MOUNT KLAPPAN COAL PROJECT

HOBBIT - BROATCH AREA

GEOLOGICAL REPORT

1984

APPENDIX IV

VOLUME II

1984 DIAMOND DRILL HOLE DATA

695

GULF CANADA RESOURCES INC.

COAL DIVISION

MOUNT KLAPPAN COAL PROJECT

APPENDIX IV

DIAMOND DRILL HOLE DATA

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCDDH84001 DATE - 01/24/85

- H I S T O R Y -

START DATE - 04/12/84
END DATE - 04/12/84

CONTRACTOR - J.T. THOMAS
GEOLOGIST - G. SEVE
OPERATOR - G.C.R.I.
SURVEYOR -

REMARKS - GEOPHYSICAL LOG SUITE INCOMPLETE DUE TO HOLE CAVIN
G

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1305.00
LICENCE/LEASE NUMBER - 7136 P0
ZONE - 9
NORTHING - 6343197.00
EASTING - 515125.00
LATITUDE - 571401
LONGITUDE - 1284458

- O R I E N T A T I O N -

LENGTH - 57.00
INCLINATION - 80.0
AZIMUTH - 54.1

CORE SIZE - 63.5

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 8.84
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** O INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC DDH84001 SEAM : 1 INTERVAL(M) : 22.73 – 25.16 ELEVATION(M) : 1305.(

GEOLOGIST : G. SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	22.73			0.24											
				(0.35)											
				0.09											
				(0.38)											
				(0.14)	28.6	2211	1	1.69 / 0.58 2.27		1.41	39.66	9.06	49.87	0.34	19.14
				(0.69)											
	25.16			0.10											

PLOT 2 15.15.36 TUES 29 JAN, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC DDH84001 SEAM : H INTERVAL(M) : 50.73 – 52.14 ELEVATION(M) : 1305.0

GEOLOGIST : G. SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	50.73			0.65											
			0.13		100.0	2220	2	1.12 / 0.27		1.73	38.85	8.68	50.73	0.60	19.67
			0.14					1.39							
				0.47											
	52.14														

GULF CANADA RESOURCES INC. - COAL DIVISION

21/MAR/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84001										
	I	2211	22.73	25.16	28.80	0.55	0.15	1.26	0.47	1.81- 0.62
	I	2204	26.48	27.31	100.00	0.00	0.83	0.00	0.00	0.00- 0.83
	H	2220	50.73	52.14	100.00	1.12	0.27	0.00	0.00	1.12- 0.27
	H	2205	54.68	56.77	100.00	0.00	2.09	0.00	0.00	0.00- 2.09

GULF CANADA RESOURCES INC. - COAL DIVISION

06/MAR/85 COMPOSITE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84001												
	I	1	2211	2211	22.73	25.16	28.80	0.55	0.15	1.26	0.47	1.81- 0.62
	H	2	2220	2220	50.73	52.14	100.00	1.12	0.27	0.00	0.00	1.12- 0.27

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	0.00	0.50	0.50			CASING	DRILL FLOOR TO GROUND
80	0.50	1.72	1.22			TOPSOIL	
80	1.72	5.68	3.96			CLAY	MINOR ORGANIC RICH BANDS
80	5.68	6.60	0.92			MUD	REGOLITH; OXIDIZED
80	6.60	7.21	0.61			MUDSTONE	BEDROCK; TRICONED
80	7.21	8.37	1.16			MUDSTONE	DK.GY.VBRKN OXIDIZED
80	8.37	8.73	0.36			ROCK LOSS	
80	8.73	9.55	0.82			MUDSTONE	DK.GY.VBRKN
80	9.55	10.11	0.56			ROCK LOSS	
80	10.11	10.86	0.75			MUDSTONE	DK.GY.BRKN SLIGHTLY OXIDIZED
80	10.86	10.96	0.10			MUDSTONE	DK.GY.BRKN HEAVILY OXIDIZED; SILTY TOWARDS BASE
80	10.96	11.43	0.47			SANDSTONE	MG-.M.GY.SLD SILTY TOWARDS BASE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

	BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	80	11.43	11.77	0.34			SILTSTONE	M.GY.BRKN BROKEN IN PART
	80	11.77	11.78	0.01			ROCK LOSS	
*	80	11.78	12.24	0.46			SILTSTONE	M.GY.BRKN BROKEN IN PART; SANDSTONE LAMINATIONS
	80	12.24	13.36	1.12			MUDSTONE	SLTY.M.GY.BRKN VERY BROKEN TOWARDS BASE
	80	13.36	13.61	0.25			ROCK LOSS	
	79	13.61	14.35	0.74			MUDSTONE	SLTY.M.GY.VBRKN
	79	14.35	14.82	0.47			ROCK LOSS	
	79	14.82	15.00	0.18			MUDSTONE	SLTY.M.GY.VBRKN
*	79	15.00	16.87	1.87			MUDSTONE	CARB.DK.GY.VBRKN VERY BROKEN AT BASE
	78	16.87	17.26	0.39			ROCK LOSS	
	77	17.26	17.46	0.20			MUDSTONE	DK.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	17.46	19.56	2.10			MUDSTONE	DK.GY.BRKN BROKEN AT BASE
74	19.56	20.62	1.06			ROCK LOSS	
73	20.62	21.62	1.00			MUDSTONE	DK.GY.BRKN BROKEN AND REWORKED DURING CORING
71	21.62	22.73	1.11			ROCK LOSS	
71	22.73	22.82	0.09	02211	I	COAL	C-2.BRKN
71	22.82	22.94	0.12	02211	I	COAL	C-3.BRKN BANDED WITH C-1
70	22.94	22.96	0.02	02211	I	COAL	C-5.BRKN MAY BE WEATHERED
70	22.96	22.99	0.03	02211	I	COAL	C-4.BRKN
70	22.99	23.36	0.37	02211	I	COAL LOSS	
70	23.36	23.44	0.08	02211	I	COAL	C-2.VBRKN
70	23.44	23.54	0.10	02211	I	MUDSTONE	DK.BN.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	23.54	23.95	0.41	02211	I	ROCK LOSS	
69	23.95	23.96	0.01	02211	I	CLAYSTONE	CARB.DK.GY.VBRKN
69	23.96	24.01	0.05	02211	I	COAL	C-2.BRKN BANDS OF CLAYSTONE
69	24.01	24.16	0.15	02211	I	COAL LOSS	
69	24.16	24.20	0.04	02211	I	CLAYSTONE	BRKN
69	24.20	24.26	0.06	02211	I	ROCK LOSS	
69	24.26	24.31	0.05	02211	I	COAL	C-3.BRKN BANDS OF C-2
68	24.31	25.05	0.74	02211	I	COAL LOSS	
68	25.05	25.16	0.11	02211	I	COAL	PWRD
68	25.16	25.26	0.10			CLAYSTONE	CARB.DK.GY.VBRKN BANDS OF C-2 TO C-1
67	25.26	26.48	1.22			MUDSTONE	DK.GY.VBRKN CORE VERY BROKEN AT TOP

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	26.48	27.31	0.83	02204		MUDSTONE	DK.GY.SLD SILTY TOWARDS BASE; SAMPLED IN MIDDLE
* 65	27.31	27.53	0.22			SILTSTONE	M.GY.SLD SANDY IN PART
66	27.53	28.96	1.43			SANDSTONE	FG.M.GY.BRKN
67	28.96	29.21	0.25			SANDSTONE	FG.M.GY.SLD
69	29.21	30.68	1.47			SANDSTONE	FG.M.GY.SLD BROKEN IN PART
* 70	30.68	31.05	0.37			MUDSTONE	SLTY.M.GY.BIOTR.SLD MINOR HORIZONTAL BURROWS
* 67	31.05	32.34	1.29			MUDSTONE	SLTY.M.GY.BIOTR.SLD
* 67	32.34	33.02	0.68			MUDSTONE	SLTY.M.GY.BIOTR.BRKN VERY MINOR BIOTURBATION
* 68	33.02	35.14	2.12			MUDSTONE	SLTY.M.GY.BIOTR.BRKN CORE BROKEN IN PART
69	35.14	35.76	0.62			MUDSTONE	SLTY.DK.GY.SSD.BRKN WHITE SPECKS; CARBONACEOUS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	35.76	36.42	0.66			MUDSTONE	CARB.DK.GY.BRKN COAL STRINGERS THROUGHOUT
* 69	36.42	36.65	0.23			MUDSTONE	DK.GY.BIOTR.BRKN BIOTURBATED IN PART
69	36.65	36.88	0.23			ROCK LOSS	
67	36.88	38.04	1.16			MUDSTONE	M.GY.SLD SILTY TOWARDS BASE
66	38.04	38.39	0.35			SANDSTONE	FG-.LT.GY.SLD MUDSTONE RIP-UP CLASTS
65	38.39	38.85	0.46			SANDSTONE	FG-.LT.GY.SLD
* 63	38.85	40.17	1.32			SANDSTONE	FG-.M.GY.SLD SILTSTONE LAMINATIONS
68	40.17	40.99	0.82			SANDSTONE	FG-.LT.GY.SLD MUDSTONE RIP-UP CALSTS IN PART; GRIT BA ND AT TOP
71	40.99	41.64	0.65			SANDSTONE	FG-.LT.GY.BIOTR.SLD MUDSTONE CLASTS THROUGHOUT; MINOR BIOTU RBATION;CORE BROKEN IN PART; TOPS UP IN DICATED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 75	41.64	43.02	1.38			SANDSTONE	FG-.LT-M.GY.BIOTR.SLD MUDSTONE LAMINATIONS
75	43.02	44.82	1.80			SANDSTONE	FG-.LT-M.GY.BIOTR.SLD MUDSTONE LAMINATIONS
76	44.82	45.05	0.23			SANDSTONE	FG-.LT-M.GY.BIOTR.SLD MUDSTONE LAMINATIONS
76	45.05	46.98	1.93			SANDSTONE	FG-.LT-M.GY.BIOTR.SLD INTERBEDDED SILTSTONE
76	46.98	48.67	1.69			SANDSTONE	FG-.LT-M.GY.BIOTR.SLD INTERBEDDED SILTSTONE; MUDSTONE LAMINAT IONS
77	48.67	49.83	1.16			SANDSTONE	SLTY.FG-.LT.GY.BRKN FRACTURED PERPENDICULAR TO BEDDING PLAN E
77	49.83	49.86	0.03			MUDSTONE	LT.GY.BRKN
77	49.86	50.15	0.29			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	50.15	50.22	0.07			SANDSTONE	SLTY.FG-.LT.GY.BRKN FRACTURED PERPENDICULAR TO BEDDING PLAN E
77	50.22	50.29	0.07			MUDSTONE	M.GY.SLD FRACTURED PERPENDICULAR TO BEDDING PLAN E
77	50.29	50.46	0.17			MUDSTONE	M.GY.SLD FRACTURED PERPENDICULAR TO BEDDING PLAN E
77	50.46	50.50	0.04			CLAYSTONE	CARB.DK.GY.SLD PYRITE WITH QUARTZ VEIN BRECCIATION
77	50.50	50.57	0.07			COAL	C-2.BRKN
77	50.57	50.73	0.16			CLAYSTONE	CARB.DK.GY.BRKN COALY STREAKS C-1
77	50.73	50.83	0.10	02220	H	COAL	C-5.DK.GY.VBRKN CLAYEY COAL
77	50.83	50.88	0.05	02220	H	COAL	C-2.VBRKN
77	50.88	51.24	0.36	02220	H	COAL	C-5.VBRKN COALY STREAKS C-1

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	51.24	51.30	0.06	02220	H	COAL	C-3.VBRKN
77	51.30	51.37	0.07	02220	H	COAL	C-5.BRKN COALY STREAKS C-1
77	51.37	51.39	0.02	02220	H	COAL	C-2.VBRKN
77	51.39	51.52	0.13	02220	H	CLAYSTONE	CARB.DK.GY.BRKN
77	51.52	51.66	0.14	02220	H	MUDSTONE	M.BN.BRKN SOFT
77	51.66	51.73	0.07	02220	H	COAL	C-2.BRKN CLAYSTONE BANDS
77	51.73	51.81	0.08	02220	H	COAL	C-4.BRKN COAL BANDS C-2
77	51.81	52.14	0.33	02220	H	COAL	C-2.BRKN
77	52.14	52.16	0.02			CLAYSTONE	M.GY.BRKN QUITE HARD,QUARTZ VEIN BELOW
78	52.16	52.57	0.41			CLAYSTONE	CARB.DK.GY.BRKN VERY FINE COALY STREAKS IN C-1

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	52.57	53.96	1.39			MUDSTONE	SLTY.M.GY.SHRD MINOR SHEAR
* 78	53.96	54.68	0.72			SILTSTONE	CLYY.M.GY.SLD FINELY LAMINATED MUDSTONE
* 73	54.68	56.77	2.09	02205		SANDSTONE	SLTY.M.GY.SLD ARGILACEOUS BANDS; COARSENS TOWARDS BAS E; SAMPLED AT BASE
73	56.77	57.00	0.23			SANDSTONE	SLTY.M.GY.SLD ARGILACEOUS BANDS; END OF HOLE AT 57.00 METERS

* DENOTES MEASURED BCA
NEWPAGE

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GR.-Mt. Klappan 84(3)A

GULF CANADA RESOURCES INC.
COAL DIVISION
KLAPPAN PROJECT
STRATIGRAPHIC LOG
KPN HC DDH84001

GEOLOGIST : G. SEVE	DATE : DEC 12/84	DRAWING NO. :

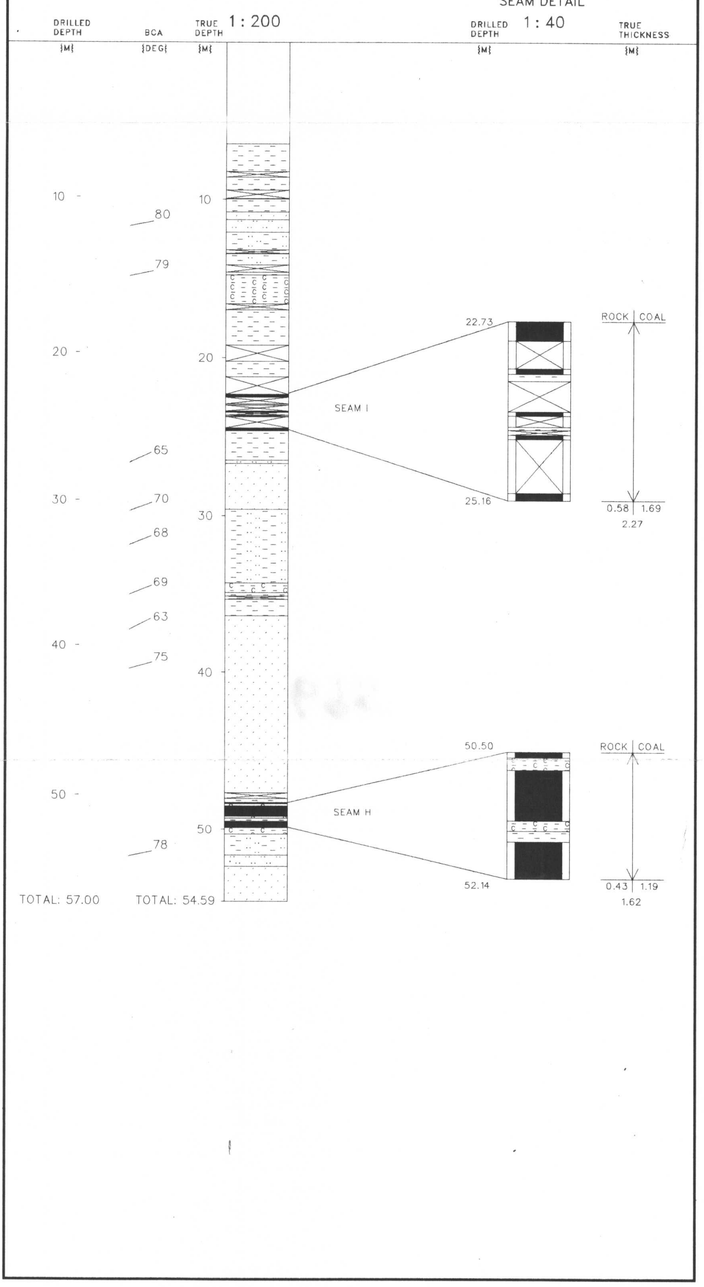
SCALE : 1:200 1:40

NORTHING: 6343197.0 N
EASTING: 515125.0 E

INCLINATION: 80.0°
BEARING: 54.1 °

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE	2 2 2	BRECCIA
	COAL	C C C	CARBONACEOUS
	OVERBURDEN	Q Q Q	QUARTZ
	MUDSTONE,CLAYSTONE	P P P	PYRITE
	TUFF	FE FE FE	FERRUGINOUS
	LIMESTONE	o o o	CONGLOMERATE
	CORE LOSS	F	FOSSIL BED



PLOT 1 10:38:33 WED 12 DEC, 1984 JOB=TSTCRD GULF DRAFTER DISSPLA 9.0

COMPU-LOG V8L2 PLOT 04-13-84

DDH-84-001 (IN PIPE)
GULF CANADA RES. INC
MT. KLAPPAN

HOLE DIAMETER : 08.7
PROBE # 9030A - 403
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 98
DATA V8L28 TRUCK # P811
K. SKARBO APPL.#2704L1

GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL

G.R. - Mt. Klappan 84(3) A

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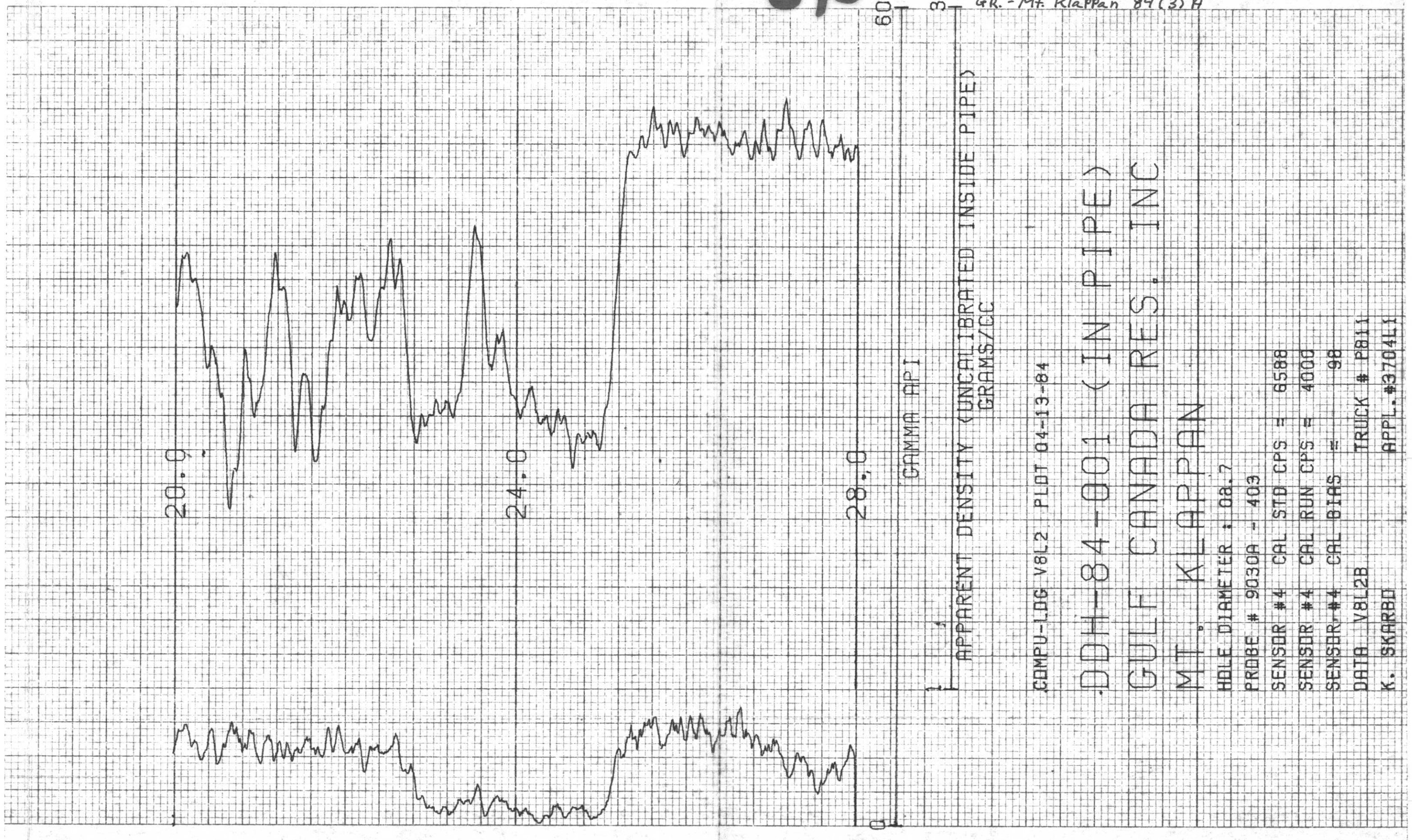
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

695

CENTURY GEOPHYSICAL CORP.

GR. - Mt. Klappan 84(3)A



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

COMPU-LOG V8L2 PLOT 04-13-84

DDH-84-001 (IN PIPE)
GULF CANADA RES. INC
MT. KLAPPAN

HOLE DIAMETER : 08.7
PROBE # 9055A - 245
SENSOR #1 CAL STD CPS = 152
SENSOR #1 CAL RUN CPS = 214
SENSOR #1 CAL BIAS = 0
DATA V8L28 TRUCK # A811
K. SKARBO APPL.#1007L1

Gr.-Mt. Klappan 84(3).A

695

CENTURY

221

VERTICAL DEVIATION

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L28

CLIENT : GULF CANADA RES. INC
LOCATION : MT. KLAPPAN
HOLE ID : DDH-84-001 OPEN HOLE
DATE OF LOG : 04-13-84
PROBE : 9055A 0245

SCALE: .25 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 19.6 M
AZIMUTH: 54.1
DISTANCE: 3.25 M

+ = 1.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

GR. - Mt. Klappan 84(3) A

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GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCDDH84002 DATE - 01/24/85

- H I S T O R Y -

START DATE - 04/18/84
END DATE - 04/19/84

CONTRACTOR - J.T. THOMAS
GEOLOGIST - G. SEVE
OPERATOR - G.C.R.I.
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1368.00
ZONE - 9
NORTHING - 6343493.00
EASTING - 514717.00

LICENCE/LEASE NUMBER - 7141 0

LATITUDE - 571410
LONGITUDE - 1284522

- O R I E N T A T I O N -

LENGTH - 67.05
INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 63.5

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 7.56
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

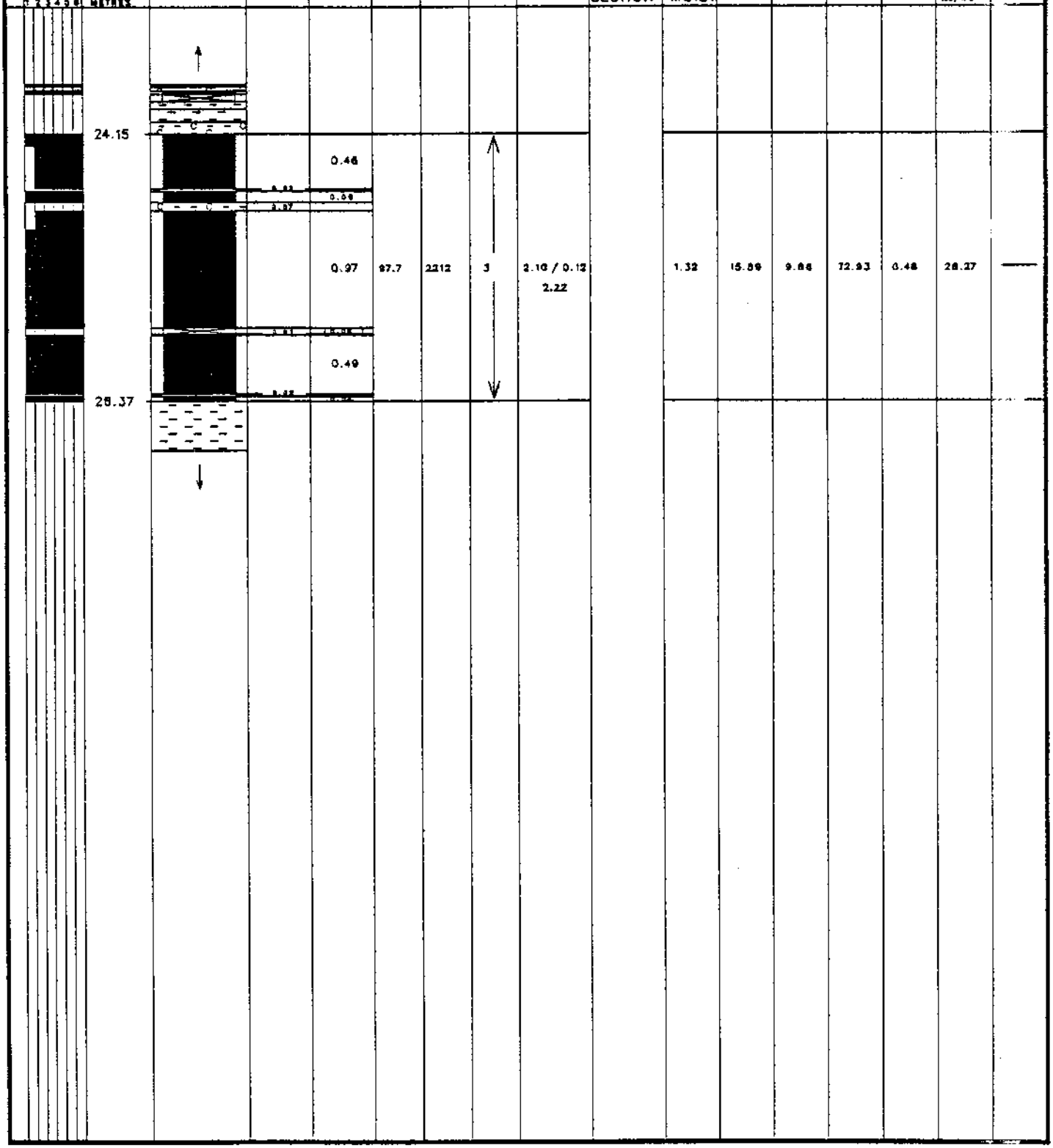
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC DDH84002 SEAM : 1 INTERVAL(M) : 24.15 – 26.37 ELEVATION(M) :

GEOLOGIST : G. SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	24.15			0.46											
				0.97	97.7	2212	3	2.10 / 0.12 2.22		1.32	15.89	9.86	72.93	0.48	28.27
				0.49											
	26.37														

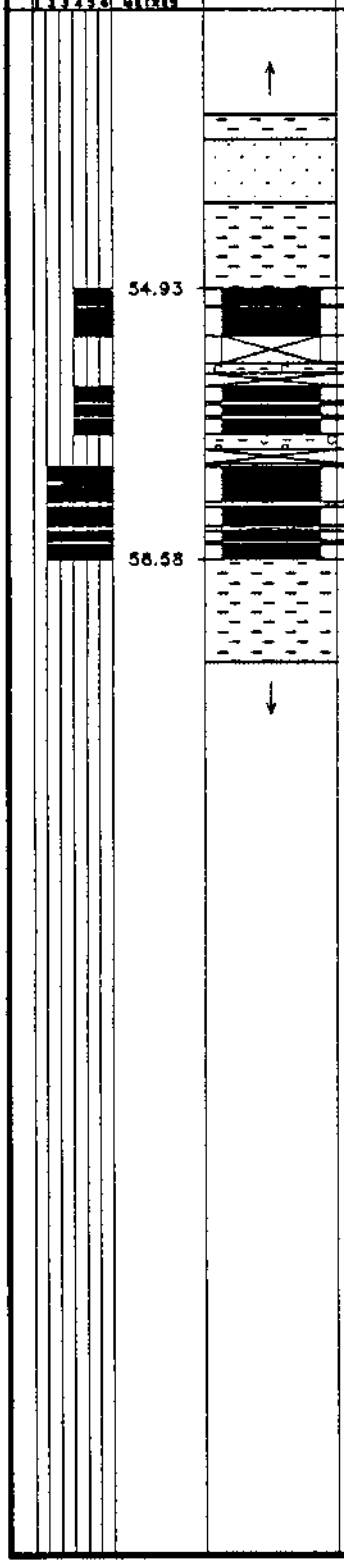
PLOT 2 15.46.37 TUES 29 JAN, 1985 JOB=TSTCE80 GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL — **COAL DIVISION** — **MOUNT KLAPPAN PROJECT** — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84002 SEAM : H INTERVAL(M) : 54.93 – 56.58 ELEVATION(M) :

GEOLOGIST : G. SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	54.93			0.11											
				0.17											
				(0.17)											
				0.09											
				0.09	77.6	2213	4	1.21 / 0.44		1.67	37.27	10.70	50.36	0.48	19.69
								1.65							
				0.21											
	56.58			0.09											

Plan

GULF CANADA RESOURCES INC. - COAL DIVISION

21/MAR/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84002										
		2202	11.12	13.17	100.00	0.00	2.05	0.00	0.00	0.00- 2.05
	I	2212	24.15	26.37	97.74	2.05	0.12	0.05	0.00	2.10- 0.12
		2203	30.61	31.73	100.00	0.00	1.12	0.00	0.00	0.00- 1.12
	H	2213	54.93	56.58	77.57	1.01	0.27	0.20	0.17	1.21- 0.44
		2210	56.58	57.23	100.00	0.00	0.65	0.00	0.00	0.00- 0.65
		2201	57.23	58.30	100.00	0.00	1.07	0.00	0.00	0.00- 1.07

GULF CANADA RESOURCES INC. - COAL DIVISION

06/MAR/85 COMPOSITE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84002												
	I	3	2212	2212	24.15	26.37	97.74	2.05	0.12	0.05	0.00	2.10- 0.12
	H	4	2213	2213	54.93	56.58	77.57	1.01	0.27	0.20	0.17	1.21- 0.44

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	0.00	0.40	0.40			CASING	DRILL FLOOR TO GROUND
69	0.40	1.31	0.91			OVBRDN	DK.GY DARK ORGANIC SOIL
69	1.31	1.92	0.61			OVBRDN	LT.GY CLAY BASED SOIL
69	1.92	2.84	0.92			OVBRDN	LT.GY BOULDER LIGHT GREY CLAY BASED
69	2.84	2.99	0.15			OVBRDN	DK.GY CLAY BASED SOIL
69	2.99	3.14	0.15			OVBRDN	LT.GY BOULDER
69	3.14	5.28	2.14			OVBRDN	DK.GY CLAY BASED SOIL
69	5.28	5.89	0.61			OVBRDN	DK.GY DARK GREY MUDSTONE REGOLITH
69	5.89	7.56	1.67			MUDSTONE	LT.GY MUDSTONE NOT CORED,CASING SET TO 7.56M
* 69	7.56	9.24	1.68			MUDSTONE	SLTY.M.GY.BRKN CORE BROKEN IN PART,CORE DESSICATES UPO N DRYING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	9.24	9.42	0.18			MUDSTONE	SLTY.M.GY.BRKN CORE BROKEN IN PART CORE DESSICATES UPO N DRYING
* 67	9.42	11.12	1.70			MUDSTONE	SLTY.M.GY.BRKN CORE BROKEN IN PART CORE DESSICATES UPO N DRYING
* 70	11.12	13.17	2.05	02202		MUDSTONE	SLTY.M.GY.BIOTR.BRKN CORE BROKEN IN PART CORE DESSICATES UPO N DRYING SILTY BANDS MINOR BIOTURBATION IN PART 0.17 CM SAMPLED FROM MIDDLE
69	13.17	14.06	0.89			MUDSTONE	SLTY.M.GY.BIOTR.BRKN
* 69	14.06	15.10	1.04			MUDSTONE	M.GY.BRKN
* 74	15.10	17.03	1.93			MUDSTONE	M.GY.BRKN SILTY TOWARDS BASE
* 77	17.03	19.05	2.02			MUDSTONE	DK.GY.BRKN DESSICATED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	19.05	19.70	0.65			MUDSTONE	DK.GY.VBRKN DESSICATED
76	19.70	19.81	0.11			ROCK LOSS	
* 75	19.81	20.90	1.09			MUDSTONE	DK.GY.BRKN CARBONATE INFILLING MINOR FRACTURES INC REASING CARBONATION TOWARDS BASE
78	20.90	21.28	0.38			MUDSTONE	DK.GY CARBONATE VEINING THROUGHOUT MINOR COAL LAMINATIONS
79	21.28	21.54	0.26			COAL	CARBONATE INFILLING FRACTURES THROUGHOU T
82	21.54	22.75	1.21			MUDSTONE	DK.GY.BRKN MINOR COAL LAMINATIONS TOWARDS BASE
85	22.75	22.77	0.02			COAL	MUDSTONE INTERBEDS
* 87	22.77	23.74	0.97			MUDSTONE	DK.GY COAL LAMINATIONS INCREASING TOWARDS BAS E LISTRIC SURFACES MINOR PYRITE
87	23.74	23.76	0.02			COAL	C-1.BRKN QUARTZ VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	23.76	23.79	0.03			CLAYSTONE	CARB.DK.GY.BRKN COAL STRINGERS C-1
87	23.79	23.82	0.03			COAL	C-1.BRKN CALCAREOUS VEINING
87	23.82	23.88	0.06			COAL LOSS	
87	23.88	23.94	0.06			MUDSTONE	DK.GY.BRKN SOFT AND BROWNISH
87	23.94	24.05	0.11			CLAYSTONE	DK.GY.BRKN CALCAREOUS VEINING
87	24.05	24.15	0.10			CLAYSTONE	CARB.DK.GY.BRKN
87	24.15	24.25	0.10	02212 I		COAL	C-1.BRKN CLAYSTONE BANDS
87	24.25	24.61	0.36	02212 I		COAL	C-2.SHRD VERY SHEARED WITH NUMEROUS LISTRIC SURF ACES
87	24.61	24.63	0.02	02212 I		CLAYSTONE	CARB.DK.GY.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	24.63	24.72	0.09	02212	I	COAL	C-1.BRKN
87	24.72	24.76	0.04	02212	I	CLAYSTONE	CARB.DK.GY.BRKN; LISTRIC SURFACES
87	24.76	24.79	0.03	02212	I	CLAYSTONE	CARB.DK.GY.BRKN LISTRIC SURFACES
87	24.79	24.95	0.16	02212	I	COAL	C-2.BRKN STREAKED WITH C-1
87	24.95	25.76	0.81	02212	I	COAL	C-1.VBRKN SOFTNESS OF COAL SUGGESTS WEATHERING
87	25.76	25.81	0.05	02212	I	COAL LOSS	
87	25.81	25.82	0.01	02212	I	CLAYSTONE	DK.GY.SLD LENS OF CLAYSTONE
87	25.82	26.24	0.42	02212	I	COAL	C-1.BRKN RUSTY DEPOSITE ON CLEAT FACES
86	26.24	26.31	0.07	02212	I	COAL	C-1.PWRD
86	26.31	26.33	0.02	02212	I	CLAYSTONE	CARB.DK.GY.SLD CALCAREOUS VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	26.33	26.37	0.04	02212	I	COAL	C-1.VBRKN
86	26.37	26.78	0.41			MUDSTONE	M.GY.BRKN PLANT LEAF IMPRINTS LYING IN BEDDING PL ANE
86	26.78	28.80	2.02			MUDSTONE	M.GY.BRKN SILTY TOWARDS BASE PYRITIC
* 86	28.80	29.31	0.51			SILTSTONE	M.GY.BRKN SANDY TOWARDS BASE
87	29.31	30.61	1.30			SANDSTONE	FG.M.GY.BRKN
87	30.61	31.73	1.12	02203		SANDSTONE	LT.GY.BRKN RIP UP CLASTS AT BASE SAMPLE TAKEN FROM MIDDLE
* 88	31.73	32.34	0.61			MUDSTONE	SLTY.M.GY.BIOIR BECOMES SANDY TOWARDS BASE
88	32.34	32.58	0.24			SANDSTONE	SLTY.VFG.M.GY.BRKN
87	32.58	32.76	0.18			SILTSTONE	M.GY.SLD INTERBEDDED WITH MUDSTONE

* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 86	32.76	34.77	2.01			MUDSTONE	DK.GY.SLD SILTY IN PART
86	34.77	35.39	0.62			MUDSTONE	DK.GY.SLD SILTY IN PART
85	35.39	36.84	1.45			MUDSTONE	DK.GY.SLD SILTY IN PART COAL BANDS UP TO 1.5 CM T HICK
* 85	36.84	37.02	0.18			MUDSTONE	DK.GY.BRKN
85	37.02	38.30	1.28			MUDSTONE	SLTY.M.GY.BRKN BECOMES SILTY TOWARDS BASE
84	38.30	38.93	0.63			SANDSTONE	FG-.M.GY.BIOTR.SLD SILTSTONE BANDS LARGE SUBVERTICAL BURRO W
* 84	38.93	41.10	2.17			SANDSTONE	FG-.M.GY.BIOTR.SLD MUDSTONE RIP UP CLASTS AT BASE
83	41.10	41.29	0.19			SANDSTONE	FG-.M.GY.SLD COARSE GRAINED BAND MUDSTONE LAMINATION S

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	41.29	43.15	1.86			SANDSTONE	FG-.M.GY.SLD MUDSTONE LAMINATIONS AND RIP UP CLASTS THROUGHOUT MINOR BIOTURBATION
82	43.15	44.34	1.19			SANDSTONE	FG-.M.GY.BIOTR.SLD MUDSTONE LAMINATIONS RIP UP CLASTS
81	44.34	45.12	0.78			SANDSTONE	FG-.M.GY.SLD MUDSTONE LAMINATIONS RIP UP CLASTS NO B IOTURBATION
80	45.12	47.21	2.09			SANDSTONE	FG-.LT.GY.BRKN MUDSTONE LAMINATIONS AND RIP UP CLASTS IN PART
80	47.21	47.37	0.16			SANDSTONE	FG-.LT.GY.BRKN MUDSTONE BAND
79	47.37	49.15	1.78			SANDSTONE	FG-.LT.GY.BRKN FRACTURED JOINTS THROUGHOUT MINOR INFIL LING
79	49.15	49.58	0.43			SANDSTONE	FG-.LT.GY.VBRKN
* 78	49.58	51.09	1.51			SANDSTONE	FG-.LT.GY.BRKN MINOR MUDSTONE LAMINATIONS NEAR BASE FR ACTURED MINOR INFILLING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	51.09	52.80	1.71			SANDSTONE	FG-.LT.GY.BRKN FRACTURED
80	52.80	53.00	0.20			SANDSTONE	FG-.LT.GY.SLD MUDSTONE LAMINATIONS AND BANDS THROUGHO UT
80	53.00	53.36	0.36			MUDSTONE	SLTY.M.GY.BIOTR.SLD
80	53.36	53.85	0.49			SANDSTONE	FG-.LT.GY.SLD MINOR MUDSTONE LAMINATIONS
80	53.85	54.00	0.15			MUDSTONE	M.GY.BIOTR.BRKN INTERBEDDED SANDSTONE
81	54.00	54.40	0.40			SANDSTONE	FG-.M.GY ABRUPT CONTACT AT BASE SLUMP
* 81	54.40	54.93	0.53			MUDSTONE	BLK COAL BANDS AND LAMINATIONS THROUGHOUT P YRITIC AT BASE
80	54.93	54.99	0.06	02213	H	COAL	C-4.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	54.99	55.04	0.05	02213	H	COAL	C-4.VBRKN
80	55.04	55.05	0.01	02213	H	CLAYSTONE	CARB.DK.GY.SLD
80	55.05	55.09	0.04	02213	H	COAL	C-4.SLD
80	55.09	55.22	0.13	02213	H	COAL	C-4.PWRD
80	55.22	55.39	0.17	02213	H	COAL LOSS	
80	55.39	55.45	0.06	02213	H	CLAYSTONE	CARB.DK.GY.BRKN
79	55.45	55.53	0.08	02213	H	ROCK LOSS	
79	55.53	55.62	0.09	02213	H	COAL	C-4.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	55.62	55.64	0.02	02213	H	CLAYSTONE	CARB.DK.GY.SLD
79	55.64	55.71	0.07	02213	H	COAL	C-4.BRKN
79	55.71	55.73	0.02	02213	H	CLAYSTONE	CARB.DK.GY.BRKN
79	55.73	55.82	0.09	02213	H	COAL	C-4.PWRD LISTRIC SURFACES
79	55.82	55.91	0.09	02213	H	MUDSTONE	CARB.DK.BN.SLD GREYISH SOFT MUD
78	55.91	56.00	0.09	02213	H	ROCK LOSS	
78	56.00	56.02	0.02	02213	H	CLAYSTONE	DK.GY.SLD CALCAREOUS VEINING
78	56.02	56.10	0.08	02213	H	COAL	C-2.BRKN
78	56.10	56.13	0.03	02213	H	COAL	C-3.PWRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	56.13	56.23	0.10	02213	H	COAL	C-2.SLD QUARTZ VEINS REPLACING ROOTLETS?
78	56.23	56.26	0.03	02213	H	CLAYSTONE	CARB.DK.GY.SLD LENTICULAR
78	56.26	56.38	0.12	02213	H	COAL	C-2.LAM.SLD CLAYSTONE BANDS THROUGHOUT
78	56.38	56.41	0.03	02213	H	COAL LOSS	
78	56.41	56.45	0.04	02213	H	COAL	C-2.PWRD
78	56.45	56.47	0.02	02213	H	COAL	C-2.SLD
77	56.47	56.49	0.02	02213	H	CLAYSTONE	CARB.DK.GY.SLD
77	56.49	56.58	0.09	02213	H	COAL	C-2.LAM.SLD CLAYSTONE BANDS AND QUARTZ REPLACE ROOT LETS
77	56.58	57.23	0.65	02210		MUDSTONE	BLK.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	57.23	58.30	1.07	02201		MUDSTONE	BLK.SLD TOP 0.13 M SAMPLE
* 73	58.30	59.25	0.95			SILTSTONE	M.GY.BIOTR.BRKN
74	59.25	59.58	0.33			SILTSTONE	CARB.M.GY.BIOTR.BRKN CARBONATE IN PART
76	59.58	61.09	1.51			SANDSTONE	FG.M.GY.BRKN FRACTURED; INFILLED SILTY AT TOP
78	61.09	61.24	0.15			ROCK LOSS	
* 80	61.24	62.76	1.52			SANDSTONE	FG.M.GY.BRKN FRACTURED, INFILLED BY CEMENT
78	62.76	63.06	0.30			SANDSTONE	FG.M.GY.BRKN MINOR FRACTURES
77	63.06	63.63	0.57			SANDSTONE	FG.M.GY.BRKN MINOR FRACTURES
* 75	63.63	64.66	1.03			SANDSTONE	FG-.M.GY.BRKN
75	64.66	64.91	0.25			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 76	64.91	67.05	2.14			SANDSTONE	FG-.M.GY.SLD CARBONACEOUS LAMINATIONS END OF HOLE AT 67.05

* DENOTES MEASURED BCA

NEWPAGE

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GR. - Mt. Klappan 84(3) A

GULF CANADA RESOURCES INC.
COAL DIVISION
KLAPPAN PROJECT
STRATIGRAPHIC LOG
KPN HC DDH84002

GEOLOGIST : G. SEVE	DATE : DEC 12/84	DRAWING NO. :

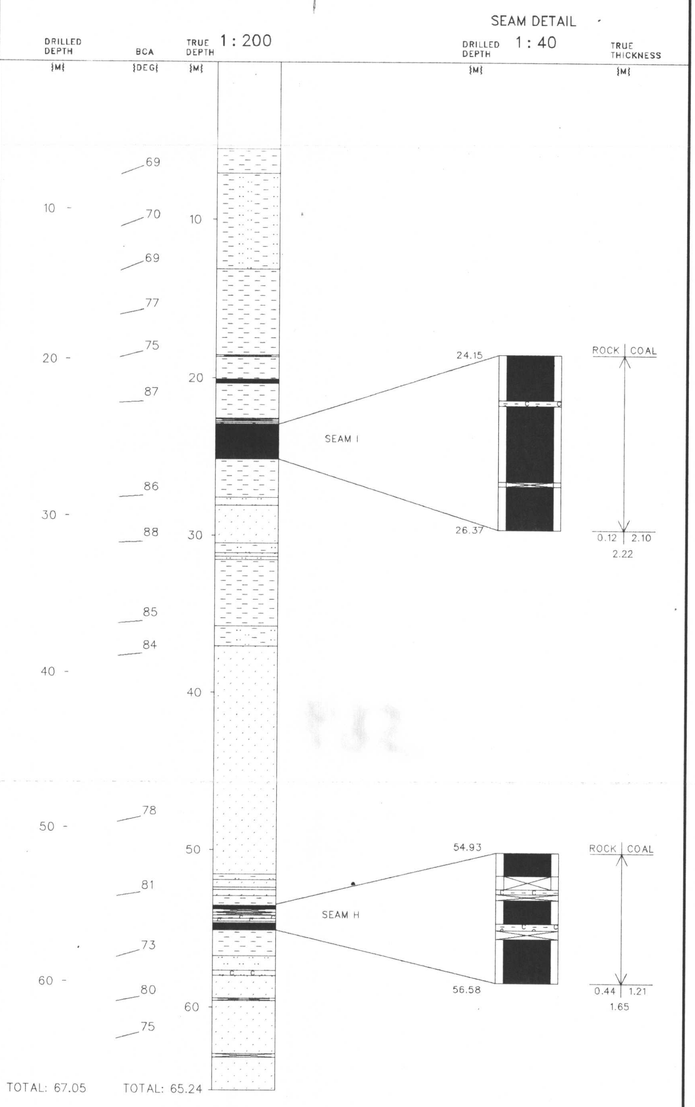
SCALE : 1:200 1:40

NORTHING: 6343493.0 N
EASTING: 514717.0 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL	C C C	CARBONACEOUS
	OVERBURDEN	Q Q Q	QUARTZ
	MUDSTONE,CLAYSTONE	P P P	PYRITE
	TUFF	FE FE FE	FERRUGINOUS
	LIMESTONE	o o o	CONGLOMERATE
	CORE LOSS	F	FOSSIL BED



PLOT 1 10.42.46 WED 12 DEC, 1984 JOB=7510080 GULF CANADA DISSPLA 9.0

695

COMPU-LOG V8L2 PLOT 04-18-84

DDH-84-002 OPEN HOLE
GULF CANADA RES. INC.
MT. KLAPPAN

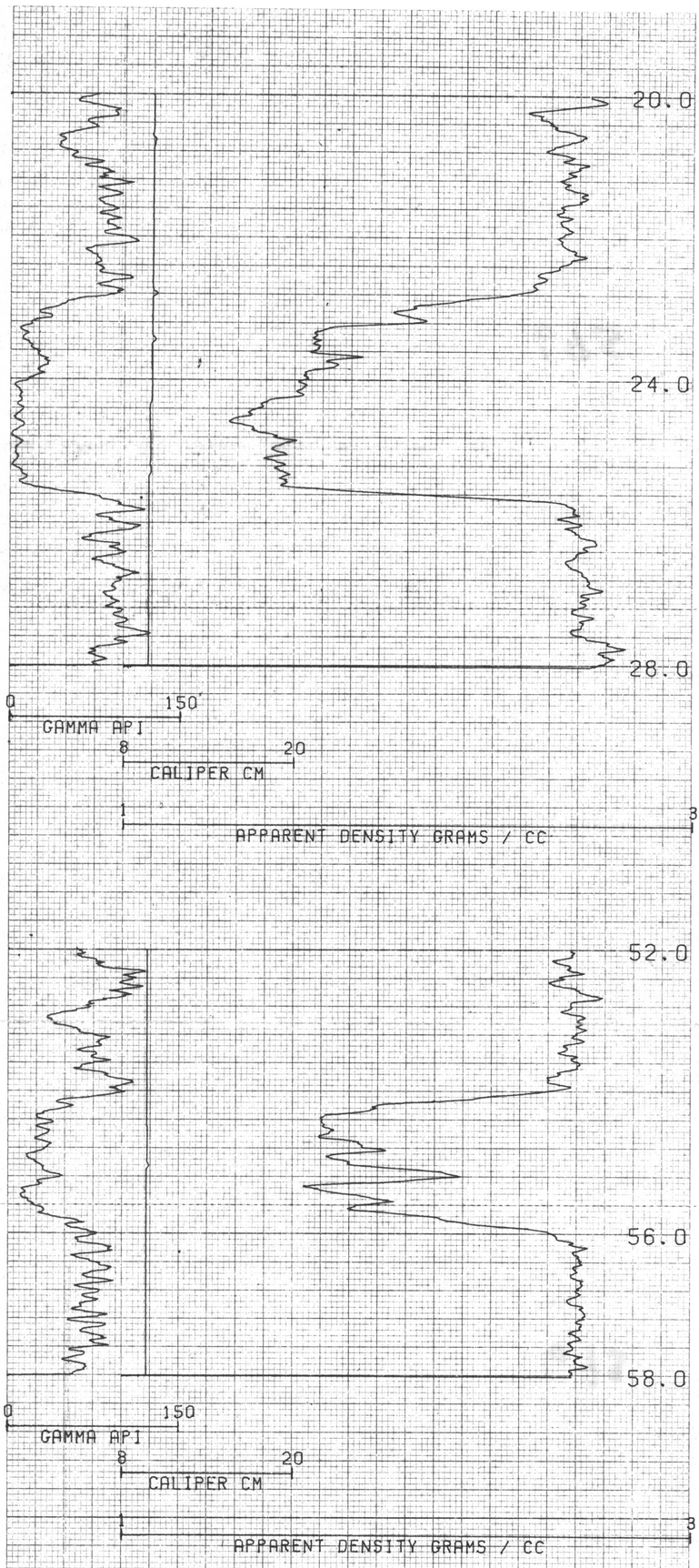
HOLE DIAMETER : 09.2
PROBE # 9030A - 403
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 6210
SENSOR #4 CAL BIAS = 28
DATA V8L28 TRUCK # P811
R.BERKLEY APPL.#29 L1

GR - Mt. Klappan 84(3).8

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

ART NO. 786-0040 CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

695

CDMPU-LOG V8L2 PLOT 04-18-84

DDH-84-002 OPEN HOLE
GULF CANADA RES. INC.
MT. KLAPPAN

HOLE DIAMETER : 09.2
PROBE # 9030A - 403
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 8210
SENSOR #4 CAL BIAS = 98
DATA V8L28 TRUCK # F811
R.BERKLEY APPL.#703 L1

G.R. - Mt. Klappan 84(3).P

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

695

COMPU-LOG V8L2 PLOT 04-18-84

DDH-84-002

GULF CANADA RES. INC.

MT. KLAPPAN

HOLE DIAMETER : 08.7

PROBE # 9055A - 245

SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 214

SENSOR #4 CAL BIAS = 0

DATA V8L2B TRUCK # P811

R.BERKLEY APPL. #1007L1

GR.-Mt. Klappan BY(3) P

451

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VERTICAL DEVIATION

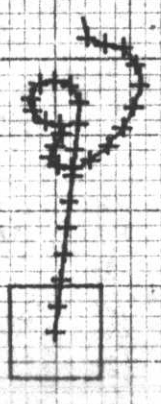
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2B

CLIENT : GULF CANADA RES. INC.
LOCATION : MT. KLAPPAN
HOLE ID : DDH-84-002
DATE OF LOG : 04-19-84
PROBE : 9055A 0245

SCALE: .10 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 62.0 M
AZIMUTH: 5.2
DISTANCE: .41 M

+ = 2.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



L. CORP. PART NO. 786-0040
GR. - Mt. Klappan 84(3)A
310
Sbg

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCDDH84003 DATE - 01/24/85

- H I S T O R Y -

START DATE - 04/20/84
END DATE - 04/20/84

CONTRACTOR - J.T.THOMAS
GEOLOGIST - G.SEVE
OPERATOR - GCRI
SURVEYOR -

REMARKS - HOLE IS LOGGED THROUGH DRILL RODS ONLY

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1347.00
LICENCE/LEASE NUMBER - 7136 0

ZONE - 9
NORTHING - 6343228.00
EASTING - 514895.00
LATITUDE - 571402
LONGITUDE - 1284512

- O R I E N T A T I O N -

LENGTH - 53.95
CORE SIZE - 63.5

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

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

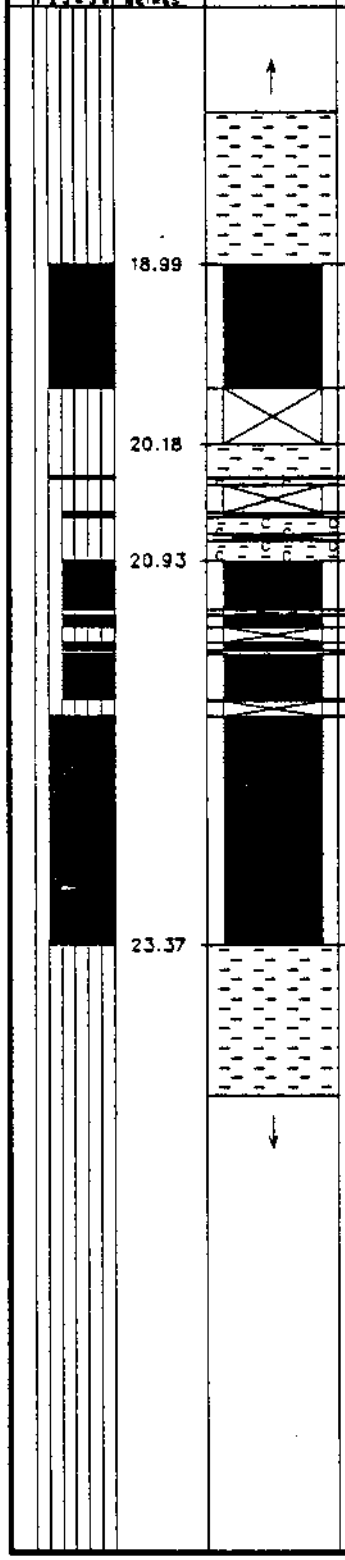
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84003 SEAM : 1 INTERVAL(M) : 18.99 - 23.37 ELEVATION(M) : 1347.0

GEOLOGIST : G.SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :



SEAM COMP.	DRILL DEPTH METRES	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
1	18.99		0.76	59.1	2214	5	1.10 / 0.00		1.51	14.99	8.52	74.98	0.34	28.77
			(0.34)				1.10							
	20.18	0.20												
			(0.17)	70.4	2215	6	0.21 / 0.50		1.97	59.80	11.36	26.87	0.20	10.31
							0.71							
	20.93		0.30											
			0.26											
				91.1	2216	7	2.31 / 0.04		1.44	15.05	9.78	73.72	0.45	28.56
			1.40				2.35							
	23.37													

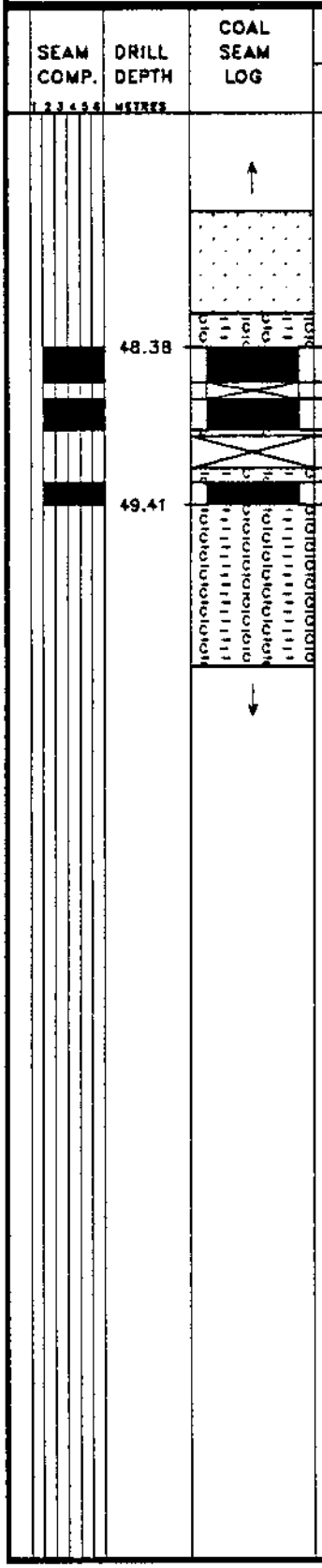
PLOT 2 17.28.12 TUES 29 JAN, 1985 JOB-TSTCE60 GULF CANADA LHT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC 00H84003 SEAM : H INTERVAL(M) : 48.38 – 49.41 ELEVATION(M) : 1347.0

GEOLOGIST : G.SEVE SCALE: DATE : JAN 29/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	48.38			0.23											
				(0.11)											
				0.20	68.9	2217	8	0.69/ 0.34 1.03		1.94	35.34	8.31	53.41	1.25	21.09
			(0.21)												
			0.09												
	49.41			0.18											

GULF CANADA RESOURCES INC. - COAL DIVISION

21/MAR/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84003										
	I	2214	18.99	20.18	68.90	0.82	0.00	0.37	0.00	1.19- 0.00
	I	2215	20.18	20.93	70.66	0.04	0.49	0.18	0.04	0.22- 0.53
	I	2216	20.93	23.37	90.98	2.18	0.04	0.22	0.00	2.40- 0.04
	I	2301	24.32	25.01	100.00	0.00	0.69	0.00	0.00	0.00- 0.69
	I	2302	36.89	38.35	100.00	0.00	1.46	0.00	0.00	0.00- 1.46
	I	2303	44.91	45.47	100.00	0.00	0.56	0.00	0.00	0.00- 0.56
	H	2217	48.38	49.41	68.93	0.58	0.13	0.11	0.21	0.69- 0.34

GULF CANADA RESOURCES INC. - COAL DIVISION

06/MAR/85 COMPOSITE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84003												
	I	5	2214	2214	18.99	20.18	68.90	0.82	0.00	0.37	0.00	1.19- 0.00
	I	6	2215	2215	20.18	20.93	70.66	0.04	0.49	0.18	0.04	0.22- 0.53
	I	7	2216	2216	20.93	23.37	90.98	2.18	0.04	0.22	0.00	2.40- 0.04
	H	8	2217	2217	48.38	49.41	68.93	0.58	0.13	0.11	0.21	0.69- 0.34

85/01/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	0.00	0.50	0.50			CASING	DRILL FLOOR TO GROUND
72	0.50	1.11	0.61			OVBRDN	DARK ORGANIC SOIL
72	1.11	4.46	3.35			OVBRDN	M-DK.BN CLAY BASED SOIL
72	4.46	5.07	0.61			MUDSTONE	TRICONED TO SET CASING AT 4.57M
72	5.07	6.35	1.28			CORE LOSS	
72	6.35	7.86	1.51			CAVE	MUDSTONE AND SILTSTONE GRAVEL UNCONSOLI DATED
72	7.86	8.19	0.33			MUDSTONE	SLTY.M.GY.BRKN
72	8.19	8.33	0.14			MUDSTONE	SLTY.M.GY.BRKN CORE SLIGHTLY SPINDLED
* 72	8.33	9.91	1.58			MUDSTONE	SLTY.M.GY.BRKN SILTY BANDS; LOW ANGLE CROSSING STRATA; INDICATES UPRIGHT
* 75	9.91	10.26	0.35			MUDSTONE	SLTY.M.GY.BRKN SILTSTONE BANDING

* DENOTES MEASURED BCA

85/01/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 73	10.26	11.80	1.54			MUDSTONE	SLTY.M.GY.BRKN SILTSTONE BANDING
73	11.80	12.13	0.33			MUDSTONE	SLTY.M.GY.BRKN SILTSTONE BANDING; CORE SLIGHTLY SPINDL ED;BIOTURB. MINOR; HORIZONTAL BURROWS
* 74	12.13	14.14	2.01			MUDSTONE	SLTY.M.GY.BRKN SILTSTONE BANDING; CORE SPINDLED
70	14.14	14.70	0.56			MUDSTONE	SLTY.M.GY.BRKN MINOR SILTY BANDS; CORE SPINDLED
68	14.70	15.68	0.98			MUDSTONE	SLTY.M.GY.BRKN MINOR SILTY BANDS; CORE SPINDLED
66	15.68	15.89	0.21			MUDSTONE	SLTY.M.GY.BRKN MINOR SILTY BANDS; CORE SPINDLED
* 62	15.89	17.97	2.08			MUDSTONE	SLTY.M.GY.BRKN MINOR SILTY BANDS; CORE SPINDLED
65	17.97	18.99	1.02			CLAYSTONE	M.GY.BRKN 30 CM SAMPLE TAKEN OF ROOF ROCK DIRECTL Y ABOVE TH E COAL SEAM, FOR USE IN TOXI CITY STUDIES

* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	18.99	19.81	0.82	02214	I	COAL	C-2.PWRD SOME CLAYSTONE IN THIS INTERVAL (MINOR) BUT IMPOSSIBLE TO LOCATE ACCURATELY
69	19.81	20.18	0.37	02214	I	COAL LOSS	
69	20.18	20.36	0.18	02215	I	CLAYSTONE	M.BN.SLD SOFT: BUFF COLOUR
69	20.36	20.39	0.03	02215	I	CLAYSTONE	M.GY.SLD CALCITE VEINING
69	20.39	20.40	0.01	02215	I	COAL	C-2
70	20.40	20.44	0.04	02215	I	CLAYSTONE	CARB.DK.GY LISTRIC SURFACES
70	20.44	20.62	0.18	02215	I	COAL LOSS	
70	20.62	20.65	0.03	02215	I	COAL	C-3.VBRKN
70	20.65	20.76	0.11	02215	I	CLAYSTONE	CARB.BRKN COALY STREAKS (C-2)
70	20.76	20.80	0.04	02215	I	ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	20.80	20.93	0.13	02215	I	CLAYSTONE	CARB.BRKN FEWER COALY STREAKS
71	20.93	21.25	0.32	02216	I	COAL	C-3.PWRD
71	21.25	21.28	0.03	02216	I	COAL LOSS	
71	21.28	21.29	0.01	02216	I	CLAYSTONE	CARB.DK.GY
71	21.29	21.36	0.07	02216	I	COAL	C-3.SLD
72	21.36	21.46	0.10	02216	I	COAL LOSS	
72	21.46	21.51	0.05	02216	I	COAL	C-3.PWRD SOME C-2
72	21.51	21.53	0.02	02216	I	CLAYSTONE	CARB.DK.GY
72	21.53	21.82	0.29	02216	I	COAL	C-3.BRKN
73	21.82	21.83	0.01	02216	I	CLAYSTONE	CARB
73	21.83	21.92	0.09	02216	I	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	21.92	22.11	0.19	02216 I		COAL	C-2.VBRKN ROUGH MEASUREMENT; SOME LOSS
74	22.11	22.46	0.35	02216 I		COAL	C-2.BRKN
75	22.46	23.37	0.91	02216 I		COAL	C-2.PWRD VBRKN TO PWRD BANDS OF MINOR CLAYSTONE LENSES; SOME LISTRIC SURFACES; COAL SHEARED AND WEATHERED
77	23.37	24.32	0.95			CLAYSTONE	DK.GY.SLD LISTRIC SURFACES; CORE BROKEN IN A FEW PLACES 30 CM SAMPLE OF FLOOR ROCK TAKEN FOR TOXICITY STUDIES
79	24.32	25.01	0.69	02301		MUDSTONE	SLTY.M.GY.BRKN TOP 26 cm SAMPLED; SANDY LENSES; SILTY MUDSTONE LAMINATIONS
81	25.01	26.41	1.40			MUDSTONE	SLTY.M.GY FRACTURED MEDIUM; CARBONATE INFILLED; INCREASINGLY SILTY TOWARDS BASE
* 84	26.41	27.86	1.45			SILTSTONE	SSY.LT.GY.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	27.86	28.46	0.60			MUDSTONE	SLTY.M.GY SILTSTONE BANDS; CARBONACEOUS PLANT FRAGMENTS ON BEDDING PLANE
85	28.46	29.58	1.12			SILTSTONE	SSY.M.GY.BRKN INFILLED FRACTURES
* 86	29.58	30.54	0.96			MUDSTONE	SLTY.M.GY.BRKN CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
84	30.54	32.45	1.91			MUDSTONE	DK.GY.BRKN INCREASINGLY SILTY TOWARDS BASE
* 83	32.45	32.57	0.12			SANDSTONE	CG-.LT.GY.SLD ABRUPT UPPER AND LOWER PYRITIC
84	32.57	33.69	1.12			MUDSTONE	BLK.BRKN COAL BANDS AND LAMINATIONS; PYRITIC IN PART; LISTRIC SURFACES
85	33.69	34.79	1.10			MUDSTONE	SLTY.DK.GY.SLD SILTY IN PART; CARBONACEOUS PLANT FRAGMENTS
86	34.79	35.54	0.75			MUDSTONE	SLTY.BRKN MINOR CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE; MINOR SANDSTONE BANDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 86	35.54	35.77	0.23			SANDSTONE	FG.LT-M.GY.SLD MUDSTONE LAMINATIONS AT TOP
85	35.77	36.89	1.12			SANDSTONE	MG-.LT-M.GY.SLD MUDSTONE AND COAL CLASTS IN PART; MINOR GRITTY BANDS
82	36.89	38.35	1.46	02302		SANDSTONE	MG-.LT-M.GY.BRKN MINOR GRITTY BANDS; MUDSTONE AND COAL CLASTS; MIDDLE 0.21m SAMPLED
80	38.35	38.89	0.54			SILTSTONE	MG.M.GY.BIOTR.SLD CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
* 77	38.89	40.70	1.81			SILTSTONE	M.GY.BIOTR.SLD FRACTURED; LOW DISPLACEMENT MICROFAULTS; MINOR SANDSTONE BANDS IN PART
80	40.70	41.06	0.36			SANDSTONE	MG-.M.GY.BIOTR.SLD HORIZONTAL BURROW; MUDSTONE LAMINATIONS; MINOR COALY FRAGMENTS ON BDG. PLANE
82	41.06	41.60	0.54			SANDSTONE	MG-.M.GY.BRKN MUDSTONE BANDS IN PART
* 85	41.60	42.96	1.36			SANDSTONE	MG-.M.GY.BIOTR.BRKN SILTSTONE AND MUDSTONE BANDS; SLIGHTLY CARB. IN PARTS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	42.96	44.23	1.27			SANDSTONE	MG-.M.GY.BRKN MUDSTONE RIP UP CLASTS AT TOP; MUDSTONE LAMINATIONS AND BANDS TOWARDS BASE
84	44.23	44.68	0.45			MUDSTONE	SLTY.M.GY.BRKN
84	44.68	44.91	0.23			MUDSTONE	SLTY.M.GY.BRKN MINOR CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
84	44.91	45.47	0.56	02303		SILTSTONE	M.GY.BRKN TOP 20 cm SAMPLED; MUDSTONE LAMINATIONS; FRACTURES INFILLED WITH CEMENT
* 84	45.47	47.05	1.58			SANDSTONE	SLTY.MG-.M.GY.BRKN SILTSTONE AND MUDSTONE BANDS; FRACTURED IN MIDDLE; MINOR BIOTRB
84	47.05	47.49	0.44			SANDSTONE	MG.M.GY.THKB.BRKN LISTRIC SURFACES AT CARBONACEOUS PARTINGS
84	47.49	47.66	0.17			SANDSTONE	FG.M.GY.MB.BRKN CARBONACEOUS STREAKS AND LAMINATIONS
84	47.66	48.16	0.50			SANDSTONE	MG.LT.GY.THKB.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	48.16	48.38	0.22			CLAYSTONE	CARB.DK.GY.BRKN WITH QUARTZ VEINS; COALY STREAKS AND PY RITE ZONES. 30 CM SAMPLE OF ROOF ROCK TA KEN FOR TOXICITY STUDIES
84	48.38	48.61	0.23	02217 H		COAL	C-2.BRKN
84	48.61	48.72	0.11	02217 H		COAL LOSS	
84	48.72	48.92	0.20	02217 H		COAL	C-2.PMRD VERY SHEARED; LISTRIC SURFACES
84	48.92	48.96	0.04	02217 H		CLAYSTONE	CARB.DK.GY.SLD LENTICULAR
84	48.96	49.17	0.21	02217 H		ROCK LOSS	
84	49.17	49.26	0.09	02217 H		CLAYSTONE	CARB.DK.GY.BRKN QUARTZ VEINS
84	49.26	49.41	0.15	02217 H		COAL	C-2.PMRD THICKNESS APPROX.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	49.41	50.47	1.06			CLAYSTONE	CARB.DK.GY.THKB.BRKN LESS CARBONACEOUS DOWNWARDS 30 CM SAMPL E OF FLOOR ROCK TAKEN FOR TOXICITY STUD IES
84	50.47	50.72	0.25			ROCK LOSS	
84	50.72	51.33	0.61			SILTSTONE	M.GY.THKB.SSD COARSENING DOWN
84	51.33	53.42	2.09			SANDSTONE	SLTY.FG.M.GY.SLD MUDSTONE LAMINATIONS AND CLASTS AT TOP
84	53.42	53.64	0.22			SANDSTONE	SLTY.FG.M.GY.BRKN
84	53.64	53.95	0.31			ROCK LOSS	********** END OF HOLE ; DRILLER'S MARKER ; 53.95 **********

* DENOTES MEASURED BCA
NEWPAGE

695 GR. - Mt. Klappan 84(3) A

GULF CANADA RESOURCES INC.
COAL DIVISION
KLAPPAN PROJECT
STRATIGRAPHIC LOG
KPN HC DDH84003

GEOLOGIST : G.SEVE	DATE : DEC 12/84	DRAWING NO. :

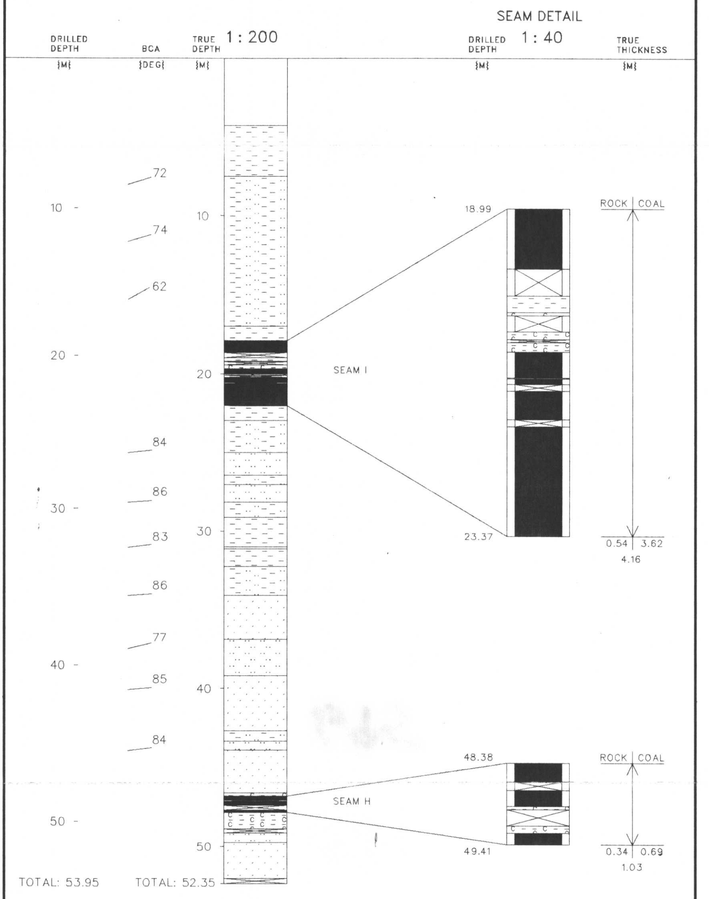
SCALE : 1:200 1:40

0 5 [M] 0 .5 1 [M]

NORTHING: 6343228.0 N INCLINATION: 90.0°
EASTING: 514895.0 E

LITHOLOGIC SYMBOLS

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



PLOT 1 10.46.38 WED 12 DEC, 1984 JOB=1STDSRD GULF CANADA DISSPLA 8.0

695

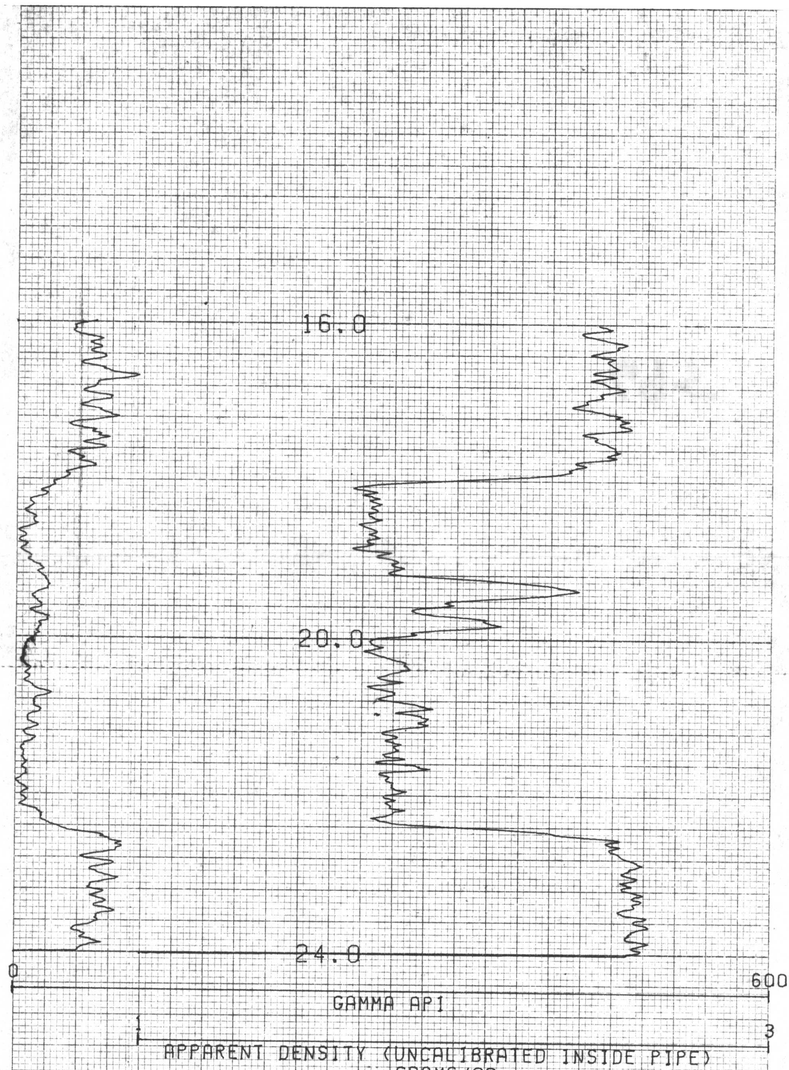
COMPU-LOG V8L2 PLOT 04-20-84

DDH-84-003 (IN PIPE)
GULF CANADA RES. INC.
MT. KLAPPAN

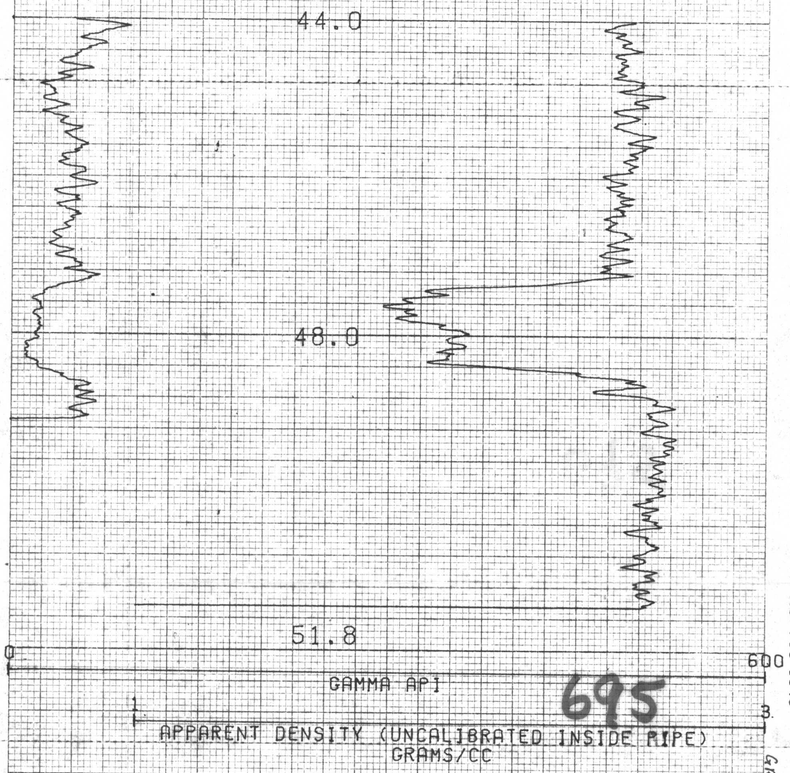
HOLE DIAMETER : 08.7
PROBE # 9030A - 403
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 98
DATA V8L28 TRUCK # P811
R.BERKLEY APPL.#3704L1

GR - Mt. Klappan 84(3)A

ART NO. 786-0040 CENTURY GEOPHYSICAL CORP. PART NO. 786-0040 CENTURY GEOPHYSICAL CORP. PART NO. 78



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

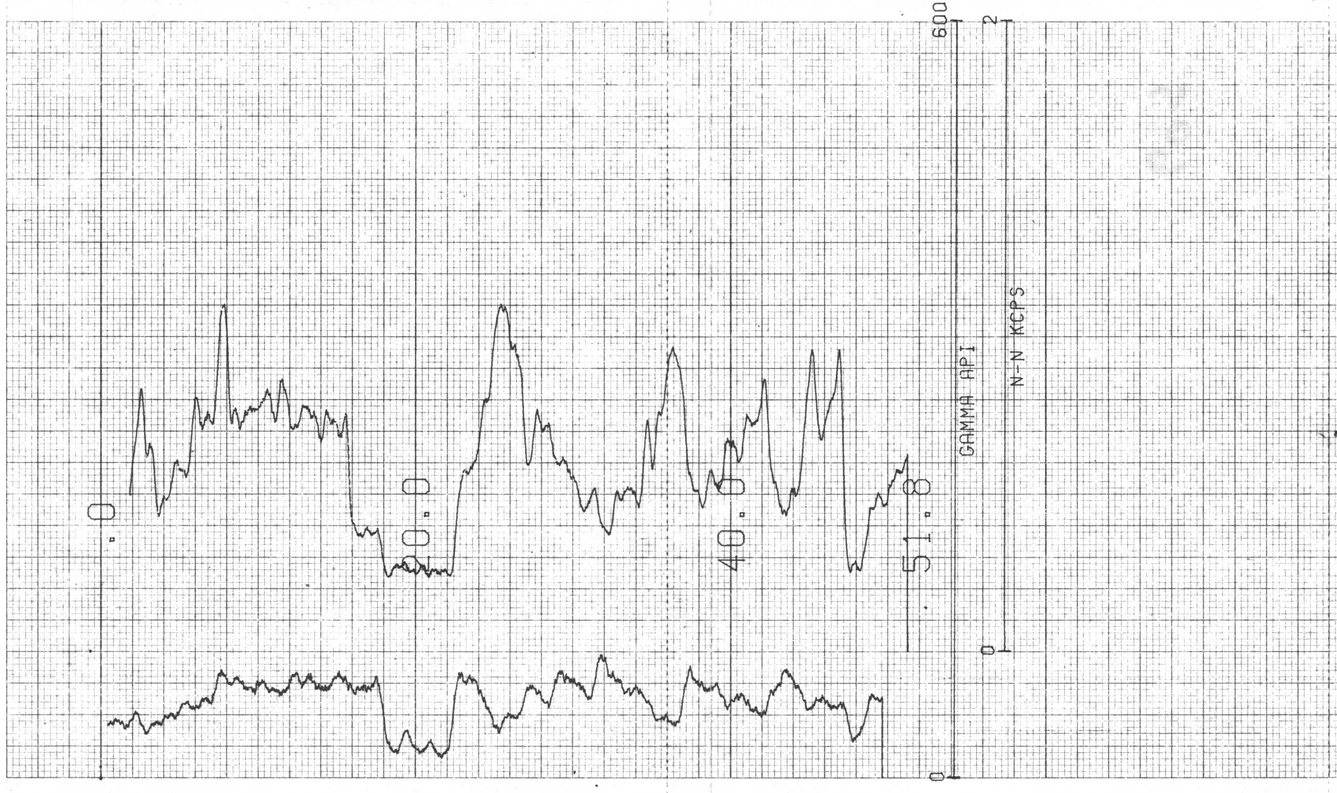
695

GR-Mt. Klappan 84(3)A

COMPU-LOG V8L2 PLOT 04-20-84

DDH-84-003 (IN PIPE)
GULF CANADA RES. INC.
MT. KLAPPAN

HOLE DIAMETER = 08.7
PROBE # 9030A - 403
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 98
DATA V8L2B TRUCK # P811
R.BERKLEY APPL.#3704L1



GR. - Mt. Klappan 84(32)A

695

DDH-84-003 (IN PIPE)
GULF CANADA RES. INC.
MT. KLAPPAN

COMPU-LOG V8L2 PLOT 04-21-84

HOLE DIAMETER : 08.7
PROBE # 9055A - 245
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 214
SENSOR #4 CAL BIAS = 0
DATA V8L28 TRUCK # P811
R. BERKLEY APPL.#100711

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCDDH84004 DATE - 01/24/85

- H I S T O R Y -

START DATE - 04/23/84
END DATE - 04/23/84

CONTRACTOR - J.T. THOMAS
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - GEOPHYSICAL LOG MEASURED FROM GROUND LEVEL PLUS 0. 75 METRES; THIS IS EQUIVALENT TO THE DRILLERS ZERO LEVEL,OR DRILL FLOOR. DEPTH TO SEAMS FROM GROUND LEVEL WILL BE 0.75M LESS THAN THE GEOPHYSICAL OR w ritten log. hole was drilled in two phases.

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1295.00
ZONE - 9
NORTHING - 6342717.00
EASTING - 515230.00

LICENCE/LEASE NUMBER - 9136 0

LATITUDE - 571345
LONGITUDE - 1284452

- O R I E N T A T I O N -

LENGTH - 311.93
INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 95.8

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

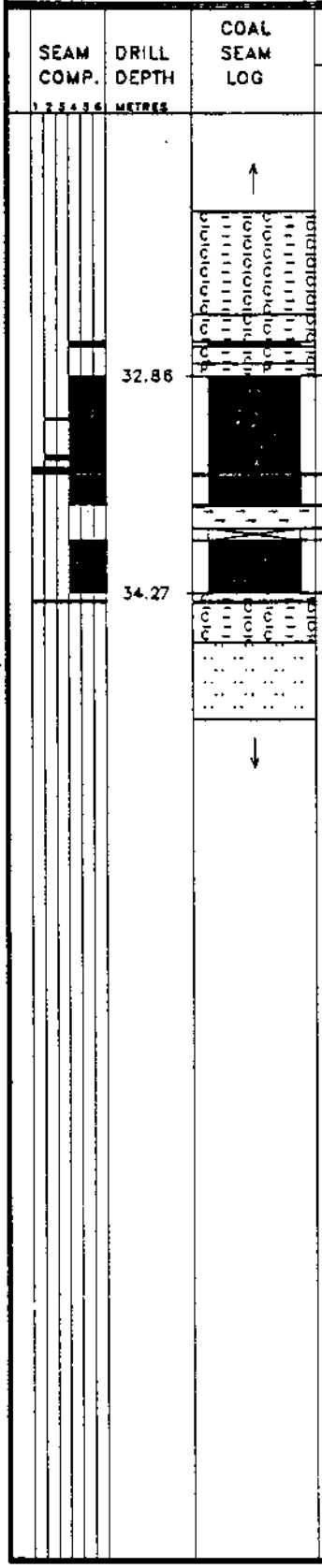
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC DDH84004 SEAM : H INTERVAL(M) : 32.86 – 34.27 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 20/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	32.86			0.64											
			0.01	0.19	93.6	2218	9	1.25 / 0.16		1.69	41.56	9.03	47.72	0.62	18.49
			0.07					1.41							
			0.14												
				0.34											
	34.27														

PLOT 1 16.11.20 WED 20 MAR, 1985 JOB-TSTOEGO GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC 00H84004 SEAM : G INTERVAL(M) : 57.68 - 59.71 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 20/85 DRAWING NO. :

SEAM COMP. 1,2,3,4,5,6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	57.68			0.87											
			0.15 (0.24)												
			0.22	0.16											
			0.11	0.07 (0.09)	88.7	2219	10	1.73 / 0.30 2.03		1.40	32.85	10.09	55.66	1.55	21.56
				0.30											
			0.13	(0.31)											
				0.18											
	59.71		0.39	0.12											

PLOT 1 18.12.04 WED 20 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL — **COAL DIVISION** — **MOUNT KLAPPAN PROJECT** — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84004 SEAM : F INTERVAL(M) : 79.75 – 80.80 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : JAN 29/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	79.75			0.08											
			0.48	0.17											
			0.10												
			0.33	(0.19)	81.8	1757	11	0.91 / 0.14		1.64	39.49	9.08	29.81	0.22	11.77
				0.36				1.05							
	80.80														

GULF CANADA RESOURCES INC.

SEAM DETAIL — **COAL DIVISION** — **MOUNT KLAPPAN PROJECT** — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84004 SEAM :NEW INTERVAL(M) : 103.10 – 103.80 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: 1:40 DATE : MAR 05/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	103.10			0.70	100.0	1756	1756	0.70 / 0.00 0.70		—	—	—	—	—	—
	103.80														

PLOT : 16.39.20 TUES 5 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC DDH84004 SEAM : E INTERVAL(M) : 113.32 - 115.62 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 20/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	113.32														
	115.62														

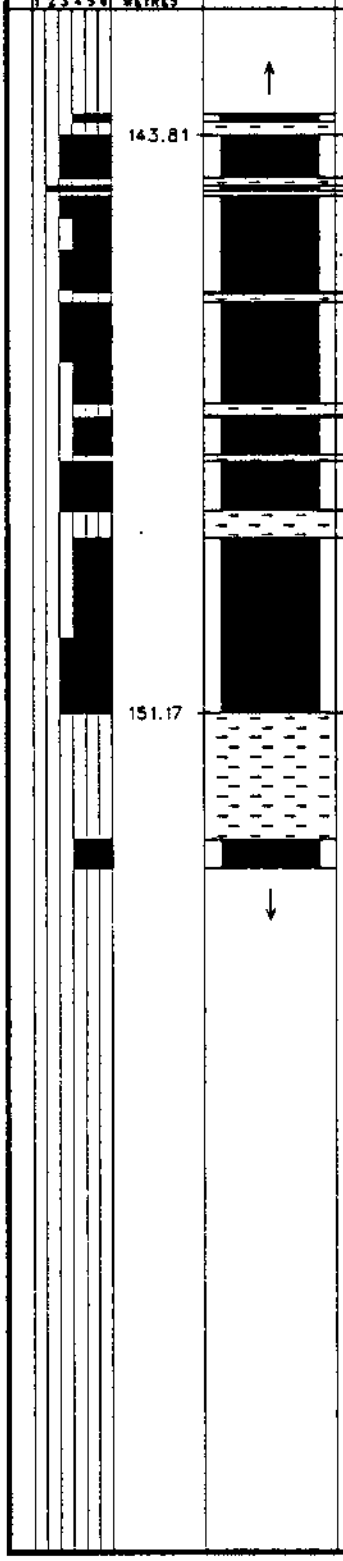
PLOT 1 18.11.35 WED 20 MAR, 1985 JOB-TST0230 GULF CANADA LMT DISSPLA 9.2

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC DDH84004 SEAM : D INTERVAL(M) : 143.81 – 151.17 ELEVATION(M) : 129[illegible].0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : FEB 28/85 DRAWING NO. :



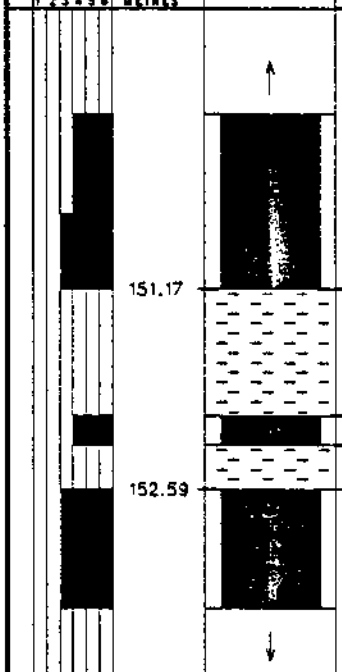
SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	143.81			0.26	100.0	1759									
				0.59											
				0.62											
				0.23											
				0.30											
			0.17												
				1.07											
	151.17														

GULF CANADA RESOURCES INC.

SEAM DETAIL — **COAL DIVISION** — **MOUNT KLAPPAN PROJECT** — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84004 SEAM : 0 INTERVAL(M) : 151.17 - 152.59 ELEVATION(M) : 129

GEOLOGIST : E.LEGRESLEY SCALE: DATE : FEB 28/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	151.17		0.77		100.0	1760									
				0.18											
			0.27												
	152.59														

GULF CANADA RESOURCES INC.

SEAM DETAIL — **COAL DIVISION** — **MOUNT KLAPPAN PROJECT** — **TRUE THICKNESS**

DATA SOURCE: KPN HC DDH84004 SEAM : D INTERVAL(M) : 152.59 - 159.74 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : FEB 28/85 DRAWING NO. :

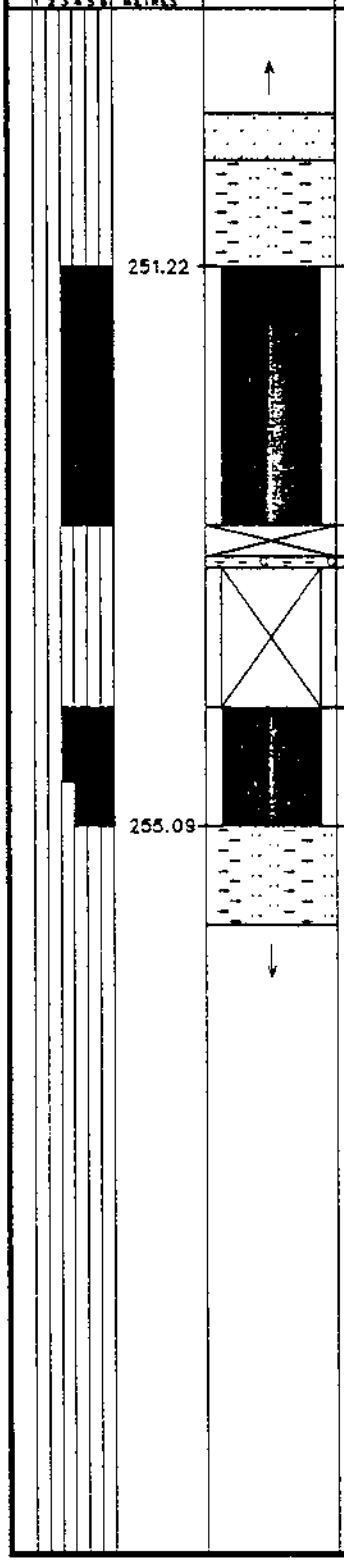
SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	152.59			1.39											
			0.46												
				0.85	100.0	1761	12	2.98 / 1.45 4.43		1.54	47.25	11.00	40.21	0.38	15.57
			0.31												
				0.14											
			0.42												
				0.14											
			0.28												
				0.46											
	159.74														

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION, MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC D0H84004 SEAM : D INTERVAL(M) : 251.22 – 255.09 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : FEB 28/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	251.22			1.58											
			(0.19)		69.3	1470	13	3.18/0.26		1.08	28.92	7.48	62.54	0.37	23.93
			0.32					3.42							
				(0.86)											
				0.72											
	255.09														

GULF CANADA RESOURCES INC.

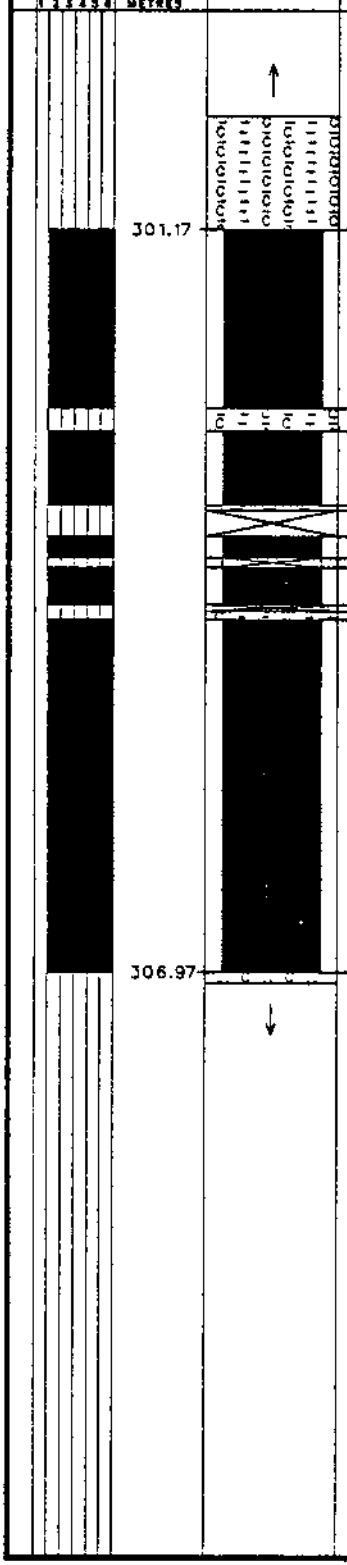
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC 00H84004 SEAM : 0 INTERVAL(M) : 301.17 - 306.97 ELEVATION(M) : 1295.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : FEB 28/85 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	301.17			1.09											
			3.14												
				0.45											
			0.03												
			(0.18)												
				0.13											
				0.23	95.3	1471	14	4.13 / 1.44 5.57		1.31	29.68	8.96	62.05	0.31	23.84
				2.17											
	306.97														

GULF CANADA RESOURCES INC. - COAL DIVISION

21/MAR/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84004										
		2304	10.33	11.53	100.00	0.00	1.20	0.00	0.00	0.00- 1.20
		2305	24.63	26.29	100.00	0.00	1.66	0.00	0.00	0.00- 1.66
	H	2306	47.05	49.22	100.00	0.00	2.17	0.00	0.00	0.00- 2.17
	F	1757	79.75	80.80	81.90	0.72	0.14	0.19	0.00	0.91- 0.14
	D	1759	143.81	151.17	100.00	5.95	1.41	0.00	0.00	5.95- 1.41
	D	1760	151.17	152.59	100.00	0.22	1.20	0.00	0.00	0.22- 1.20
	D	1761	152.59	159.74	100.00	4.10	3.05	0.00	0.00	4.10- 3.05
	D	1469	228.00	228.40	45.00	0.18	0.00	0.22	0.00	0.40- 0.00
	D	1470	251.22	255.09	69.25	2.60	0.08	0.97	0.22	3.57- 0.30
	D	1476	282.19	283.32	100.00	0.00	1.13	0.00	0.00	0.00- 1.13
	D	1471	301.17	306.97	93.96	5.13	0.32	0.08	0.27	5.21- 0.59

GULF CANADA RESOURCES INC - COAL DIVISION

06/MAR/85 COMPOSITE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84004												
	H	9	2218	2218	33.16	34.57	93.61	0.42	0.90	0.08	0.01	0.50- 0.91
	G	10	2219	2219	58.06	60.00	89.69	1.47	0.27	0.17	0.03	1.64- 0.30
	F	11	1757	1757	79.75	80.80	81.90	0.72	0.14	0.19	0.00	0.91- 0.14
	D	12	1759	1761	143.81	159.74	100.00	10.27	5.66	0.00	0.00	10.27- 5.66
	D	13	1470	1470	251.22	255.09	69.25	2.60	0.08	0.97	0.22	3.57- 0.30
	D	14	1471	1471	301.17	306.97	93.96	5.13	0.32	0.08	0.27	5.21- 0.59

GULF CANADA RESOURCES INC. - COAL DIVISION

06/MAR/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH84004										
	F	1757	79.75	80.80	81.90	0.72	0.14	0.19	0.00	0.91- 0.14
	D	1759	143.81	151.17	100.00	5.95	1.41	0.00	0.00	5.95- 1.41
	D	1760	151.17	152.59	100.00	0.22	1.20	0.00	0.00	0.22- 1.20
	D	1761	152.59	159.74	100.00	4.10	3.05	0.00	0.00	4.10- 3.05
	D	1470	251.22	255.09	69.25	2.60	0.08	0.97	0.22	3.57- 0.30
	D	1476	282.19	283.32	100.00	0.00	1.13	0.00	0.00	0.00- 1.13
	D	1471	301.17	306.97	93.96	5.13	0.32	0.08	0.27	5.21- 0.59

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	0.00	0.75	0.75			CASING	DRILL FLOOR TO GROUND
87	0.75	2.17	1.42			OVERBURDEN	DK.GY DARK ORGANIC SOIL
87	2.17	4.26	2.09			OVERBURDEN	LT.GY LIGHT GREY CLAY BASED SOIL
87	4.26	4.56	0.30			OVERBURDEN	LT.GY CONTAINS GRAVEL(CONSOLIDATED MUDSTONE FRAGMENTS)
87	4.56	5.17	0.61			OVERBURDEN	LT.GY CLAY BASED SOIL
87	5.17	5.78	0.61			OVERBURDEN	WEATHERED BEDROCK(REGOLITH) CASING SET TO 6.1M
87	5.78	6.55	0.77			MUDSTONE	BEDROCK
87	6.55	7.21	0.66			MUDSTONE	DK.GY.BRKN FINELY LAMINATED
87	7.21	8.31	1.10			MUDSTONE	DK.GY.BRKN FINELY LAMINATED
* 87	8.31	10.33	2.02			SANDSTONE	SLTY.VCG.M.GY.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	10.33	11.53	1.20	02304		SILTSTONE	M.GY.BIOTR.BRKN 20 cm SAMPLED FROM MIDDLE; MINOR BIOTURBATION; BECOMES MUDDIER TOWARDS BASE
* 89	11.53	12.44	0.91			MUDSTONE	DK.GY.BRKN CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
86	12.44	14.67	2.23			MUDSTONE	DK.GY.SLD CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
83	14.67	15.42	0.75			MUDSTONE	DK.GY.BRKN MINOR CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE; BECOMES SILTY TOWARDS BASE
81	15.42	16.56	1.14			SANDSTONE	FG-.PR.M.GY.BRKN INTERBEDDED WITH MUDSTONE; COAL LAMINATIONS AND CLASTS IN PART
* 80	16.56	16.59	0.03			ROCK LOSS	
80	16.59	16.89	0.30			SILTSTONE	CARB.M.GY.SLD MUDDY
80	16.89	17.52	0.63			MUDSTONE	CARB.DK.GY.BRKN COAL LAMINATIONS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	17.52	17.77	0.25			MUDSTONE	SLTY.DK.GY.BRKN MINOR CARBONACEOUS PLANT FRAGMENTS ON B EDDING PLANE
81	17.77	18.51	0.74			SILTSTONE	DK.GY.BRKN MUDDY
* 82	18.51	19.79	1.28			SILTSTONE	M.GY.BIOTR.BRKN INTERBEDDED WITH SANDSTONE; MODERATE TO HEAVILY BIOTURBATED; VERTICAL AND HORI ZONTAL BURROWS
81	19.79	20.29	0.50			SANDSTONE	MG.LT.GY.SLD
81	20.29	20.42	0.13			SANDSTONE	FG-.LT.GY.SLD
81	20.42	20.47	0.05			SANDSTONE	FG-.LT.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	20.47	21.15	0.68			MUDSTONE	M.GY.SLD INTERBEDDED WITH SILTSTONE AND SANDSTON E
* 80	21.15	22.55	1.40			SANDSTONE	SLTY.FG.M.GY.BIOTR MOST LAMINATED THROUGHOUT; VERTICAL BUR ROWS
81	22.55	23.18	0.63			SANDSTONE	VFG.M.GY.BIOTR.BRKN INTERBEDDED WITH MUDSTONE; MINOR HORIZO NTAL BURROWS; MINOR COARSE SANDSTONE BA NDS AT BASE
82	23.18	23.20	0.02			ROCK LOSS	
83	23.20	24.63	1.43			SANDSTONE	VFG.M.GY.BIOTR.SLD CARBONACEOUS PLANT FRAGMENTS TOWARDS BA SE; MUDSTONE RIP UP CLASTS AT BASE
* 85	24.63	26.29	1.66	02305		SANDSTONE	MG-.LT-M.GY.BRKN TOP 20 cm SAMPLES INCREASINGLY SILTY TO WARDS BASE; MINOR MUDSTONE LAMINATIONS AND CLASTS TOWARDS BASE; CARBONACEOUS P LANT FRAGMENTS IN BEDDING PLANE TOWARD BASE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	26.29	26.59	0.30			SANDSTONE	MG-.LT-M.GY.BRKN VERTICAL BURROWS
84	26.59	26.96	0.37			SANDSTONE	FG-.LT.GY.BIOTR.SLD
* 83	26.96	27.91	0.95			MUDSTONE	M.GY.BIOTR.SLD INTERBEDDED SANDSTONE; MODERATE TO HEAV ILY BIOTURBATED
84	27.91	28.78	0.87			SANDSTONE	FG-.LT.GY.SLD MINOR MUDSTONE BANDS AND RIP UP CLASTS AT BASE
85	28.78	29.39	0.61			MUDSTONE	SLTY.M.GY.BRKN CARBONACEOUS PLANT FRAGMENTS IN BEDDING PLANE
86	29.39	30.72	1.33			SANDSTONE	FG-.LT.GY.BRKN SILTY IN PARTS; MUDSTONE LAMINATED; CAR BONACEOUS PLANT FRAGMENTS IN BEDDING PL ANE
* 87	30.72	31.79	1.07			SANDSTONE	FG-.M.GY.BRKN MUDSTONE RIP UP CLASTS; CARBONACEOUS PL ANT FRAGMENTS ON BEDDING PLANE
87	31.79	31.97	0.18			MUDSTONE	CARB.DK.GY.SLD ABUNDANT CARBONACEOUS PLANT FRAGMENTS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	31.97	32.46	0.49			MUDSTONE	CARB.BLK PYRITIC BANDS
87	32.46	32.63	0.17			CLAYSTONE	CARB.DK.GY.SLD COALY STREAKS (C-1) WITH ABUNDANT PYRIT E AT BOTTOM
87	32.63	32.67	0.04			COAL	C-4.SLD WITH QUARTZ VEINS; C-1 STREAKS AND PYRI TE BLEBS
87	32.67	32.78	0.11			CLAYSTONE	CARB.DK.GY C-1 STREAKS AND QUARTZ
87	32.78	32.86	0.08			CLAYSTONE	PYR.DK.GN.BRKN VERY RICH IN DISSEMINATED PYRITE WITH S OME PURE PYRITE VEINS
87	32.86	33.14	0.28	02218 H		COAL	C-4.BRKN NUMEROUS BANDS C-1
87	33.14	33.15	0.01	02218 H		COAL	C-2.SLD
87	33.15	33.38	0.23	02218 H		COAL	C-4.SLD BANDS C-1
87	33.38	33.41	0.03	02218 H		COAL	C-2.SLD SOME CALCITE VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	33.41	33.46	0.05	02218	H	COAL	C-4.SLD BANDS C-1
87	33.46	33.50	0.04	02218	H	COAL	C-1 CALCITE VEINING
87	33.50	33.51	0.01	02218	H	CLAYSTONE	M.GY
87	33.51	33.70	0.19	02218	H	COAL	C-4.BRKN NUMEROUS BANDS C-1 LOGGED WITHOUT SPLIT TING BUT ASH ANALYSIS INDICATES DULL CO AL RATHER THAN CLAYSTONE.
87	33.70	33.71	0.01	02218	H	ROCK LOSS	
87	33.71	33.85	0.14	02218	H	MUDSTONE	LT.BN.BRKN SOFT
87	33.85	33.93	0.08	02218	H	COAL LOSS	
87	33.93	34.27	0.34	02218	H	COAL	C-4.BLK.BRKN SIMILAR TO CARBONACEOUS CLAYSTONE; ABOV E MUCH C-1 AND CALCITE VEINING; ALSO CL AYSTONE LAMINATIONS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	34.27	34.32	0.05			CLAYSTONE	CARB.DK.GY.BRKN CALCITE VEINING
87	34.32	34.33	0.01			COAL	C-1.SLD CALCITE VEINING
87	34.33	34.59	0.26			CLAYSTONE	CARB.DK.GY.SLD LESS CARBONACEOUS DOWNWARD
87	34.59	35.09	0.50			SILTSTONE	M.GY.BRKN CARBONACEOUS AT TOP; MUDDY
87	35.09	36.70	1.61			SILTSTONE	M.GY.SLD INCREASINGLY MUDDY TOWARDS BASE
88	36.70	36.73	0.03			ROCK LOSS	
88	36.73	36.96	0.23			MUDSTONE	M.GY.BRKN ABRUPT BASAL CONTACT
88	36.96	38.14	1.18			SANDSTONE	MG-.LT.GY.BRKN MINOR CARBONATE FRACTURED INFILL
88	38.14	38.34	0.20			ROCK LOSS	
88	38.34	38.85	0.51			SANDSTONE	MG-.LT.GY.SLD
88	38.85	41.01	2.16			SANDSTONE	MG-.LT.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 88	41.01	41.19	0.18			SANDSTONE	FG.LT.GY.SLD
88	41.19	42.76	1.57			SANDSTONE	FG.LT.GY.SLD
87	42.76	43.45	0.69			SANDSTONE	FG.LT.GY.SLD BECOMES GRITTY TOWARDS ABRUPT BASAL CON TACT
87	43.45	43.48	0.03			ROCK LOSS	
87	43.48	44.24	0.76			MUDSTONE	DK.GY.BRKN SILTY IN PARTS; MINOR CARBONACEOUS PLAN T FRAGMENTS IN BEDDING PLANE
87	44.24	44.95	0.71			MUDSTONE	DK.GY.SLD MINOR SILTSTONE BANDS
* 86	44.95	46.87	1.92			MUDSTONE	DK.GY.SLD FEATURELESS; MINOR COAL LAMINATIONS; CA RBONACEOUS PLANT FRAGMENTS TOWARDS BASE
86	46.87	47.05	0.18			MUDSTONE	CARB.DK.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	47.05	49.22	2.17	02306		MUDSTONE	CARB.DK.GY.SLD TOP 16 cm SAMPLED; FEATURELESS; PYRITIZ ED INTACT; BIVALVES TOWARDS BASE
86	49.22	49.95	0.73			MUDSTONE	CARB.DK.GY.SLD TOP 16 cm SAMPLED; FEATURELESS; PYRITIZ ED INTACT; BIVALVES TOWARDS BASE
86	49.95	51.34	1.39			MUDSTONE	CARB.DK.GY.SLD TOP 16 cm SAMPLED; FEATURELESS; PYRITIZ ED INTACT BIVALVES TOWARDS BASE
86	51.34	53.08	1.74			MUDSTONE	CARB.DK.GY.SLD MINOR BIVALVES AT TOP
86	53.08	53.28	0.20			MUDSTONE	CARB.DK.GY.BRKN LAMINATED
* 86	53.28	55.34	2.06			MUDSTONE	CARB.DK.GY.SLD
86	55.34	56.10	0.76			MUDSTONE	CARB.DK.GY.SLD
86	56.10	56.42	0.32			ROCK LOSS	
85	56.42	57.58	1.16			MUDSTONE	CARB.DK.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	57.58	57.68	0.10			CLAYSTONE	M.GY.SLD SHELL BAND AT BASE; ALSO COALY STREAKS AND CALCITE VEINS
85	57.68	58.35	0.67	02219	G	COAL	C-1.BRKN SOME C-2 BUT OTHERWISE QUITE BRIGHT AND HARD WITH PYRITE
85	58.35	58.50	0.15	02219	G	CLAYSTONE	CARB.DK.GY.BRKN
85	58.50	58.53	0.03	02219	G	ROCK LOSS	
85	58.53	58.56	0.03	02219	G	COAL	C-1.SLD
85	58.56	58.69	0.13	02219	G	COAL	C-1.BRKN CALCITE LENS
85	58.69	58.71	0.02	02219	G	CLAYSTONE	CARB.DK.GY.SLD
85	58.71	58.78	0.07	02219	G	COAL	C-1.BRKN
85	58.78	58.87	0.09	02219	G	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	58.87	58.88	0.01	02219	G	CLAYSTONE	CARB.DK.GY.SLD
85	58.88	59.15	0.27	02219	G	COAL	C-1.BRKN MINOR CLAYSTONE LAMINATIONS AND LENSES
85	59.15	59.18	0.03	02219	G	COAL	C-1.BRKN CALCITE VEINING THROUGHOUT
85	59.18	59.20	0.02	02219	G	CLAYSTONE	CARB.DK.GY.BRKN
85	59.20	59.23	0.03	02219	G	COAL	C-1.BRKN CALCITE VEINING
85	59.23	59.25	0.02	02219	G	CLAYSTONE	CARB.DK.GY.SLD
85	59.25	59.36	0.11	02219	G	COAL LOSS	
85	59.36	59.49	0.13	02219	G	COAL	C-3.VBRKN WEATHERED
85	59.49	59.54	0.05	02219	G	COAL	C-2.SLD
85	59.54	59.59	0.05	02219	G	CLAYSTONE	CARB.DK.GY.BRKN COALY STREAKS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	59.59	59.65	0.06	02219 G		COAL	C-1.SLD MINOR CLAYSTONE LAMINATIONS
85	59.65	59.71	0.06	02219 G		COAL	C-3.BRKN SOME C-2 WEATHERED
85	59.71	59.83	0.12			CLAYSTONE	CARB.DK.GY.SLD COALY STREAKS
85	59.83	60.21	0.38			MUDSTONE	CARB.DK.GY.SLD
85	60.21	60.27	0.06			CLAYSTONE	LT.GY.SLD BENTONITIC
85	60.27	61.99	1.72			MUDSTONE	DK.GY.SLD SILTY LAMINATIONS
84	61.99	62.97	0.98			SILTSTONE	SSY.M.GY.BIOTR.BRKN MUDSTONE LAMINATIONS; MINOR CARBONACEOU S PLANT FRAGMENTS IN BEDDING PLANE
* 84	62.97	63.92	0.95			SILTSTONE	SSY.M.GY.BIOTR.SLD MUDSTONE LAMINATIONS; MINOR CARBONACEOU S PLANT FRAGMENTS IN BEDDING PLANE
82	63.92	64.45	0.53			SANDSTONE	SLTY.FG-.M.GY.SLD MUDSTONE LAMINATIONS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	64.45	65.37	0.92			MUDSTONE	SSY.M.GY.BRKN INCREASINGLY SANDY TOWARDS BASE
79	65.37	65.86	0.49			ROCK LOSS	
78	65.86	66.14	0.28			SANDSTONE	SLTY.FG.M.GY.SLD FRACTURED ********** END OF HOLE ; D RILLER'S MARKER ; 66.14 ********** *
* 76	66.14	67.60	1.46			SANDSTONE	SLTY.FG.MOD.M.GY.THNB.XBDG.SLD RIP UPS ASSOCIATED WITH 3-4 cm THICK CO ARSE SAND PULSES; INTERBEDDED WITH THIN BANDS AND LAMINATIONS OF SILTSTONE WHI CH INCREASE TOWARDS BASE; CARBONACEOUS PLANT FRAGMENTS; TOPS UP
* 77	67.60	68.25	0.65			SANDSTONE	FG-.MOD.M.GY.THNB.BIOTR.SLD GREATER SILTSTONE CONTENT AT BASE; MINO R BIOTURBATED HORIZONTAL FEEDING BURROW S; GRADATIONAL CONTACT WITH SILTSTONE B ELOW
* 80	68.25	69.26	1.01			SILTSTONE	SSY.DK.GY.THNB.SLD MUDSTONE LAMINATIONS THROUGHOUT; CARBON ACEOUS PLANT FRAGMENTS ON BEDDING PLANE ; CALCITE VEINING AT TOP

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	69.26	69.39	0.13			SILTSTONE	SSY.DK.GY.VTHNB.SLD MUDSTONE LAMINATIONS THROUGHOUT; CARBONACEOUS PLANT FRAGMENTS ON BEDDING PLANE; CALCITE VEINING AT TOP
76	69.39	69.65	0.26			SANDSTONE	SLTY.VFG.PR.M.GY.VTHNB.SLD CONVOLUTED BEDDING; RIP UP CLASTS
* 71	69.65	71.34	1.69			SANDSTONE	SLTY.VFG-.MOD.M.GY.THNB.BIOTR.SLD SILTSTONE LAMINATIONS THROUGHOUT; MINOR SILTSTONE RIP UP CLASTS IN COARSE GRAINED BEDS; VERTICAL FEEDING BURROW (BIVALVE) INDICATES TOPS UP; CARBONACEOUS PLANT FRAGMENTS; CONVOLUTED BEDDING
* 70	71.34	71.99	0.65			SANDSTONE	SLTY.VFG-.MOD.M.GY.THNB.SLD NUMEROUS MUDSTONE AND SILTSTONE INTERBEDS; CARBONACEOUS PLANT FRAGMENTS ON BEDDING PLANE
73	71.99	73.45	1.46			SANDSTONE	SLTY.VFG-.MOD.M.GY.VTHNB.SLD CARBONACEOUS PLANT FRAGMENTS; ABUNDANT RIP UP CLASTS IN COARSER GRAINED BEDS; CONVOLUTED BEDDING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 76	73.45	74.17	0.72			SANDSTONE	CLYY.VFG-.PR.M.GY.LAM.BIOTR.SLD HEAVILY BIOTURBATED (HORIZONTAL); MINOR CALCITE VEINING AT TOP; BURROWS IN MUDSTONE BANDS; MINOR CARBONACEOUS BANDS
* 76	74.17	74.96	0.79			MUDSTONE	DK.GY.LAM.SLD PYRITIC; VERY CARBONACEOUS; CARBONACEOUS PLANT FRAGMENTS; BIVALVE FOSSILS (BUCHIA?); UPPER CONTACT GRADATIONAL
78	74.96	75.72	0.76			MUDSTONE	DK.GY.LAM.SLD PYRITIC; VERY CARBONACEOUS; CARBONACEOUS PLANT FRAGMENTS; BIVALVE FOSSILS (BUCHIA?);
* 82	75.72	77.89	2.17			MUDSTONE	DK.GY.LAM.SLD PYRITIC; VERY CARBONACEOUS; CARBONACEOUS PLANT FROAGMENTS; BIVALVE FOSSILS (BUCHIA?); BIVALVE DETRITUS AT 1.23 M;
79	77.89	78.36	0.47			MUDSTONE	DK.GY PYRITIC; VERY CARBONACEOUS; CARBONACEOUS PLANT FRAGMENTS; BIVALVE FOSSILS (BUCHIA?);
77	78.36	79.42	1.06			MUDSTONE	PYRITIC; VERY CARBONACEOUS; CARBONACEOUS PLANT FRAGMENTS BECOME SILTY TOWARDS BASE; BIVALVE FOSSILS (BUCHIA?);

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 75	79.42	79.75	0.33			SILTSTONE	CLYY.M-DK.GY.LAM.XBDG ABUNDANT CARBONACEOUS PLANT FRAGMENTS; COAL STRINGERS AT BASE; 4 cm DISSEMINATED PYRITE AT BASE; ABUNDANT SMALL RIP UP CLASTS IN PYRITIC ZONE; ABUNDANT CALCITE VEINING AT BASE
81	79.75	79.84	0.09	01757	F	COAL	C-5.BLK.BRKN HEAVY CALCITE VEINING THROUGHOUT
82	79.84	79.86	0.02	01757	F	CLAYSTONE	CARB.BLK COAL LAMINATIONS THROUGHOUT
83	79.86	79.93	0.07	01757	F	COAL	C-3.BLK MINOR MUDSTONE LAMINATIONS
* 85	79.93	79.97	0.04	01757	F	COAL	C-2.BLK MODERATE CALCITE VEINING
85	79.97	80.03	0.06	01757	F	COAL	C-5.BLK MODERATE CALCITE VEINING
85	80.03	80.13	0.10	01757	F	MUDSTONE	CARB.BLK.LAM.BRKN COAL LAMINATIONS THROUGHOUT
85	80.13	80.18	0.05	01757	F	COAL	C-2 MINOR CALCITE VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	80.18	80.20	0.02	01757	F	CLAYSTONE	CARB.BLK COALY
85	80.20	80.25	0.05	01757	F	COAL	C-3.BLK MODERATE CALCITE VEINING
84	80.25	80.44	0.19	01757	F	COAL LOSS	
84	80.44	80.49	0.05	01757	F	COAL	C-6.BLK MODERATE CALCITE VEINING
84	80.49	80.54	0.05	01757	F	COAL	C-4.BLK.BRKN
84	80.54	80.80	0.26	01757	F	COAL	C-4.BLK INTERBEDDED WITH MUDSTONE; HEAVY CALCITE VEINING; GRADING TO CARBOMACEOUS MUDSTONE AT BASE
83	80.80	81.44	0.64			MUDSTONE	DK.GY.SLD MINOR CALCITE VEINING; INCREASINGLY SILTY TOWARDS BASE; CARBONACEOUS PLANT FRAGMENTS
82	81.44	81.88	0.44			MUDSTONE	SLTY.DK.GY

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 81	81.88	83.28	1.40			MUDSTONE	DK.GY.SLD CARBONACEOUS PLANT FRAGMENTS; MINOR CALCITE VEINS; CORE BROKEN IN PARTS; BECOMES INCREASINGLY SILTY TOWARDS BASE; LAMINATED AT BASE
82	83.28	83.97	0.69			SILTSTONE	CLYY.M-DK.GY.LAM.SSD.SLD SAND INCREASES TOWARDS BASE; FINE MUDSTONE LAMINATED THROUGHOUT
* 82	83.97	84.40	0.43			SILTSTONE	SSY.M-DK.GY.LAM.SSD.SLD MINOR SANDY LENSES; SOFT SEDIMENTARY DEFORMATION MINOR; MINOR CARBONACEOUS PLANT FRAGMENTS
83	84.40	84.46	0.06			SILTSTONE	SSY.M-DK.GY.LAM.BIOTR.SLD VERTICAL (BIVALVE?) BURROW
85	84.46	86.04	1.58			SANDSTONE	SLTY.VFG-.PR.M.GY.THNB.BIOTR.SLD VERTICAL BURROWS ESPECIALLY NEAR BASE; CONVOLUTED BEDDING
88	86.04	86.56	0.52			SANDSTONE	SLTY VERTICAL BURROWS ESPECIALLY NEAR BASE; CONVOLUTED BEDDING;

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	86.56	87.40	0.84			SANDSTONE	SLTY.FG.MOD.M.GY START OF VERY THICK SANDSTONE; SILTSTONE/CLAYSTONE RIP UP CLASTS; MODERATE SILTSTONE/CLAYSTONE LAMINATIONS
90	87.40	88.13	0.73			SANDSTONE	AS ABOVE
89	88.13	90.32	2.19			SANDSTONE	AS ABOVE; MINOR CALCITE VEINING; CARBONACEOUS PLANT FRAGMENTS
88	90.32	90.61	0.29			SANDSTONE	SILTSTONE/CLAYSTONE RIP UP CLASTS; MODERATE SILTSTONE-CLAYSTONE LAMINATIONS .
* 88	90.61	92.46	1.85			SANDSTONE	AS ABOVE; SLIGHTLY MORE RIP UP CLASTS; FEWER LAMINATIONS; SLIGHTLY COARSER GRAINED
88	92.46	93.67	1.21			SANDSTONE	SLD SILTSTONE/CLAYSTONE RIP UP CLASTS; MODERATE SILTSTONE-CLAYSTONE LAMINATIONS .
89	93.67	94.57	0.90			SANDSTONE	SLD AS ABOVE; RIP UP CLASTS IN BANDS PARALLEL BEDDING
89	94.57	96.73	2.16			SANDSTONE	AS ABOVE;
89	96.73	98.75	2.02			SANDSTONE	SLD AS ABOVE; CALCITE VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	98.75	99.64	0.89			SANDSTONE	SILTSTONE/CLAYSTONE RIP UP CLASTS; MODE RATE SILTSTONE-CLAYSTONE LAMINATIONS; S LIGHTLY MORE CALCITE VEINING; SLIGHTLY MORE RIP UP CLASTS; SLIGHTLY COARSER
* 90	99.64	100.76	1.12			SANDSTONE	SILTSTONE/CLAYSTONE RIP UP CLASTS; MODE RATE SILTSTONE-CLAYSTONE LAMINATIONS .
88	100.76	102.66	1.90			SANDSTONE	BRKN AS ABOVE; MINOR SLICKENSIDES
87	102.66	102.76	0.10			SANDSTONE	BRKN SILTSTONE/CLAYSTONE RIP UP CLASTS; MODE RATE SILTSTONE-CLAYSTONE LAMINATIONS; C ALCITE VEINED
86	102.76	103.10	0.34			SANDSTONE	SILTSTONE/CLAYSTONE RIP UP CLASTS; MODE RATE SILTSTONE-CLAYSTONE LAMINATIONS; C ALCITE VEINED; SLIGHTLY MORE RIP UP CLA STS AT BASE; VERY SHARP CONTACT WITH UN DERLYING COAL
86	103.10	103.80	0.70	01758		COAL	C-3.BLK.BRKN CORE OF COAL IS VERY BROKEN; MINOR CALC ITE VEINING; CLAYSTONE INTERBEDS THROUG HOUT
85	103.80	104.09	0.29			MUDSTONE	CARB.DK.GY.BRKN VERY MINOR COAL STRINGERS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 84	104.09	105.07	0.98			SILTSTONE	M.GY.SLD BECOMES SLIGHTLY SANDY AT BASE; GRADATI ONAL CONTACT WITH UNDERLYING UNIT
85	105.07	105.16	0.09			SILTSTONE	SSY.M-DK.GY.LAM.SLD
* 85	105.16	105.95	0.79			SILTSTONE	SSY.M-DK.GY.BIOTR.SLD INCREASING SAND TOWARDS BASE; BIOTURBAT ED HORIZONTAL SAND FILLED BURROWS
87	105.95	106.61	0.66			SILTSTONE	SSY.M.GY.LAM.BIOTR.SLD HORIZONTAL SAND FILLED BURROWS; CARBONA CEOUS PLANT FRAGMENTS; CONTAINS NUMEROU S LENSES OF FINE SANDS; GRADATIONAL BAS AL CONTACT
* 88	106.61	107.31	0.70			SANDSTONE	SLTY.VFG.PR.M.GY.LAM.BIOTR.SLD EXTENSIVELY BIOTURBATED; HORIZONTAL BUR ROWS; CONVOLUTED BEDDING
89	107.31	107.76	0.45			SANDSTONE	SLTY.VFG.M.GY.LAM.SLD INCREASINGLY SILTY TOWARDS BASE; EXTENS IVELY BIOTURBATED; HORIZONTAL BURROWS; CONVOLUTED BEDDING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	107.76	108.42	0.66			SILTSTONE	SSY.DK.GY.BIOTR.SLD CARBONACEOUS PLANT FRAGMENTS; BECOMES M ORE CLAYEY AND CARBONACEOUS AT BASE; HO RIZONTAL SAND FILLED BURROWS
90	108.42	108.52	0.10			SILTSTONE	CLYY.DK.GY.LAM VERY CARBONACEOUS
* 90	108.52	109.13	0.61			CLAYSTONE	SLTY.DK.GY VERY CARBONACEOUS
87	109.13	110.17	1.04			CLAYSTONE	DK.GY.BRKN CARBONACEOUS PLANT FRAGMENTS THROUGHOUT ; EXTENSIVE QUARTZ VEINING
82	110.17	111.28	1.11			SILTSTONE	DK.GY.BRKN EXTENSIVE QUARTZ VEINING
* 79	111.28	111.79	0.51			SILTSTONE	M.GY.VTHNB.BRKN EXTENSIVE QUARTZ VEINING; MINOR PLANT F RAGMENTS
82	111.79	111.97	0.18			SILTSTONE	CLYY.M-DK.GY.LAM.BRKN BECOMES CARBONACEOUS AT BASE
* 89	111.97	113.22	1.25			CLAYSTONE	M-DK.GY.LAM.SLD MONOTONOUS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	113.22	113.32	0.10			CLAYSTONE	CARB.DK.GY.BRKN VERY CARBONACEOUS
89	113.32	113.38	0.06		E	COAL	C-2.BLK.BRKN
89	113.38	113.42	0.04		E	CLAYSTONE	CARB.DK.GY.BRKN
89	113.42	113.56	0.14		E	COAL	C-5.BLK.VBRKN COAL IS IN POOR SHAPE
88	113.56	113.91	0.35		E	COAL	C-4.BLK.BRKN
88	113.91	113.96	0.05		E	CLAYSTONE	DK.GY.BRKN
88	113.96	114.01	0.05		E	COAL	C-3.BLK.BRKN
88	114.01	114.23	0.22		E	CLAYSTONE	DK.GY.BRKN
88	114.23	114.28	0.05		E	COAL	C-4.BLK.BRKN
88	114.28	114.42	0.14		E	CLAYSTONE	CARB.DK.GN.BRKN CALCITE VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	114.42	114.48	0.06		E	COAL	C-3.BLK.BRKN
88	114.48	114.63	0.15		E	CLAYSTONE	CARB.DK.GN.BRKN
88	114.63	114.72	0.09		E	COAL	C-3.BLK.BRKN
88	114.72	114.82	0.10		E	CLAYSTONE	CARB.DK.GN.BRKN
88	114.82	114.98	0.16		E	COAL	C-4.BLK.BRKN
88	114.98	115.37	0.39		E	CLAYSTONE	CARB.DK.GY MINOR CALCITE VEINING; COAL IS POOR QUA LITY
88	115.37	115.48	0.11		E	COAL	C-3.BRKN
88	115.48	115.53	0.05		E	CLAYSTONE	
88	115.53	115.62	0.09		E	COAL	C-2

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	115.62	116.11	0.49			CLAYSTONE	CARB.M.GY.LAM COALY BANDS; PLANT FRAGMENTS BECOMING S ILTIER AT BOTTOM; GRADATIONAL CONTACT W ITH SILTSTONE BELOW
* 87	116.11	117.06	0.95			SILTSTONE	CLYY.M.GY.LAM BECOMES SANDY AT BASE; CARBONACEOUS PLA NT FRAGMENTS
* 77	117.06	117.58	0.52			SANDSTONE	SLTY.FG.MOD.LT.GY.THKB.SLD COARSER TOWARDS BASE; MINOR PYRITE; SIL TY BANDS AT TOP
80	117.58	118.04	0.46			SANDSTONE	FG.MOD.LT.GY.THKB.SLD MINOR SILTY BANDS; VERY MINOR CALCITE V EINING; MINOR RIP UP CLASTS
* 89	118.04	120.14	2.10			SANDSTONE	FG.MOD.LT.GY.THKB.SLD MINOR SILTY BANDS; VERY MINOR CALCITE V EINING; MINOR RIP UP CLASTS
88	120.14	120.32	0.18			SANDSTONE	CARB.FG.PR.M.GY.LAM.SLD FINELY LAMINATED INTERBEDS OF SILTSTONE ; CRUMBLY; CLAYEY TOWARDS TOP
* 88	120.32	121.13	0.81			SANDSTONE	FG.MOD.LT-M.GY.MAS.SLD MINOR SILTY CLASTS; QUARTZ STRINGERS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	121.13	121.37	0.24			SANDSTONE	VFG.MOD.LT.GY.MAS.SLD SILTSTONE RIP UP CLASTS; FINER THAN PREVIOUS SAND
79	121.37	121.48	0.11			SILTSTONE	LT-M.GY.LAM LOTS OF FINE GRAINED SANDSTONE INTERBEDS
78	121.48	121.58	0.10			SANDSTONE	FG.MOD.LT.GY.THKB.SLD AS ABOVE
77	121.58	121.62	0.04			SANDSTONE	FG.MOD.LT.GY.SLD AS ABOVE; MINOR SILTY BANDS
74	121.62	122.17	0.55			SILTSTONE	SSY.M.GY.LAM.BIOTR.SLD LOTS OF FINE GRAINED SANDSTONE INTERBEDS; HORIZONTAL SAND FILLED BURROWS; QUARTZ VEINS PRESENT
69	122.17	122.33	0.16			SANDSTONE	FG.MOD.LT.GY.THKB.SLD LARGE QUARTZ VEIN; SHARP CONTACT WITH NUMEROUS RIP UPS
67	122.33	122.53	0.20			SANDSTONE	SLTY.FG.MOD.LT-M.GY.MB.SLD THIN SILTSTONE BEDS; QUARTZ VEINS
* 55	122.53	124.26	1.73			SILTSTONE	M.GY.SLD CALCITE VEINS; MINOR SAND BANDS; CARBONACEOUS PLANT FRAGMENTS ON BEDDING PLANE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	124.26	124.58	0.32			SILTSTONE	M.GY.SLD AS ABOVE
67	124.58	124.60	0.02			SILTSTONE	AS ABOVE
69	124.60	124.82	0.22			CLAYSTONE	SLTY.DK.GY.SLD ABUNDANT CARBONACEOUS PLANT DEBRIS; SOME SILTY BANDS
71	124.82	125.06	0.24			SILTSTONE	CLYY.M-DK.GY.LAM.SLD
74	125.06	125.36	0.30			SILTSTONE	LT.GY.LAM.BRKN ABUNDANT CARBONATE ON SLIPPAGE SURFACES
79	125.36	126.07	0.71			SILTSTONE	CARB.M-DK.GY.SLD CARBONACEOUS PLANT FRAGMENTS; MINOR SANDY BEDS; MINOR CALCITE STRINGERS
* 90	126.07	127.46	1.39			SILTSTONE	SSY.M.GY.LAM MINOR SANDY BANDS, CARBONACEOUS PLANT FRAGMENTS
89	127.46	127.60	0.14			SILTSTONE	CLYY.M-DK.GY.SLD PLANT FRAGMENTS; GRADATIONAL CONTACT WITH UNIT BELOW

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	127.60	127.97	0.37			CLAYSTONE	CARB.DK.GY.BRKN COALY IN PART; MINOR CALCITE VEINING; FISSILE
* 88	127.97	128.73	0.76			CLAYSTONE	CARB.M-DK.GY.BRKN COALY; MINOR CALCITE VEINING
86	128.73	129.95	1.22			SILTSTONE	CLYY.LT-M.GY.THNB.BRKN CALCITE VEINING; SLIPPAGE SURFACES; PLASTERED CALCITE
84	129.95	130.28	0.33			SILISTONE	CLYY.LI-M.GY.THNB.BRKN RADICAL LITHOLOGY CHANGE ACROSS DEPTH MARKER SUGGESTS POSSIBLE CORE LOSS OR MISPOSITION
83	130.28	131.34	1.06			SANDSTONE	FG.M.GY.THKB.BRKN CLAYSTONE RIP UP CLASTS IN COARSER PORTIONS; EXTENSIVE QUARTZ VEINING; MINOR SILTSTONE BANDS
81	131.34	131.56	0.22			SILTSTONE	CLYY.M.GY BRECCIATED; EXTENSIVE QUARTZ VEINS; COALY IN PART
* 81	131.56	131.74	0.18			CLAYSTONE	SLTY.M-DK.GY.THNB.SLD EXTENSIVELY QUARTZ VEINED; SLIPPAGE SURFACES; BOX MAY BE DISTURBED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 80	131.74	133.14	1.40			CLAYSTONE	LT-M.GY.THNB SILTSTONE CONTENT DECREASING; EXTENSIVELY QUARTZ VEINED IN UPPER 30 cm; RHYTHMICALLY BANDED; PLANT FRAGMENTS DISTINCTIVELY ABSENT
80	133.14	133.81	0.67			CLAYSTONE	LT-M.GY.LAM.SLD AS ABOVE
81	133.81	135.94	2.13			CLAYSTONE	LT-M.GY.LAM.SLD AS ABOVE
* 82	135.94	138.00	2.06			CLAYSTONE	LT-M.GY.LAM.SLD AS ABOVE
86	138.00	139.08	1.08			CLAYSTONE	LT-M.GY.LAM.SLD AS ABOVE; SILTSTONE CONTENT DECREASING
* 88	139.08	139.73	0.65			CLAYSTONE	LT-M.GY.LAM.SLD AS ABOVE
80	139.73	139.95	0.22			SILTSTONE	LT.GY.LAM.BRKN EXTENSIVE QUARTZ VEINING; ABRUPT CONTACT WITH OVERLYING CLAYSTONE
* 60	139.95	142.00	2.05			SILTSTONE	M.GY.LAM.BRKN BCA VARIES RAPIDLY;BECOMES CLAY RICH TOWARDS BASE; BEDDING HIGHLY DISTURBED; EXTENSIVE QUARTZ VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	142.00	142.23	0.23			SILTSTONE	CARB.M.GY.LAM.BRKN SLICKENSIDED; BRECCIATED EXTENSIVELY QU ARTZ VEINED;
67	142.23	142.58	0.35			SILTSTONE	CARB.M.GY.LAM.BRKN AS ABOVE
* 71	142.58	143.65	1.07			CLAYSTONE	DK.GY.LAM.BRKN AS ABOVE
57	143.65	143.71	0.06		D	COAL	C-4.BLK.BRKN COALY LENSES
55	143.71	143.81	0.10		D	CLAYSTONE	M-DK.GY.BRKN COALY STRINGERS; CALCITE VEINS
50	143.81	144.15	0.34	01759	D	COAL	C-3.BLK.BRKN MINOR CLAYSTONE INTERBEDS
45	144.15	144.19	0.04	01759	D	CLAYSTONE	M-DK.GY.BRKN AS ABOVE
44	144.19	144.22	0.03	01759	D	CLAYSTONE	M-DK.GY.BRKN AS ABOVE
44	144.22	144.26	0.04	01759	D	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	144.26	144.31	0.05	01759	D	CLAYSTONE	M-DK.GY.BRKN MINOR CLAYSTONE INTERBEDS
39	144.31	144.51	0.20	01759	D	COAL	C-3.BLK.BRKN
32	144.51	144.88	0.37	01759	D	COAL	C-4.BLK.BRKN
20	144.88	145.53	0.65	01759	D	COAL	C-3.BLK.BRKN
10	145.53	145.66	0.13	01759	D	COAL	C-3.BLK.BRKN
07	145.66	145.81	0.15	01759	D	COAL	C-4.BLK.BRKN
* 03	145.81	145.99	0.18	01759	D	MUDSTONE	BLK COAL STRINGERS; HIGHLY CARBONACEOUS
* 01	145.99	146.23	0.24	01759	D	COAL	C-3.BLK.BRKN BEDDING VERTICLE
* 05	146.23	146.76	0.53	01759	D	CLAYSTONE	DK.GN DISTINCTIVELY LESS CARBONACEOUS THAN OT HER CLAYSTONES

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	146.76	147.77	1.01	01759	D	COAL	C-3 REMAINDER OF THIS BOX IS ESSENTIALLY VE RTICAL CONTAINING APPROXIMATELY EQUAL A MOUNTS OF MUDSTONE AND C-3; NUMEROUS SM ALL FOLD AXES ARE VISIBLE
* 36	147.77	148.22	0.45	01759	D	COAL	C-4.BLK.BRKN
16	148.22	148.47	0.25	01759	D	MUDSTONE	DK.GY.BRKN
* 01	148.47	148.77	0.30	01759	D	COAL	C-4.BLK.BRKN
09	148.77	148.84	0.07	01759	D	CLAYSTONE	DK.GY.BRKN CARBONACEOUS
24	148.84	149.41	0.57	01759	D	COAL	C-4.BLK.BRKN CORE IS VERY HIGHLY BROKEN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	149.41	149.48	0.07	01759	D	CLAYSTONE	DK.GY.BRKN
49	149.48	149.88	0.40	01759	D	COAL	C-3.BLK.BRKN
62	149.88	150.07	0.19	01759	D	CLAYSTONE	DK.GY UNCARBONACEOUS
* 80	150.07	150.69	0.62	01759	D	COAL	C-4.BLK.BRKN
73	150.69	151.17	0.48	01759	D	COAL	C-3.BLK.BRKN
66	151.17	151.77	0.60	01760	D	CLAYSTONE	DK.GY.BRKN UNCARBONACEOUS
61	151.77	151.90	0.13	01760	D	CLAYSTONE	DK.GY.BRKN UNCARBONACEOUS
59	151.90	152.03	0.13	01760	D	CLAYSTONE	DK.GY.BRKN UNCARBONACEOUS
57	152.03	152.25	0.22	01760	D	COAL	C-4.BLK.BRKN
53	152.25	152.59	0.34	01760	D	CLAYSTONE	DK.GY.BRKN UNCARBONACEOUS; 2 cm OF PYRITE AT TOP

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	152.59	153.64	1.05	01761	D	COAL	C-3.BLK.BRKN SECTION QUITE DISTORTED AND CRUMBLED
* 30	153.64	154.77	1.13	01761	D	COAL	C-2.BLK.BRKN VERY SOFT
53	154.77	154.89	0.12	01761	D	COAL	C-2.BLK.BRKN VERY SOFT
65	154.89	155.40	0.51	01761	D	CLAYSTONE	CARB.DK.GY.BRKN VERY CARBONACEOUS (SMASHED)
* 90	155.40	156.25	0.85	01761	D	COAL	C-3.BLK
* 01	156.25	157.05	0.80	01761	D	CLAYSTONE	CARB.DK.GY.BRKN CONTORTED BEDDING; CALCITE
21	157.05	157.88	0.83	01761	D	CLAYSTONE	CARB.DK.GY.BRKN BEDS OF COAL THROUGHOUT
34	157.88	158.13	0.25	01761	D	COAL	C-2.BLK.BRKN CALCITE VEINING
45	158.13	158.73	0.60	01761	D	CLAYSTONE	CARB.DK.BRKN
53	158.73	158.79	0.06	01761	D	COAL	C-3.BLK.BRKN X

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 55	158.79	158.90	0.11	01761	D	COAL	C-3.BLK.BRKN
56	158.90	159.21	0.31	01761	D	CLAYSTONE	CARB.BLK COALY BANDS
59	159.21	159.74	0.53	01761	D	COAL	C-4.BLK THIN CLAYSTONE INTERBANDS
62	159.74	160.06	0.32			CLAYSTONE	CARB.DK.GY.LAM.SLD GRADATIONAL CONTACT WITH OVERLYING COAL ; MINOR QUARTZ VEINING
* 65	160.06	160.49	0.43			CLAYSTONE	CARB.DK.GY.LAM.SLD AS ABOVE
68	160.49	160.79	0.30			CLAYSTONE	DK.GY.LAM.SLD INCREASINGLY SILTY TOWARDS BASE; GRADAI IONAL CONTACT WITH SILTSTONE BELOW
* 75	160.79	162.53	1.74			SILTSTONE	SSY.M.GY.THNB.XBDG THIN BEDS OF VERY FINE GRAIN SAND ESPEC IALLY IN TOP 50 cm; UPRIGHT ON CROSS BE DDING; BECOMES MORE CLAY RICH AT BASE
67	162.53	163.03	0.50			SILTSTONE	M-DK.GY.LAM THIN BEDS OF VERY FINE GRAINED SAND; CA RBONACEOUS

* DENOTES MEASURED BCA

DRM 4001

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	163.03	163.16	0.13			SILTSTONE	CLYY.DK.GY.LAM LONG GRADATIONAL CONTACT WITH UNDERLYIN G MUDSTONE
* 60	163.16	164.38	1.22			MUDSTONE	SLTY.DK.GY.LAM.BIOTR THIN SILTSTONE LAMINATIONS; PLANT FRAGM ENTS ON SOME BEDDING PLANES;RARE HORIZO NTAL SILT FILLED BURROWS
60	164.38	165.61	1.23			MUDSTONE	SLTY.DK.GY.LAM NUMEROUS PLANT FRAGMENTS (LARGE LEAVES) ON BEDDING PLANES
60	165.61	165.97	0.36			SILTSTONE	CLYY.M.GY.XBDG CLAY/SILT LAMINATIONS; UPRIGHT ON CROSS BEDDING; LACKS PLANT FOSSILS
60	165.97	166.39	0.42			SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE; VERY FINE GRAINED SAND LAMINA TIONS
* 60	166.39	168.44	2.05			SILTSTONE	CLYY.M-DK.GY.LAM.SLD AS ABOVE; BECOMES MORE CLAY RICH TOWARD S BASE
68	168.44	169.05	0.61			SILTSTONE	CLYY.M-DK.GY.LAM.SLD AS ABOVE; GRADING DOWN INTO MUDSTONE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 74	169.05	170.45	1.40			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.SLD SILTY BANDS; SLIGHTLY CARBONACEOUS; SIL T FILLED BURROWS
69	170.45	170.77	0.32			MUDSTONE	SLTY.DK.GY.LAM.BIOTR.SLD AS ABOVE; CONVOLUTED SILTSTONE LAMINATI ONS
66	170.77	171.51	0.74			SILTSTONE	CLYY.M.GY.LAM.SSD CARBONACEOUS; CONTORTED BEDS
63	171.51	171.72	0.21			SILTSTONE	CLYY AS ABOVE
* 60	171.72	172.49	0.77			SILTSTONE	SSY.LT-M.GY.LAM THIN VERY FINE GRAINED SANDSTONE BEDS
64	172.49	173.18	0.69			SILTSTONE	SSY.LT-M.GY.LAM.XBDG AS ABOVE; UPRIGHT ON CROSS BEDDING
* 71	173.18	175.27	2.09			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD INTERBEDDED WITH VERY FINE GRAINED SAND STONE; AMBIGUOUS TOPS INDICATIONS
* 55	175.27	177.23	1.96			SILTSTONE	SSY.PR.LT-M.GY.LAM.BIOTR.SLD AS ABOVE; BECOMES MUCH MORE SANDY TOWAR DS BASE; SMALL HORIZONTAL BURROWS

* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 57	177.23	178.24	1.01			SILTSTONE	SSY.PR.LT-M.GY.LAM.BIOTR.SLD AS ABOVE
59	178.24	179.19	0.95			SILTSTONE	SSY.PR.LT-M.GY.LAM.BIOTR.SLD AS ABOVE
* 61	179.19	181.22	2.03			SILTSTONE	SSY.PR.LT-M.GY.LAM.BIOTR.SLD AS ABOVE; AMBIGUOUS TOPS
* 57	181.22	183.27	2.05			SILTSTONE	SSY.PR.LT-M.GY.LAM.BRKN SMALL HORIZONTAL BURROWS; AMBIGUOUS TOPS..
* 44	183.27	185.10	1.83			SILTSTONE	SSY.PR.LT-M.GY.LAM.BRKN AS ABOVE; DISTINCTIVELY NON-CARBONACEOUS
* 45	185.10	187.07	1.97			SILTSTONE	SSY.PR.LT-M.GY.LAM.BRKN AS ABOVE
* 45	187.07	187.52	0.45			SILTSTONE	SSY.PR.LT-M.GY.LAM.BRKN AS ABOVE; RARE CARBONACEOUS MATERIAL
39	187.52	189.09	1.57			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE; SMALL HORIZONTAL BURROWS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 30	189.09	190.47	1.38			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE; SMALL HORIZONTAL BURROWS; EXTENSIVE CALCITE VEINING; BECOMING CLAYEY IN PARTS; MINOR SLICKENSIDES
* 15	190.47	191.09	0.62			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE
14	191.09	192.24	1.15			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD INTENSIVELY VEINED (QUARTZ AND CALCITE); BRECCIATED; HIGHLY DISTURBED; APPARENT FOLD AXIS
13	192.24	192.98	0.74			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD INTENSIVELY VEINED; BRECCIATED
12	192.98	194.86	1.88			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD INTENSIVELY VEINED FOR FIRST 25 CM; MIN OR THROUGH REST OF BOX
* 11	194.86	195.32	0.46			SILTSTONE	CLYY.PR.DK.GY.LAM.BRKN CALCITE VEINED; VERY CARBONACEOUS BEDDING CONTORTED; BECOMING INCREASINGLY CLAY RICH; COALY IN PART
31	195.32	196.94	1.62			SILTSTONE	CLYY.PR.DK.GY.LAM.BRKN AS ABOVE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	196.94	197.11	0.17			MUDSTONE	SLTY.PR.DK.GY.LAM.BRKN CARBONACEOUS
52	197.11	197.26	0.15			MUDSTONE	SLTY.PR.DK.GY.LAM.BRKN CARBONACEOUS
* 70	197.26	198.94	1.68			SILTSTONE	CLYY.PR.M-DK.GY.LAM.BRKN
64	198.94	199.72	0.78			SILTSTONE	CLYY.PR.M-DK.GY.LAM.BRKN MINOR CALCITE VEINING; CARBONACEOUS
60	199.72	201.00	1.28			SILTSTONE	CLYY.PR.M-DK.GY.LAM.BRKN AS ABOVE
* 52	201.00	203.05	2.05			SILTSTONE	CLYY.PR.M-DK.GY.LAM.XBDG.BRKN AS ABOVE; APPEARS UPRIGHT
* 53	203.05	203.38	0.33			SILTSTONE	CLYY.PR.M-DK.GY.LAM.BRKN AS ABOVE
* 56	203.38	205.00	1.62			SILTSTONE	CLYY.PR.M-DK.GY.LAM.XBDG.BRKN AS ABOVE
* 52	205.00	206.44	1.44			SILTSTONE	CARB.PR.M-DK.GY.LAM.BRKN AS ABOVE
* 52	206.44	207.14	0.70			SILTSTONE	CARB.PR.M-DK.GY.LAM.BRKN AS ABOVE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 59	207.14	209.16	2.02			SILTSTONE	CARB.PR.M-DK.GY.LAM.SLD PLANT FOSSILS DISTINCTLY ABSENT; SLICKE NSIDES
60	209.16	209.62	0.46			SILTSTONE	SSY.PR.M-DK.GY.LAM.SLD CARBONACEOUS
* 60	209.62	211.16	1.54			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD CARBONACEOUS; MINOR CALCITE VEINING
* 44	211.16	212.64	1.48			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE
48	212.64	213.11	0.47			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE,INCREASING SAND CONTENT
52	213.11	215.14	2.03			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE; SLICKENSIDES
57	215.14	215.61	0.47			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD INCREASING SAND CONTENT
* 61	215.61	217.12	1.51			SILTSTONE	SSY.PR.LT-M.GY.LAM.XBDG.SLD ABUNDANT SANDY INTERBEDS
* 52	217.12	218.68	1.56			SILTSTONE	PR.LT-M.GY.XBDG.SLD UPRIGHT BY CROSS BEDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	218.68	219.21	0.53			SILTSTONE	PR.LT-M.GY.LAM.SLD ALTERNATING INTERBEDS OF SANDSTONE
* 50	219.21	221.32	2.11			SILTSTONE	PR.LT-M.GY.LAM.SLD AS ABOVE, SLIGHTLY LOWER SAND CONTENT; MINOR CALCITE VEINS
55	221.32	221.68	0.36			SILTSTONE	SSY.PR.LT-M.GY.LAM.SLD AS ABOVE; CALCITE VEINS
59	221.68	223.31	1.63			SILTSTONE	CARB.PR.LT-M.GY.LAM.SLD CARBONACEOUS
* 65	223.31	224.72	1.41			SILTSTONE	CLYY.PR.LT-M.GY.LAM.SLD CARBONACEOUS
65	224.72	225.40	0.68			SILTSTONE	CLYY.PR.LT-M.GY.LAM.SLD CARBONACEOUS; EXTENSIVE VEINING (CALCIT E AND QUARTZ)
65	225.40	227.35	1.95			SILTSTONE	CARB.PR.LT-M.GY.LAM.BRKN INTENSIVELY VEINED; CALCITE AND QUARTZ; VERY CARBONACEOUS
64	227.35	227.55	0.20			SILTSTONE	CLYY.MOD.LT-M.GY.LAM.BRKN VERY CLAYEY; INTENSIVELY CALCITE VEINED
64	227.55	227.72	0.17			MUDSTONE	SLTY.MOD.DK.GY.BRKN AS ABOVE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	227.72	227.90	0.18			MUDSTONE	MOD.DK.GY.BRKN AS ABOVE; BRECCIATED
64	227.90	228.00	0.10			MUDSTONE	CARB.MOD.DK.GY.BRKN COALY IN PLACES; CALCITE VEINING
64	228.00	228.18	0.18	01469		COAL	C-6.BLK.BRKN
64	228.18	228.40	0.22	01469		COAL LOSS	
64	228.40	229.57	1.17			MUDSTONE	CARB.DK.GY MINOR COAL LENSES
* 64	229.57	230.65	1.08			SILTSTONE	DK.GY.LAM.SLD
60	230.65	231.47	0.82			SILTSTONE	DK.GY.LAM.SLD
* 57	231.47	232.38	0.91			SILTSTONE	DK.GY.LAM.SLD GRADATIONAL CONTACT WITH SAND BELOW
* 57	232.38	233.54	1.16			SANDSTONE	VFG.VWEL.LT.GY.THNB.SLD THIN SILTSTONE LAMINATIONS
64	233.54	233.71	0.17			SANDSTONE	SLTY.VFG.PR.M.GY.THNB.BRKN INTERBEDDED SILTSTONE LAMINATIONS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	233.71	234.47	0.76			SANDSTONE	SLTY.VFG.PR.M.GY.THNB.SLD AS ABOVE
* 80	234.47	235.62	1.15			SILTSTONE	SSY.PR.M.GY.LAM.SLD GRADATIONAL CONTACT WITH SANDSTONE ABOV E
74	235.62	236.30	0.68			SILTSTONE	SSY.PR.M.GY.LAM.SLD AS ABOVE; CARBONACEOUS PLANT FRAGMENTS
71	236.30	236.72	0.42			SANDSTONE	SSY.FG.PR.M.GY.THNB.SLD INTERBEDDED WITH SILTSTONE
* 69	236.72	236.82	0.10			SILTSTONE	SLTY.PR.M.GY.LAM.SLD
68	236.82	237.64	0.82			SILTSTONE	CLYY.PR.DK.GY.SLD
* 65	237.64	239.76	2.12			SILTSTONE	CLYY.PR.DK.GY.LAM.SLD FINE GRAINED SANDSTONE INTERBEDDED IN C ENTRE; UPRIGHT BASED ON SCOUR
68	239.76	239.83	0.07			SILTSTONE	CLYY.PR.DK.GY.LAM.SLD
* 71	239.83	241.86	2.03			SILTSTONE	CLYY.PR.DK.GY.LAM.SLD SOME FINE GRAINED SANDSTONE INTERBEDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	241.86	241.92	0.06			SILTSTONE	SSY.PR.M.GY.LAM.SLD GRADATIONAL CONTACT WITH SANDSTONE BELO W
69	241.92	242.85	0.93			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD MINOR CALCITE VEINING; SILTSTONE INTERB EDS
* 68	242.85	244.01	1.16			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD AS ABOVE
* 62	244.01	245.65	1.64			SANDSTONE	SLTY.FG.PR.M.GY.LAM BECOMING LESS SILTY; MINOR CALCITE AND QUARTZ VEINS
63	245.65	245.99	0.34			SANDSTONE	FG.M.GY.LAM.BRKN AS ABOVE
* 64	245.99	248.09	2.10			SANDSTONE	FG.M.GY.LAM.SLD INCREASING IN SILTSTONE TOWARDS BASE AN D INCREASING IN BED THICKNESS TOWARDS B ASE; UPRIGHT ON FLAME STRUCTURE
* 72	248.09	248.88	0.79			SANDSTONE	FG.PR.M.GY.LAM.SLD INTERBEDDED WITH SILTSTONE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 62	248.88	250.15	1.27			SANDSTONE	SLTY.VFG.PR.M.GY.SLD CALCITE VEINING; SILTSTONE INTERBEDDED AT TOP; DECREASING SILISTONE CONTENT TOWARDS BASE
61	250.15	250.47	0.32			SANDSTONE	SLTY.VFG.PR.M.GY.SLD CALCITE VEINING
* 61	250.47	251.22	0.75			MUDSTONE	SLTY.PR.DK.GY.BRKN VERY CARBONACEOUS; CALCITE VEINED
61	251.22	251.95	0.73	01470 D		COAL	C-3.BLK.BRKN MINOR MUDSTONE LAMINAE
62	251.95	253.02	1.07	01470 D		COAL	C-3.BLK MINOR MUDSTONE; SEAM IS TOTALLY POWDERED
62	253.02	253.24	0.22	01470 D		ROCK LOSS	
62	253.24	253.32	0.08	01470 D		MUDSTONE	CARB.BLK
63	253.32	254.29	0.97	01470 D		COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	254.29	254.79	0.50	01470 D		COAL	C-3.BLK POWDERED
63	254.79	255.09	0.30	01470 D		COAL	C-4.BLK POWDERED; MINOR MUDSTONE
64	255.09	255.75	0.66			MUDSTONE	SLTY.PR.DK.GY.MB.SLD SILTSTONE INCREASES TOWARDS BASE; VEINLETS OF COAL; CARBONACEOUS
* 64	255.75	256.65	0.90			SILTSTONE	CLYY.DK.GY.MB.SLD INTERNAL FEATURES NOT VISIBLE
68	256.65	257.22	0.57			SILTSTONE	SSY.BIOTR.SLD SAND INCREASES TOWARDS BASE; VERTICAL S AND FILLED BURROWS
* 72	257.22	258.29	1.07			SANDSTONE	SLTY.FG.PR.LT-M.GY.LAM.BIOTR.SLD NUMEROUS SILTSTONE INTERBEDS; MINOR CALCITE VEINING; UPRIGHT ON BURROWS AND CUT AND FILL
76	258.29	258.49	0.20			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD SILTSTONE INTERBEDDED
* 80	258.49	259.46	0.97			SILTSTONE	SSY.M.GY.LAM.SLD SANDSTONE INTERBEDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 75	259.46	260.37	0.91			SANDSTONE	SLTY.FG.PR.M.GY.LAM.BIOTR.SLD SILTSTONE INTERBEDS; UPRIGHT BASED ON B URROW; MINOR CALCITE VEINING
73	260.37	260.75	0.38			SILTSTONE	SSY.M.GY.LAM.SLD SANDSTONE INTERBEDS
72	260.75	260.86	0.11			SANDSTONE	LT.GY.LAM.SLD HIGHLY FRACTURED
* 70	260.86	262.52	1.66			SILTSTONE	CARB.M-DK.GY.LAM.SLD MINOR SANDSTONE INTERBEDS
68	262.52	263.16	0.64			SILTSTONE	CLYY.PR.DK.GY.LAM.SLD AS ABOVE
67	263.16	263.33	0.17			MUDSTONE	SLTY.PR.DK.GY.LAM.SLD BECOMES SANDY AT BASE; CARBONACEOUS
67	263.33	263.52	0.19			SANDSTONE	CARB.FG.PR.M.GY.THNB.SLD
67	263.52	263.83	0.31			SANDSTONE	FG.PR.LT.GY.THNB.BIOTR RARE SILTSTONE INTERBEDS; TOPS UP BASED ON VERTICAL BURROW
* 66	263.83	264.09	0.26			SANDSTONE	VFG.PR.M.GY.THNB.SLD SILTSTONE INTERBEDS TOWARDS TOP; COARSE NING TOWARDS BASE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	264.09	264.38	0.29			SANDSTONE	FG.PR.M.GY.THNB.SLD SILTSTONE LAMINATIONS
63	264.38	264.48	0.10			SANDSTONE	MG.PR.LT.GY.MB.SLD
62	264.48	264.78	0.30			SANDSTONE	MG.PR.M.GY.THNB.SLD SILT AND CLAY INTERBEDS; THESE ENTIRE S AND SEQUENCES APPEAR TO FINE UPWARDS
60	264.78	265.18	0.40			SANDSTONE	MG.PR.M.GY.LAM.SLD MIXED WITH FINE GRAIN SANDSTONE
* 56	265.18	266.26	1.08			SANDSTONE	FG.PR.M.GY.THNB SILTSTONE INTERBEDS; COARSENS UPWARD IN TO OVERLYING UNIT
59	266.26	266.49	0.23			SANDSTONE	MG.PR.M-DK.GY.LAM.SLD CONTINUOUS GRADATION FROM SILTSTONE THR OUGH TO MEDIUM GRAINED SANDSTONE; SILTS TONE INTERBEDS THROUGHOUT; CALCITE VEIN ING
61	266.49	266.88	0.39			SANDSTONE	FG.PR.M-DK.GY.LAM.SLD GRADES FROM SILT - FINE GRAINED SANDSTO NE;CARBONATE BLEBS WITH COAL INSIDE;CAR BONACEOUS AT BASE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	266.88	266.93	0.05			SANDSTONE	FG.PR.M.GY.THNB.SLD CARBONACEOUS PLANT FRAGMENTS (LARGE LEAVES)
63	266.93	267.23	0.30			SANDSTONE	FG.MOD.LT-M.GY.THNB.SLD SILTSTONE LAMINAE TOWARDS BASE; RAPIDLY GRADES TO MEDIUM GRAINED SANDSTONE BELOW
64	267.23	267.35	0.12			SANDSTONE	MG.PR.LT-M.GY.THNB.SLD *SILTSTONE-CLAYSTONE LAMINAE; COARSENING UP SEQUENCE*
* 68	267.35	268.91	1.56			SANDSTONE	MG.PR.LT-M.GY.THNB.SLD REPEATED COARSENING UPWARD CYCLES FROM FINE TO MEDIUM SAND OVER ABOUT 10 cm AVERAGE PUNCTUATED BY CLAYSTONE LAMINAE; VERY CARBONACEOUS
66	268.91	269.48	0.57			SANDSTONE	MG.PR.LT-M.GY.THNB.SLD AS ABOVE; THIN GRIT TO CONGLOMERATIC LENSES
66	269.48	269.61	0.13			CLAYSTONE	CARB.DK.GY.LAM.BRKN VERY CARBONACEOUS; MINOR CALCITE VEINS
* 65	269.61	270.51	0.90			SANDSTONE	MG.PR.LT-M.GY.THNB.SLD COARSENING UPWARD CYCLES; MINOR CALCITE VEINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	270.51	270.93	0.42			SANDSTONE	MG.PR.LT-M.GY.MB.SLD GRADING NOT APPARENT
* 52	270.93	272.17	1.24			SANDSTONE	MG.PR.LT-M.GY.THNB.SLD AS ABOVE
64	272.17	272.99	0.82			SANDSTONE	CG.PR.LT.GY.MAS.SLD NUMEROUS CLAYSTONE RIP UP CLASTS; FINES UPWARD TO OVERLYING MEDIUM GRAINED SANDSTONE; EROSIVE BASAL CONTACT
69	272.99	273.07	0.08			SANDSTONE	FG.PR.M.GY.THNB.SLD FINES UPWARDS SLIGHTLY; THIN LAMINAE OF MEDIUM GRAINED SANDSTONE
70	273.07	273.20	0.13			SANDSTONE	SLTY.FG.PR.M.GY.LAM.SLD THIN SILTSTONE LAMINATIONS THROUGHOUT; UNITS BELOW THE END OF BOX 102 START TO FINE UPWARDS
* 82	273.20	275.12	1.92			SANDSTONE	MG.PR.LT-M.GY.MB.XBDG.SLD REPEATED FINING UPWARDS SEQUENCES OF 10-20 CM INTERVALS; PUNCTUATED BY THIN CLAYSTONE BANDS; MINOR RIP UP CLASTS; COALY FRAGMENTS IN COARSER UNITS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	275.12	275.22	0.10			SANDSTONE	MG.PR.M.GY.LAM.SLD GENERALLY COARSER THAN SANDS SEEN PREVI OUSLY;CONTAINS CLAYSTONE RIP UP CLASTS AND COALY FRAGMENTS NEAR BASE
* 68	275.22	276.45	1.23			SANDSTONE	MG.PR.M.GM.LAM.SLD AS ABOVE; EROSIVE BASAL CONTACT
72	276.45	276.86	0.41			CLAYSTONE	DK.GY.LAM.BRKN CALCITE VEINING; VERY CARBONACEOUS; THI N AND VERY FINE SANDSTONE BANDS
74	276.86	277.18	0.32			CLAYSTONE	SLTY.DK.GY.LAM.BRKN CARBONACEOUS PLANT FRAGMENTS
* 81	277.18	279.34	2.16			CLAYSTONE	SLTY.DK.GY.LAM.SLD VERY MINOR FINE SANDSTONE BANDS
80	279.34	279.72	0.38			CLAYSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE; VERY CARBONACEOUS
80	279.72	279.96	0.24			CLAYSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE; GRADES RAPIDLY TO FINE SAND A T BASE
80	279.96	280.54	0.58			SANDSTONE	FG.LT-M.GY.MAS.SLD MINOR SILTSTONE BANDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 80	280.54	280.95	0.41			SANDSTONE	FG.LT-M.GY.LAM.SLD HIGHLY CONTORTED BEDDING; INTERBEDS OF SILTSTONE
80	280.95	281.13	0.18			SILTSTONE	SSY.M-DK.GY.LAM.SLD BEDDING CONTORTED; CARBONACEOUS ESPECIA LLY NEAR TOP; COALY IN PART
* 80	281.13	282.19	1.06			SILTSTONE	SSY.M-DK.GY.LAM.SLD AS ABOVE; SAND CONTENT DECREASES DOWNWA RDS; SAND AND SILT INTERBEDS
70	282.19	282.59	0.40	01476		CLAYSTONE	CARB.BLK.LAM.BRKN VERY CARBONACEOUS; COALY LENSES;CONTAIN S 5 CM BAND OF DISSEMINATED PYRITE AND CALCITE
64	282.59	283.15	0.56	01476		CLAYSTONE	CARB.BLK.LAM.BRKN AS ABOVE
59	283.15	283.32	0.17	01476		CLAYSTONE	CARB.BLK.LAM.BRKN AS ABOVE; FOLD AXIS EVIDENT AT THE TOP OF THIS BOX
* 44	283.32	285.30	1.98			SANDSTONE	FG.LT-M.GY.SLD SILTSTONE LAMINATION; INTENSIVELY CALCI TE VEINED; BRECCIATED IN VEINED ZONES

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	285.30	285.39	0.09			SANDSTONE	FG.LT-M.GY.SLD AS ABOVE
* 35	285.39	286.98	1.59			SANDSTONE	FG.LT-M.GY.SLD AS ABOVE; GRADES INTO CARBONACEOUS CLAY STONE AT BASE
38	286.98	287.33	0.35			SANDSTONE	MG.LT.GY.MAS.SLD MINOR SILTSTONE RIP UP CLASTS
39	287.33	287.45	0.12			SANDSTONE	MG.LT.GY.MAS.SLD AS ABOVE; CARBONATE VEINS
* 41	287.45	288.47	1.02			SANDSTONE	FG.PR.M.GY.THKB.SLD SILTSTONE INTERBEDS
40	288.47	289.02	0.55			SANDSTONE	FG.PR.M.GY.THKB.SLD SILTSTONE INTERBEDS; NUMEROUS SILTSTONE RIP UP CLASTS; CARBONACEOUS AT BASE; V ERY GRADATIONAL CONTACT WITH MUDSTONE B ELOW
39	289.02	289.36	0.34			MUDSTONE	CARB.BLK.LAM.SLD SANDY AT TOP; GRADING TO MUDSTONE
37	289.36	291.48	2.12			MUDSTONE	CARB.BLK.SLD VERY CARBONACEOUS; CARBONACEOUS PLANT F RAGMENTS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 33	291.48	293.61	2.13			MUDSTONE	CARB.DK.GY.LAM.XBDG.SLD LARGE AMOUNTS OF FINE GRAINED SANDSTONE INTERBEDS; OVERTURNED AS INDICATED BY CROSS BEDS; CARBONATE VEINING THROUGHOU T
37	293.61	294.37	0.76			SANDSTONE	SLTY.FG.WEL.M-DK.GY.LAM.XBDG.SLD NUMEROUS SILTSTONE INTERBEDS WITHIN SAN DSTONE; TOPS OVERTURNED INDICATED BY CR OSS BEDS
38	294.37	294.60	0.23			SILTSTONE	SSY.DK.GY.LAM.SLD SILT INTERBEDS WITHIN SANDSTONE; HORIZO NTAL BURROWS
* 40	294.60	295.75	1.15			SILTSTONE	SSY.DK.GY.LAM.XBDG.SLD SANDSTONE INTERBEDS; SILTSTONE BECOMES MUDSTONE IN PLACES; CARBONATE VEINING I N CENTRAL REGION
42	295.75	295.94	0.19			SILTSTONE	SSY.DK.GY.LAM.SLD INCREASINGLY SANDY TOWARDS BASE
* 45	295.94	297.98	2.04			SANDSTONE	SLTY.FG.WEL.M.GY.LAM.XBDG.SLD DECREASE IN SILTSTONE LAMINATIONS TOWAR DS BASE; TOPS INDICATE OVERTURNED BY CR OSS BEDS; CALCITE VEINING THROUGHOUT

* DENOTES MEASURED BCA

ORM 4001

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	297.98	298.85	0.87			SANDSTONE	SLTY.VFG.PR.M.GY.LAM.SLD CONVOLUTED BEDDING; CALCITE VEINING
* 43	298.85	299.57	0.72			SILTSTONE	CLYY.DK.GY.SLD MORE CLAY RICH AT BASE; VERY CARBONACEO US
43	299.57	300.17	0.60			MUDSTONE	SLTY.DK.GY GRADATIONAL CONTACT WITH SILTSTONE BELO W
44	300.17	300.94	0.77			MUDSTONE	CARB.BLK.SLD VERY CARBONACEOUS
44	300.94	301.17	0.23			MUDSTONE	CARB.BLK.SLD AS ABOVE
44	301.17	302.04	0.87	01471	D	COAL	C-2.BLK.BRKN INTENSELY BROKEN
44	302.04	302.74	0.70	01471	D	COAL	C-2.BLK.BRKN
45	302.74	302.94	0.20	01471	D	MUDSTONE	CARB.BLK.BRKN
45	302.94	303.58	0.64	01471	D	COAL	C-2.BLK.BRKN CORE IN BETTER SHAPE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 45	303.58	303.63	0.05	01471	D	MUDSTONE	BLK.BRKN
46	303.63	303.85	0.22	01471	D	ROCK LOSS	
48	303.85	304.02	0.17	01471	D	COAL	C-2.BLK
49	304.02	304.10	0.08	01471	D	COAL LOSS	
50	304.10	304.40	0.30	01471	D	COAL	C-2.BLK.BRKN
52	304.40	304.45	0.05	01471	D	ROCK LOSS	
52	304.45	304.52	0.07	01471	D	MUDSTONE	CARB.BLK.BRKN
58	304.52	305.87	1.35	01471	D	COAL	C-2.BLK.BRKN MINOR MUDSTONE INTERBEDS; CORE HIGHLY S MASHED
65	305.87	306.16	0.29	01471	D	COAL	C-2.BLK.BRKN MINOR MUDSTONE INTERBEDS; CORE HIGHLY S MASHED
* 70	306.16	306.97	0.81	01471	D	COAL	C-2.BLK.BRKN MINOR MUDSTONE INTERBEDS; CORE SMASHED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH84004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	306.97	307.05	0.08			SILTSTONE	CARB.M.GY.BRKN QUARTZ VEINS
* 20	307.05	309.08	2.03			SILTSTONE	M.GY.LAM.SLD FINE SAND LAMINATIONS; CALCITE VEINED; FOLD AXIS AT 24 cm; BEDDING CONTORTED; DISSEMINATED PYRITE ASSOCIATED WITH CAL CITE VEINS
* 45	309.08	309.93	0.85			SILTSTONE	M.GY.LAM.BRKN AS ABOVE; SAND MORE PREDOMINATE; HIGHLY CARBONACEOUS
45	309.93	310.98	1.05			SILTSTONE	M.GY.LAM.BRKN AS ABOVE; FRACTURE INTENSITY HIGHER; BR ECCIATED
45	310.98	311.52	0.54			SILTSTONE	SSY.M.GY.LAM FOLD AXIS AT THIS POINT
45	311.52	311.93	0.41			ROCK LOSS	TOTAL DEPTH?????????????????????????????? ???????????

-854- NOW IN CONTACT WITH SYSTEM 2000 -
-855- NO LONGER IN CONTACT WITH SYSTEM 2000 -

695 GR-M Klappan BY(2) A

GULF CANADA RESOURCES INC.
COAL DIVISION
KLAPPAN PROJECT
STRATIGRAPHIC LOG
KPN HC BHH84004

GEOLOGIST : E.LEGRESLEY | DATE : DEC 14/84 | DRAWING NO. :

SCALE : 1:200 1:40
0 5 [M] 0 5 [M]
NORTHING: 6343170.0 N
EASTING: 595336.0 E
INCLINATION: 90.0°

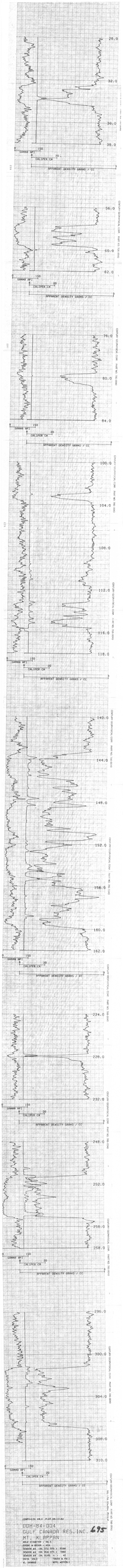
LITHOLOGIC SYMBOLS

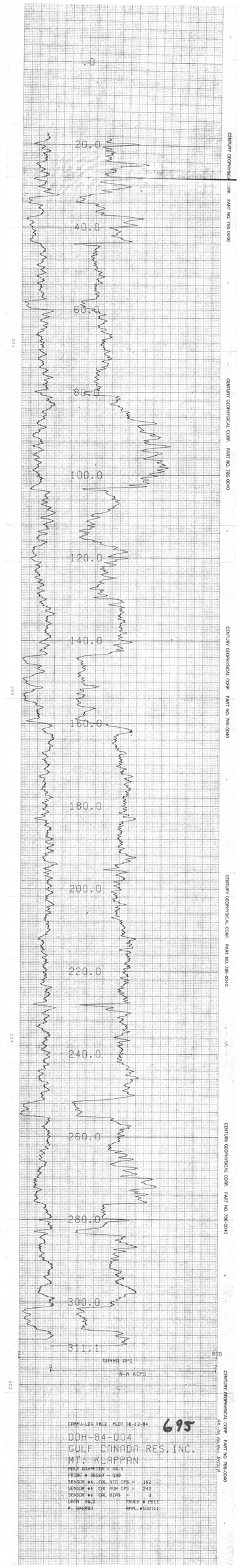
	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACCOUS
	OVERBURDEN		QUARTZ
	MUDSTONE/CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

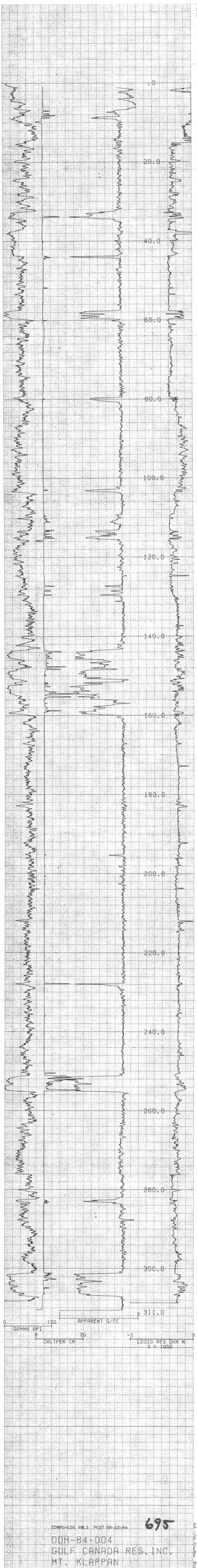
SEAM DETAIL 1 : 40

DRILLER DEPTH [M]	RCA [DEG]	TRUE DEPTH 1 : 200 [M]	DRILLER DEPTH [M]	TRUE THICKNESS [M]
10	87	10		
	89			
	80			
20	80	20		
	85			
	83			
30	87	30	32.63	ROCK | COAL
			34.33	0.40 | 1.30 = 1.70
40	88	40		
	86			
50	86	50		
			57.68	ROCK | COAL
			SEAM G	
60		60	59.71	0.30 | 1.73 = 2.03
	84			
	76			
	80			
70	70	70		
	76			
	82			
			79.75	ROCK | COAL
80	75		SEAM F	
	81	80	80.80	0.14 | 0.91 = 1.05
	82			
	90			
90	88	90		
100	90	100		
	84		NEW BEAM	
	88			
110	79	110	113.32	ROCK | COAL
	87		SEAM E	
	88		115.62	0.14 | 2.16 = 2.30
120	55	120		
	90			
130	81	130		
	82			
	88			
140	71	140		
	3		----(FOLD AXIS)	
150	30			
	55		SEAM D (STRUCTURALLY THICKENED)	
160	60	157		
	60			
	74	160		
170	60			
	55			
	61			
180	44	170		
	45			
	15			
190	70	180		
200	52			
	52			
	60	190		
210	61			
	61			
220	50			
	65	200		
			228.00	ROCK | COAL
230	64		228.40	0.00 | 0.36 = 0.36
	57			
	69	210		
240	71			
	68			
	64	220		
	62		251.20	ROCK | COAL
250			SEAM D	
	64	230		
	80			
260	70		255.02	0.23 | 3.16 = 3.42
	66			
	68	240		
270	65			
	82			
	68	250		
280	80			
	44			
	41	260	301.17	ROCK | COAL
290	33			
	45			
	43		SEAM D	
300	45	270		
	70			
310			304.37	0.42 | 4.13 = 4.55
TOTAL: 311.93		TOTAL: 274.12		

PLOT : 18.36.37 Fri 19 DEC 1984 /GR-M/BHH4 /ALT/DRAWN/DRAW.P43


20.0
32.0
36.0
38.0
56.0
60.0
62.0
76.0
80.0
84.0
100.0
104.0
108.0
112.0
116.0
118.0
140.0
144.0
148.0
152.0
156.0
160.0
162.0
224.0
228.0
232.0
248.0
252.0
256.0
296.0
300.0
304.0
308.0
310.0
GAMMA API
CALIPER CM
APPARENT DENSITY GRAMS / CC
DDH-84-004
GULF CANADA RES. INC.
MT. KLAPPAN


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
311.1
GAMMA API
N-N KCPS
COMPU-LOG V8L2 PLOT 08-12-84
695
DDH-84-004
GULF CANADA RES. INC.
MT. KLAPPAN
HOLE DIAMETER = 09.5
PROBE # 8656A - 089
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 242
SENSOR #4 CAL BIAS = 0
DATA V8L2 TRUCK # CB11
K. SKARBO APPL.#1007(L)


COMPU-LOG VOL 2: PLOT 08-12-84
695
DDH-84-004
GULF CANADA RES. INC.
MT. KLAPPAN
HOLE DIAMETER = CAL'S
PROBE # 9008M = 454
SENSOR #4 CAL STD CPS = 4586
SENSOR #4 CAL RUN CPS = 7983
SENSOR #4 CAL BIAS = 42
DATA YBL2 TRUCK # F811
K. SAMRAD APPL.#102811
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
311.0
150
APPARENT D/CC
GAMMA API
0
200
CALIPER CM
-1
LOG10 RES OHM M
3.5
1000

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

GR - Mt. Klappan 84(3).A

VERTICAL DEVIATION

695

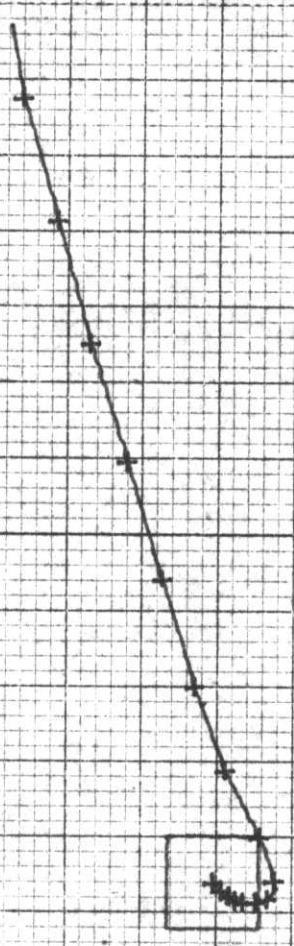
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2

CLIENT : GULF CANADA RES.INC.
LOCATION : MT. KLAPPAN
HOLE ID : DDH-84-004
DATE OF LOG : 08-12-84
PROBE : 9055A 0039

SCALE: .75 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 310.7 M
AZIMUTH: 346.3
DISTANCE: 8.74 M

+ = 20.0 M INCR.
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



CENTURY GEOPHYSICAL

LEGEND

RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
SWAMP
WATER LEVEL — EL 5051
TREE LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — .7634

SCALE 1:10,000

0 0.25 0.5 0.75 1.00 MILES

100 0 100 200 300 400 500 600 700 800 900 1KM METRES

HOBBIT-BROATCH RESOURCE AREA
INDEX MAP

LEASE BOUNDARY

GEOLOGICAL LEGEND

FIELD CONTROL POINT ⊕ CP155
DIAMOND DRILL HOLE ⊙ DDH82002
TRENCH LOCATION ⋈

GR.-Mt Klappan 84(2) N

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY

HOBBIT-BROATCH

TRENCH & DRILL HOLE LOCATION MAP

PREPARED BY: G.S., E.L.	SCALE 1:10,000
APPROVED BY: G.S.	DATE: JAN. 1985 DWG. No. KPN84HB-C03

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