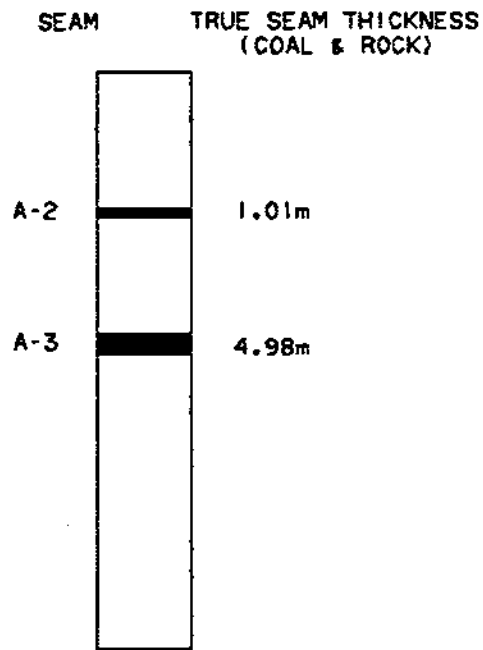
INCLINATION - 90.0  
AZIMUTH - 0.0

CEMENT - N  
PLUG - N  
PIEZ - N

CASING DEPTH (M) - 9.14  
AQUIFER DEPTHS (M) - 0.00  
0.00  
LOST CIRC. DEPTHS (M) - 0.00  
0.00

\*\*\* NOTE \*\*\* 0 INDICATES NO VALUE

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**NOTE:**

SCHEMATIC PROFILE.  
 NO THICKNESSES SHOWN  
 FOR SEAMS CONTAINING  
 LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

**FIGURE**

**MOUNT KLAPPAN ANTHRACITE PROJECT**

1986 DIAMOND DRILL HOLES  
 DDH86026

GULF CANADA CORPORATION  
 11/03/87  
 KLAP:12050571870063026.LOG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	9.14	9.14	75			OVERBURDEN	CASING
1	9.14	9.81	0.67	75			SILTSTONE	DK. GY. LAM. YBRKN OCCASIONAL HESPY MUD LAMINAE. VERY CRUM BLED CORE.
1	9.81	10.31	0.50	75			ROCK LOSS	
1	10.31	10.83	0.52	75			SANDSTONE	FG-MOD. M. GY. VTHNB. YBRKN OCCASIONAL MUD BANDS. SHARP UNIFORM CON TACTS. FG-MG. VERY CRUMBLED CORE.
1	10.83	11.01	0.18	75			ROCK LOSS	
2	11.01	12.25	1.24	75			SANDSTONE	MG. MOD. M. GY. MAS. YBRKN RARE MUD BANDS AND MUD RIPUP CLASTS. PR EDMINANTLY MASSIVE. OCCASIONAL BANDS OF EASILY WEATHERED, POORLY CONSOLIDATED SAND.
2	12.25	12.73	0.48	75			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. SLD NUMEROUS FINE PLANAR MUD LAMINAE THROUG HOUT.
3	12.73	12.87	0.14	75			SILTSTONE	VPR. DK. GY. VTHNB. SLD MUCH MORE SILT THAN ABOVE. UNIFORM BEDD ING.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	12.87	14.10	1.23	*75			SILTSTONE	VPR. DK. GY. LAM. XBDG. SLD NUMEROUS FINE LAMINAE THROUGHOUT RANGIN G IN GRAIN SIZE FROM DARK MUD TO FG SS. XBDG. SHOWS TOPS UP.
4	14.10	14.30	0.20	73			SILTSTONE	VPR. DK. GY. LAM. SLD LITH AS ABOVE WITH GRADATIONAL CONTACT TO SAND BELOW.
4	14.30	14.80	0.50	72			SANDSTONE	FG. MEL. M. GY. MAS. SLD
4	14.80	16.38	1.58	*70			SANDSTONE	FG. MOD. M. GY. MAS. YBRKN PREDOMINANTLY MASSIVE. MINOR MUD LAYERS WITH GRADATIONAL BASAL CONTACTS. FRACT URING SUB PARALLEL TO CORE.
4	16.38	16.63	0.25	65			SANDSTONE	FG. MOD. M. GY. MAS. BRKN LITH AS ABOVE. CORE THIST OFF AT TOP.
5	16.63	17.89	1.26	*60			SANDSTONE	MG. MOD. M. GY. MAS. YBRKN MASSIVE F-MG SAND-SILT BANDS ARE RARE IF PRESENT AT ALL. MINOR V FAINT BEDDIN G VISIBLE IN SAND.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	17.89	18.49	0.60	*68			SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. BRKN SILTY MUD BANDS WITH MUCH PLANT WASH AR E NUMEROUS GRADATIONAL CONTACTS. BREAKS EASILY & WILL WEATHER ALONG BEDDING PL NES.
6	18.49	20.35	1.86	*68			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. VBRKN NUMEROUS MUD LAMINAE WITH PLANT WASH. M UDST RIPUP CLASTS. FINELY LAMINATED NEA R BASE OF INTERVAL WITH VERT & HORIZ MO RM BURROWS. TOPS UP. EASILY WEATHERED. ROUND BLACK SPECKS 1MM IN DIA (WORM PEL LETS?) IN TWO CLUMPS NEAR BASE.
7	20.35	22.39	2.04	*70			SILTSTONE	SSY. VPR. DK. GY. LAM. XBDG. BRKN SILTIER THAN ABOVE. NUMEROUS Y FINE LAM INAE THROUGHOUT. XBDG. HORIZ WRMBUR. LO AD CASTS & FLAME STRUCTURES SHOW TOPS U P.
8	22.39	22.98	0.59	69			SILTSTONE	SSY. VPR. DK. GY. LAM. XBDG. SLD V. FINELY LAM AS ABOVE. XBDG. SHOWS TOPS UP.
8	22.98	24.41	1.43	67			SILTSTONE	SSY. VPR. DK. GY. LAM. XBDG. BRKN AS ABOVE WITH DISRUPTED BEDDING FROM BI OTURBATION.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	24.41	24.96	0.55	66			SILTSTONE	SSY. VPR. DK. GY. LAM. VBRKN LAMINAE GRADE UP FROM FG SS TO DARK MUD . NO CROSS BEDDING.
9	24.96	25.27	0.31	66			ROCK LOSS	
9	25.27	26.34	1.07	*65			SILTSTONE	SSY. VPR. DK. GY. LAM. BIOTR. VBRKN LITH AS ABOVE. CORE TWIST OFF. OCC BIOT RB DISRUPTS BEDDING. NUMEROUS FRACTURES WITH CLAY INFILL.
10	26.34	26.48	0.14	65			SILTSTONE	SSY. VPR. DK. GY. LAM. VBRKN AS ABOVE.
10	26.48	26.58	0.10	65			SILTSTONE	SSY. VPR. DK. GY. LAM. VBRKN AS ABOVE. RUBBLE.
10	26.58	26.84	0.26	66			ROCK LOSS	
10	26.84	27.58	0.74	66			MUDSTONE	DK. GY. MAS. VBRKN V FRACTURED ZONES WITH CLAY INFILL. SHA RP UPPER CONTACT. RARE PYRITE LENSES.
10	27.58	27.64	0.06	66			SILTSTONE	VPR. M. GY. LAM. SLD BAND OF V FINELY LAMINATED SLTST. UNIFO RM PLANAR LAMINAE.

\* DENOTES MEASURED BCA



87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	27.64	28.27	0.63	66		MUDSTONE	DK.GY.MAS.BRKN OCCASIONAL PYRITE LENSES. RARE FAINT BE DDING VISIBLE. MASSIVE. RARE PLANT FOS SILS (GINKGO NAMA).
11	28.27	29.69	1.42	67		MUDSTONE	DK.GY.MAS.BRKN MASSIVE UNIFORM MUDST. NO PLANTS. BOTTOM 20CM CONTAIN NUMEROUS SILT LAMINAE. SLI GHT BIOTURBATION.
11	29.69	30.15	0.46	67		MUDSTONE	DK.GY.MAS.BRKN MASSIVE MUDST. TURRITELLID GASTROPODS U P TO 1-1.5 CM LONG. OCC. BIVALVE PIECES. 1-2CM IN DIAMETER.
12	30.15	31.96	1.81	68		MUDSTONE	DK.GY.MAS.VBRKN LITH AS ABOVE. GASTROPODS & BIVALVES AS ABOVE. STAFFINELLA. OCCASIONAL SLICKEN SIDES.
13	31.96	32.63	0.67	69		MUDSTONE	DK.GY.THNB.BRKN SLIGHTLY MORE SILT THAN ABOVE. FAINT BE DDING VISIBLE. RARE BIVALVE PIECES. SLI CKENSIDES.
13	32.63	33.82	1.19	69		MUDSTONE	SLTY.DK.GY.VTHNB.BRKN BIVALVES 3MM-15MM IN DIAMETER. COQUINA BAND 10 CM WIDE WHICH IS V DENSELY PACK ED AND EXTREMELY HARD.

\* DENOTES MEASURED BCA

87/02/13

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	33.82	34.88	1.06	*70		MUDSTONE	SLTY.VPR.DK.GY.VTHNB.BRKN SILTY AT TOP. BECOMING FINER DOWNWARDS. NUMEROUS STAFFINELLA BIVALVES 1-2CM IN DIA AND TINY GASTROPODS 3-4MM LONG. TH REE COQUINA BANDS 2CM WIDE. ALL ARE OPE N & MOST ARE DISARTICULATED SHELLS.
14	34.88	35.66	0.78	69		MUDSTONE	DK.GY.MAS.BRKN NUMEROUS CLOSED SHELLS AND RARE OPEN AN D. DISARTICULATED SHELLS. VERY FINE MUDS T.
15	35.66	35.97	0.31	68		MUDSTONE	DK.GY.BRKN BIVALVES (1-2CM).
15	35.97	36.09	0.12	68		MUDSTONE	SSY.PR.LT-M.GY.SLD
15	36.09	36.30	0.21	68		MUDSTONE	DK.GY.SLD VERY HARD. BIVALVES (1-2CM).
15	36.30	36.32	0.02	68		MUDSTONE	CLYY.LT.GY.SLD
15	36.32	36.57	0.25	67 05394		MUDSTONE	SLTY.M.GY.SLD
15	36.57	36.63	0.06	67 05394		MUDSTONE	CARB.DK.GY.BRKN MINOR COALY STRINGERS WITHIN.

\* DENOTES MEASURED BCA

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PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	36.63	36.85	0.22	67 05395	A-2	COAL	C-3.SLD
15	36.85	36.87	0.02	67 05395	A-2	COAL	C-6 MINOR VITRINITE WITHIN.
15	36.87	36.90	0.03	67 05395	A-2	COAL	C-1.SLD
15	36.90	37.05	0.15	67 05395	A-2	COAL	C-3.BRKN
15	37.05	37.21	0.16	67 05395	A-2	COAL	C-4.BRKN
15	37.21	37.39	0.18	66 05395	A-2	MUDSTONE	CARB,DK.GY.BRKN
15	37.39	37.52	0.13	66 05395	A-2	COAL	C-2.BRKN
15	37.52	37.69	0.17	66 05395	A-2	COAL LOSS	
16	37.69	37.74	0.05	66 05395	A-2	COAL	C-2.SLD

\* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDHB6026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	37.74	38.71	0.97	65 05396		MUDSTONE	CARB,DK.GY.SLD GRADATIONALLY SILTIER TOWARDS BASE. COAL LY STRINGERS & PLANT FRAGS THROUGHOUT. UPPER 25CM SAMPLED.
16	38.71	39.75	1.04	64		SANDSTONE	SLTY,VFG.M.GY.SLD GRADATIONALLY SILTY FROM BASE.
17	39.75	41.46	1.71	63		SANDSTONE	FG.MOD.M.GY.LAM.VBRKN OCCASIONAL V HESPY SILT DRAPES, MUD RIP UPS 2-4 MM WIDE. SLICKENSIDES ON FRACTU RES SUBPARALLEL TO CORE.
18	41.46	41.71	0.25	61		SANDSTONE	FG.MOD.M.GY.LAM.VBRKN AS ABOVE. SLICKENSIDES.
18	41.71	42.19	0.48	61		SANDSTONE	FG.MOD.M.GY.LAM.VBRKN AS ABOVE. SLICKENSIDES. FRACTURES SUBPA RALLEL TO CORE.
18	42.19	43.20	1.01	*60		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.BRKN NUMEROUS MUD LAMINAE VARYING IN THICKNE SS FROM 1-10MM. HORIZ WRMBURS THROUGHOU T.
19	43.20	43.82	0.62	62		SANDSTONE	SLTY.FG.VPR.M.GY.LAM.WRMBU.VBRKN LITH AS ABOVE: NUMEROUS FINE MUD LAMINA E WITH ABUNDANT HORIZ BURROWS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	43.82	44.93	1.11	*65			SANDSTONE	SLTY. FG. VPR. M. GY. LAM. WRMBU. BRKN LITH AS ABOVE. ONE LARGE BIVALVE ESCAPE BURROW 1-2CM WIDE.
20	44.93	46.03	1.10	65			SANDSTONE	FG. MOD. M. GY. VTHNB. WRMBU. BRKN LESS SILT/MUD THAN ABOVE. SCOURING AND SSD IS MORE APPARENT THAN ABOVE. LAYERS ARE FARTHER APART.
20	46.03	46.26	0.23	65			ROCK LOSS	
20	46.26	46.90	0.64	65			SANDSTONE	FG. MOD. M. GY. VTHNB. VBRKN LITH AS ABOVE. ONE 4CM WIDE FINELY LAM RIPUP CLAST.
21	46.90	47.80	0.90	65			SILTSTONE	DK. GY. LAM. BIOTR. BRKN MUCH FINER GRAINED OVERALL THAN ABOVE. NUMEROUS MUD STRINGERS THROUGHOUT. ONE COMPLETELY BIOTURBATED BAND.
21	47.80	48.70	0.90	*65			SILTSTONE	DK. GY. LAM. BIOTR. BRKN LITH AS ABOVE WITH OCCASIONAL MG SAND LAYER AT BASE.
21	48.70	49.04	0.34	66			ROCK LOSS	

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	49.04	50.96	1.92	67			SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. SSD. VSHRD INTERBEDDED MG SS AND FINE MUD/SILT LAMINAE. MUCH SSD AND FEW HORIZ BURROWS. ENTIRE INTERVAL IS VSHRD AND FUSED BACK TOGETHER. DISPLACEMENT ON SOME FRACTURES UP TO 2CM. FG-MG.
23	50.96	51.20	0.24	69			SANDSTONE	SLTY. FG. VPR. M. GY. VTHNB. SSD. BRKN LITH AS ABOVE. MG-FG.
23	51.20	52.98	1.78	*70			MUDSTONE	DK. GY. VTHNB. BRKN V FAIN. IRREGULAR BEDDING. HELMINTHOPSIS IS THROUGHOUT. BIVALVES 5-20MM ACROSS.
24	52.98	54.19	1.21	69			MUDSTONE	DK. GY. VTHNB. SLD LITH AS ABOVE. HELMINTHOPSIS. TINY BIVALVES 3-4MM ACROSS.
24	54.19	54.98	0.79	69			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN OCCASIONAL SILT BANDS GRADING UP FROM MUD. HELMINTHOPSIS.
25	54.98	56.62	1.64	*68			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN LITH AS ABOVE. IRREGULAR BCA'S FROM MUD DRAPING? OCCASIONAL PYRITE BLEBS. HELMINTHOPSIS.
25	56.62	56.96	0.34	*55			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN LITH AS ABOVE. SLICKENSIDES.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	56.96	58.92	1.96	*60		MUDSTONE	DK.GY.VTHNB.BRKN MUCH LESS SILT THAN ABOVE. V FAINT BEDD ING. IRREGULAR PYRITE GLEBS. TINY BIVAL VES 2-4MM ACROSS.
27	58.92	59.61	0.69	60		MUDSTONE	DK.GY.MAS.BRKN MASSIVE UNIFORM MUDST. NUMEROUS PYRITE BLEBS. RARE BIVALVE PIECES.
27	59.61	60.73	1.12	60		MUDSTONE	DK.GY.MAS.BRKN LITH AS ABOVE. MUCH PYRITE. RARE BIVALV ES.
26	60.73	62.22	1.49	60		MUDSTONE	DK.GY.MAS.BRKN LITH AS ABOVE. MUCH PYRITE. FEW CLOSED BIVALVES. 1-2CM ACROSS.
28	62.22	62.48	0.26	60		MUDSTONE	DK.GY.MAS.VSHRD LITH AS ABOVE. MUCH PYRITE RARE BIVALVE PIECES.
28	62.48	63.53	1.05	60		ROCK LOSS	
29	63.53	63.97	0.44	60		MUDSTONE	DK.GY.MAS.VSHRD LITH AS ABOVE. MANY BIVALVE PIECES, NO PYRITE.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	63.97	64.26	0.29	60		MUDSTONE	DK.GY.MAS.BRKN LITH AS ABOVE. NUMEROUS BIVALVES 2-5MM ACROSS.
29	64.26	64.63	0.37	60		MUDSTONE	SSY.M.GY.MAS.SLD TRANSITIONAL FROM DARK MUDST ABOVE TO F -MG SS BELOW. SIMILAR TO MILKY MAY BUT DENSER AND FINER SAND CLASTS. MINOR BIV ALVES 3-10MM ACROSS.
29	64.63	65.39	0.76	60		SANDSTONE	MG-LT.GY.MAS.BRKN MINOR MUDST RIPUPS. GRADATIONAL UPPER C ONTACT. FG-MG.
30	65.39	65.78	0.39	60		SANDSTONE	MG.LT.GY.MAS.VBRKN CRUSHED CORE. SLICKENSIDES.
30	65.78	66.68	0.90	60		SANDSTONE	PBLY.MG.LT.GY.MAS.VBRKN AS ABOVE WITH ONE 4CM WIDE BAND CHERT P EBBLES. MUDST RIPUP CLASTS. V BROKEN CO RE FRAC ZONE? SLICKENSIDES.
31	66.68	67.13	0.45	60		CONGLOMERATE	VPR.M.GY.MAS.VBRKN POLYHICTIC.MG SAND MATRIX-SUPPORTED. CL ASTS MOSTLY 2-5MM IN DIAMETER. CORE TOTA LLY CRUSHED. SLICKENSIDES.

\* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	67.13	68.22	1.09	60			ROCK LOSS	
31	68.22	68.63	0.41	60			CONGLOMERATE	VPR.M.GY.MAS.VBRKN LITH AS ABOVE. RUBBLE.
32	68.63	68.89	0.26	60			CONGLOMERATE	VPR.M.GY.MAS.VBRKN LITH AS ABOVE. RUBBLE.
32	68.89	69.44	0.55	60			ROCK LOSS	
32	69.44	69.58	0.14	60			CONGLOMERATE	VPR.M.GY.MAS.VBRKN LITH AS ABOVE. RUBBLE.
32	69.58	70.74	1.16	60			ROCK LOSS	
32	70.74	70.85	0.11	*60			CONGLOMERATE	VPR.M.GY.MAS.VBRKN LITH AS ABOVE. RUBBLE.
32	70.85	71.01	0.16	*17			MUDSTONE	DK.GY.LAM.VBRKN MOSTLY RUBBLE. BCA ON ONE PIECE IS 17 D. EGREES. FAULT ZONE? VITRINITE SPECKS IN MUSH AT BOTTOM OF BOX.
33	71.01	71.14	0.13	47	05397		SANDSTONE	MG.LT-M.GY.VBRKN LOWER 0.06 M 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: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	71.14	71.19	0.05	*65	05397		COAL	C-4. BRKN ESTIMATED BCA.
33	71.19	71.33	0.14	65	05397		MUDSTONE	CARB. DK. GY. VBRKN UNCONSOLIDATED.
33	71.33	71.41	0.08	65	05398	A-3	COAL	C-4. PHRD
33	71.41	72.36	0.95	65	05398	A-3	COAL LOSS	
33	72.36	72.87	0.51	65	05398	A-3	COAL	C-4. VBRKN HIGHLY SHEARED. MUDDY BANDS UP TO 1CM W ITHIN.
33	72.87	72.90	0.03	65	05398	A-3	SILTSTONE	M. GY. SLD HARD.
33	72.90	72.99	0.09	65	05398	A-3	COAL	C-4. SLD BONE COAL BANDS WITHIN.
33	72.99	73.11	0.12	65	05398	A-3	MUDSTONE	CARB. DK. GY. SLD
33	73.11	73.64	0.53	*65	05398	A-3	COAL	C-5. BRKN VITRINITE STRINGERS WITHIN.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.64	74.49	0.85	66	05399	A-3	COAL	C-2. SLD ABUNDANT BANDS OF C-6 (BONE COAL) THROUGHOUT.
34	74.49	74.60	0.11	66	05399	A-3	COAL	C-1. SLD
34	74.60	74.73	0.13	66	05399	A-3	COAL	C-2. SLD
34	74.73	74.86	0.13	66	05400	A-3	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
34	74.86	75.06	0.20	66	05400	A-3	COAL	C-3. SLD MIXTURE OF COAL (C-1), MUDST, AND QTZ.
34	75.06	75.13	0.07	66	05400	A-3	MUDSTONE	CARB. DK. GY. SLD
34	75.13	75.29	0.16	66	05400	A-3	COAL	C-3. SHRD
34	75.29	75.35	0.06	67	05400	A-3	COAL	C-3. SHRD

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	75.35	75.65	0.30	67	05400	A-3	MUDSTONE	CARB. DK. GY. SLD ABUNDANT COALY STRINGERS & THIN BANDS. ABUNDANT PLANT FRAGS.
35	75.65	75.92	0.27	67	05400	A-3	MUDSTONE	CARB. DK. GY. SLD ABUNDANT COALY STRINGERS & THIN BANDS. ABUNDANT PLANT FRAGS.
35	75.92	76.17	0.25	67	05400	A-3	COAL	C-4. BRKN ABUNDANT C-2 BANDS THROUGHOUT.
35	76.17	76.23	0.06	67	05400	A-3	MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT.
35	76.23	76.55	0.32	67	05400	A-3	COAL	C-4 C-2 BANDS THROUGHOUT.
35	76.55	76.59	0.04	67	05400	A-3	MUDSTONE	CARB. DK. GY. SLD
35	76.59	76.79	0.20	68	05400	A-3	COAL	C-4. BRKN WELL BANDED.
35	76.79	77.34	0.55	68	10101		MUDSTONE	CARB. DK. GY. SLD ABUNDANT PLANT FRAGS, SOME COALY. UPPER 25CM 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: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.34	77.85	0.51	68		MUDSTONE	DK. GY. MAS. BRKN ONE IRREGULAR SHAPED LENSE OF C-1 AND Q TZ 4CM THICK AT WIDEST POINT.
36	77.85	78.88	1.03	69		MUDSTONE	DK. GY. MAS. SLD MASSIVE. GRADES SLOWLY INTO ONE 10CM BA ND OF MORE CALCAREOUS LIGHTER GREY MUD.
36	78.88	78.91	0.03	69		COAL	C-1. BLK. BRKN
36	78.91	79.16	0.25	69		MUDSTONE	CARB. DK. GY. SLD COALY STRINGERS THROUGHOUT & LENSES.
37	79.16	80.39	1.23	*70		MUDSTONE	DK. GY. MAS. SLD NUMEROUS ANKERITE IN FILLED PLANT FOSSI LS THROUGHOUT. BCA TAKEN ON PLANT FOSSI L TRACES. ONE COAL & PYRITE LENSE. 1CM H IDE. ONE 2CM WIDE PYRITE BAND.
37	80.39	81.03	0.64	70		SANDSTONE	MG. M. GY. MAS. VBRKN FRAC ZONE? FRACTURES PARALLEL TO CORE. SLICKENSIDES. GRADATIONAL UPPER CONTACT DISEMINATED PYRITE & SCATTERED PLANTS AT TOP.

\* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	81.03	81.41	0.38	70		SANDSTONE	MG. M. GY. MAS. SSD. VBRKN AS ABOVE. SHARP LOWER CONTACT WITH SSD. TOPS UP.
38	81.41	82.71	1.30	70		SILTSTONE	SSY. VPR. M. GY. LAM. WRMBU. BRKN INTERBEDDED SLTST. MUDST AND MG SS. VER T WRMBURS SHOW TOPS UP. MANY COMPLETELY BIOTURBATED LAYERS. OCCASIONAL PLANT H ASH.
39	82.71	83.83	1.12	*70		SILTSTONE	DK. GY. LAM. WRMBU. SLD FINELY INTERLAMINATED DARK MUD AND FG S AND. SHARP CONTACTS ON LAYERS. NUMEROUS HORIZ WRMBURS. TOPS UP. BIOTURBATION.
39	83.83	83.97	0.14	69		SILTSTONE	DK. GY. LAM. BIOTR. SLD AS ABOVE. GRADATIONAL WITH BIOTURB INTO SAND BELOW.
39	83.97	84.66	0.69	69		SANDSTONE	FG. WEL. LT. GY. MAS. SLD GRADATIONAL UPPER CONTACT.
40	84.66	86.72	2.06	*68		SANDSTONE	FG. MOD. LT. GY. MAS. WRMBU. SLD VERTICAL WRMBURS WITH SILTY OUTLINES VI SIBLE. TINY ROUND BLACK SPECKS (WORM PEL LETS). THREE 2CM WIDE FAINT SILT BANDS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	86.72	88.72	2.00	*70			SANDSTONE	SLTY.FG.PR.LT.GY.THNB.WRMBU.SLD MASSIVE FG SS WITH 10CM WIDE F.U.'S. BAN DS OF PLANAR LAMINATED MUDST. LOADING A ND HORIZ WRMBURS AT CONTACTS. TOPS UP.
42	88.72	89.90	1.18	*68			SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.WRMBU.SLD AS ABOVE, BUT WITH SLIGHTLY THINNER MUD BANDS.
42	89.90	90.65	0.75	67			SANDSTONE	FG.WEL.LT.GY.MAS.SLD NO MUD BANDS.
43	90.65	92.55	1.90	66			SANDSTONE	SLTY.FG.M.GY.VTHNB.BRKN F-MG SS WITH MUD LAMINAE AS ABOVE. OCCA SIONAL RIPUP CLASTS.
44	92.55	94.30	1.75	*65			SANDSTONE	SLTY.VFG-VPR.M.GY.VTHNB.BRKN MUCH DISTURBED BEDDING FROM SLUMPING. I NTERBEDDED SS AND MUD LAYERS AS ABOVE. FG-VFG.
45	94.30	96.21	1.91	67			SANDSTONE	SLTY.FG-VPR.M.GY.VTHNB.WRMBU.BRKN LITH AS ABOVE. LOAD CASTS. BIVALVE ESCA PE BURROWS. TOPS UP. MUD LAYERS FINE UPN ARDS. YFG-FG.
46	96.21	96.88	0.67	69			SILTSTONE	SSY.VPR.M.GY.THNB.SLD HIDE BEDS OF MUD & SAND WITH VERY GRADA TIONAL CONTACTS.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	96.88	98.19	1.31	*70			SILTSTONE	SSY.VPR.M.GY.VTHNB.SLD FINER BEDDING THAN ABOVE. HELMINTHOPSIS & HORIZ & VERT WRMBURS.
47	98.19	98.96	0.77	70			SILTSTONE	VPR.DK.GY.LAM.BRKN MUCH LESS SAND AND FINER BEDDING THAN A BOVE. HELMINTHOPSIS.
47	98.96	100.15	1.19	70			SILTSTONE	VPR.DK.GY.LAM.SSD.SLD LITH AS ABOVE. ONE LAYER OF SLUMPING. H ELMINTHOPSIS.
48	100.15	102.15	2.00	70			SILTSTONE	VPR.DK.GY.LAM.SSD.SLD LITH AS ABOVE. HELMINTHOPSIS. LOADING & FLAME STRUCTURES. OCCASIONAL HORIZONTA L BURROWS.
49	102.15	104.16	2.01	70			SILTSTONE	VPR.DK.GY.LAM.BIOTR.SLD LITH AS ABOVE. TINY VERTICAL BURROWS. H ELMINTHOPSIS. MOTTILING FROM BIOTURBATIO N. OCCASIONAL PLANT HASH.
50	104.16	104.93	0.77	*70			MUDSTONE	SLTY.VPR.DK.GY.LAM.BIOTR.SLD MUCH LESS SILT THAN ABOVE. BIOTURBATIO N. PLANT HASH.

\* DENOTES MEASURED BCA



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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	104.93	106.10	1.17		70		MUDSTONE	SLTY. VPR. DK. GY. MAS. BIOTR. SLD MOST VISIBLE BEDDING IS COMPLETELY BIOTURBATED. CORE TWIST OFF AT TOP.
51	106.10	108.10	2.00		69		MUDSTONE	DK. GY. MAS. BIOTR. BRKN ALL FAINT BEDDING IS COMPLETELY BIOTURBATED. MUCH LESS SILT THAN ABOVE.
52	108.10	109.25	1.15		69		MUDSTONE	SLTY. DK. GY. THNB. BIOTR. BRKN SILT BANDS 10CM WIDE. SOME BIOTR. OCCASIONAL PLANT HASH. HELMINTHOPSIS.
52	109.25	110.17	0.92		69		MUDSTONE	DK. GY. MAS. SLD MASSIVE UNIFORM MUDST. IRREGULAR PYRITE BLEBS. SCATTERED PLANT HASH & RARE BIVALVES 1CM ACROSS.
53	110.17	111.04	0.87		68		MUDSTONE	DK. GY. MAS. BRKN MASSIVE UNIFORM MUDST. PYRITE BLEBS SCATTERED THROUGHOUT. RARE PLANT HASH. RARE BIVALVE PIECES.
53	111.04	111.99	0.95		*68		MUDSTONE	DK. GY. MAS. SLD CORE TWIST OFF AT TOP. LITH SAME AS ABOVE. FAINT LAMINAE ARE RARE.
54	111.99	112.09	0.10		68		MUDSTONE	DK. GY. MAS. SLD LITH 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: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	112.09	112.11	0.02		68		COAL	C-3. BLK. BRKN QTZ STRINGERS.
54	112.11	113.24	1.13		67		MUDSTONE	DK. GY. MAS. BRKN SLICKENSIDES NUMEROUS. SILT MIXED THROUGHOUT BOTTOM OF INTERVAL. F.U.S.
54	113.24	113.93	0.69		67		MUDSTONE	SLTY. DK. GY. MAS. SLD UNIFORM MUDST AS ABOVE WITH 2CM WIDE PYRITE AND COAL BAND AT TOP. 4CM THICK LENS OF THICK CALCITE REPLACED BIVALVE SHELLS 2-5MM THICK. SOME SILT MIXED IN.
55	113.93	115.96	2.03		66		MUDSTONE	DK. GY. MAS. SLD SAME UNIFORM DARK MUD AS ABOVE BUT WITH MORE BIVALVES AND LESS PYRITE. CORE TWIST OFF AT TOP.
56	115.96	116.94	0.98		65		MUDSTONE	DK. GY. MAS. SLD LITH SAME AS ABOVE. BIVALVES.
56	116.94	117.85	0.91		64		MUDSTONE	DK. GY. MAS. SLD LITH SAME AS ABOVE. BIVALVES.
57	117.85	119.88	2.03		63		MUDSTONE	DK. GY. MAS. BRKN LITH AS ABOVE WITH ONE SILT BAND CONTAINING HELMINTHOPSIS AT TOP OF BOX. BIVALVES (OPEN & CLOSED).

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	119.88	120.97	1.09	62			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. CLOSED BIVALVES.
58	120.97	121.91	0.94	61			MUDSTONE	SLTY.DK.GY.MAS.BIOTR.SLD SILT MIXED IN. MUCH BIOTURBATION. 2CM LENS BAND OF CALCITE REPLACED BIVALVE SHELLS. 5MM WIDE COAL STRINGER AT UPPER CONTACT.
59	121.91	122.15	0.24	61			SILTSTONE	M.GY.MAS.SLD SHARP CONTACTS.
59	122.15	122.88	0.73	60			MUDSTONE	DK.GY.MAS.SLD NUMEROUS OPEN, CLOSED & PIECES OF BIVALVES 1-2CM ACROSS. UNIFORM MUDST. COAL STRINGER AT BASE.
59	122.88	122.91	0.03	60			CLAYSTONE	LT.GY.MAS.PWRD BENTONITIC? MUSH. SHARP UPPER & LOWER CONTACTS.
59	122.91	122.96	0.05	60			SILTSTONE	M.GY.LAM.SLD V FINELY LAM.
59	122.96	123.20	0.24	*60			SILTSTONE	M.GY.LAM.SLD AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	123.20	123.84	0.64	60			MUDSTONE	DK.GY.MAS.SLD UNIFORM DARK MUDS. V FAINT MOTTLED BEDDING. SLIGHTLY SILTY.
60	123.84	125.99	2.15	60			MUDSTONE	DK.GY.MAS.BRKN UNIFORM DARK MUDST WITH SILT AT TOP FADING DOWN TO FINE MUDST. NUMEROUS CALCITE REPLACED BIVALVES THROUGHOUT 1-2CM ACROSS.
61	125.99	126.91	0.92	60			MUDSTONE	DK.GY.MAS.SLD NUMEROUS BIVALVES 1-2CM ACROSS. LITH AS ABOVE.
61	126.91	127.93	1.02	60			MUDSTONE	SLTY.DK.GY.MAS.BRKN CUS. SOME FAINT BIOTURBATION OR SLUMPING. ONE CALCITE REPLACED BIVALVE 25MM ACROSS. SEVERAL CALCITE-FILLED CHAIN-LIKE GLOBS.
62	127.93	129.08	1.15	60			MUDSTONE	DK.GY.MAS.SLD V FAINT SWIRLING OF BEDS FROM BIOTURBATION VISIBLE.
62	129.08	129.99	0.91	60			MUDSTONE	SLTY.DK.GY.MAS.BIOTR.SLD FUS. DARK MUDST AT TOP GRADING TO MASSIVE SILTST AT BASE OF INTERVAL.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	129.99	130.36	0.37	*60			SILTSTONE	DK.GY.MAS.BIOTR.SLD FAINT BEDDING VISIBLE. MOSTLY BIOTURBATED. MINOR HELMINTHOPSIS.
63	130.36	132.07	1.71	61			MUDSTONE	SLTY.DK.GY.MAS.BIOTR.SLD LESS SILT THAN ABOVE. BIOTURBATED BEDDING.
64	132.07	133.98	1.91	63			MUDSTONE	SLTY.DK.GY.VTHNB.BIOTR.BRKN BEDDING IS VERY FAINT, MUCH BIOTURBATION HELMINTHOPSIS. ONE LARGE (4CM ACROSS) PYRITIZED BIVALVE.
65	133.98	135.16	1.18	64			MUDSTONE	SLTY.VPR.DK.GY.MAS.BIOTR.SLD SILT MIXED IN. WHITE CHAIN LIKE GLOBS. POSSIBLY COARSELY REPLACED GASTROPODS? 1-5MM LONG.
65	135.16	135.92	0.76	*65			MUDSTONE	SLTY.VPR.DK.GY.MAS.BIOTR.SLD MOST FAINT BEDDING IS BIOTURBATED. HELMINTHOPSIS.
66	135.92	137.93	2.01	67			MUDSTONE	SLTY.VPR.DK.GY.MAS.BIOTR.SLD LITH AS ABOVE.

\* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	137.93	138.12	0.19	69			MUDSTONE	SLTY.VPR.DK.GY.VTHNB.SSD.SLD BEDDING IS MORE DISTINCT. EACH LAYER FINESS UP. SSDAT ONE LAYERS CONTACT. HELMINTHOPSIS THROUGHOUT.
67	138.12	139.69	1.57	*70			MUDSTONE	SLTY.VPR.DK.GY.VTHNB.VBRKN LITH AS ABOVE. CORE TWIST OFF AT TOP. HELMINTHOPSIS.
68	139.69	140.96	1.27	70			MUDSTONE	DK.GY.MAS.SLD MUCH LESS SILT THAN ABOVE. NUMEROUS IRREGULAR PYRITE BLEBS. BIVALVES 10MM ACROSS.
68	140.96	141.61	0.65	70			MUDSTONE	DK.GY.MAS.SLD LITH SAME AS ABOVE. PYRITE & BIVALVES.
69	141.61	143.68	2.07	70			MUDSTONE	DK.GY.VTHNB.SLD SLIGHTLY SILTIER DOWNWARD. PYRITE & BIVALVES 1-2CM ACROSS. HELMINTHOPSIS & OCC WHITE GLOBS AS DESCRIBED ABOVE.
70	143.68	143.95	0.27	70			MUDSTONE	DK.GY.MAS.SLD MASSIVE. UNIFORM MUDST. NUMEROUS PYRITE BLEBS.
70	143.95	145.73	1.78	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. PYRITE & BIVALVES 1CM ACROSS. CORE TWIST OFF AT TOP.

\* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH86026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	145.73	147.02	1.29	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. PYRITE & BIVALVES.
71	147.02	147.66	0.64	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. PYRITE & BIVALVES.
72	147.66	149.81	2.15	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. PYRITE & BIVALVES.
73	149.81	151.79	1.98	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. PYRITE & BIVALVES.
74	151.79	152.86	1.07	70			MUDSTONE	DK.GY.MAS.SLD LITH AS ABOVE. BIVALVE PIECES, NO PYRITE. E. TWO ROUND MUDST OBJECTS 8MM IN DIA W ITH DISC SHAPED CALCAREOUS CENTRE. COLL OIDAL MUD BALL.? SAMPLE TAKEN.
74	152.86	153.65	0.79	70			MUDSTONE	SLTY. VPR. DK.GY.MAS. BIOTR. SLD LITH AS ABOVE GRADING TO SLTST AT BASE. DISEMINATED PYRITE.
75	153.65	154.41	0.76	70			SILTSTONE	VPR. M.GY. VTHNB. BIOTR. SLD MUCH BIOTRE. T.D. = 155.75 M. DRILLER'S MARK. END OF HOLE.

\* DENOTES MEASURED BCA  
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