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FIG (B)



FIGURE 3



C-44 0 ್ಷಎ -ID NO COAL 05-31 C-42 O 28.0 COLLARED IN 'A' SEAM. S-40 0 OS-23 OC-36 G-1 ...05-30 G-8 24.8 Gt Х 30.9 -<u>34.]2</u> /@.... S-35 OF <u>31.09</u> G-6 /0 [28.1] C-13 No Log No Core - 0 <u>S</u>-29 [26.9]

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FIGURE 6





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= PR- JUKUNKA 75(3)A-1=

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PR SUKUNKA 75(3)A-1

SUKUNKA COAL PROJECT PLATE 1 AREA

VOLUME 3

DRILL HOLE DATA DIAMOND DRILL HOLES P1-1 TO P1-3, P1-5 P1-13 TO P1-20

ROTARY DRILL HOLES P1-4, P1-6 TO P1-12





BORE NUMBER D.D.H. P1-1

Grid Reference:	47989N 77254E
Date Commenced:	Nov. 12/74 Date Completed: Nov. 13/74
Collar R.L.:	4093 ft. Standard Datum.
Total Depth:	82 ft.
Drilled by:	Sedco Drilling Co.
For:	Coalition Mining Ltd.
Using:	$3\frac{1}{2}$ " Dia. Christensen Core barrel with Mayhew 1500 rig
Radiation Logs:	Gamma Ray, Neutron & Density
By:	Roke Oil Enterprises Ltd.
Logged by:	G. R. Wallis

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4063.1	4.65	100%	
Chamberlain	4026.8	6.30	92.28	Depth and thickness determined from density log.

Note: Core not in total agreement with radiation logs; reason appears to be depths measured by driller from casing top and not ground level, also possible malfunction in neutron tool.





Analytical Results

D.D.H. P1-1

Sample No.	Seam	Interval	(feet)
507 -	Skeeter	25.25 -	27.20
508	Skeeter	27.20 -	29.90
509	Chamberlain	59.90 -	61.86
510	Chamberlain	61.86 -	66.20

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COALITION MINING

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January 22, 1975

Client Tag		•										•
Lab No.	<u>A.D.L.</u>	Moist.	<u>Ash</u>	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>P.</u>	<u>B.T.U.</u>	F.S.1.	<u>s.g.</u>	GM Wt.	Calc. Factors
<u>SKR 507</u> 1765	-	.6 .6	4.9 4.9 4.9	24.6 24.6 24.7	69.9 69.9 70.4	.61 .61 .61	.02	14,765 14,765 14,855	8 8	1.31	4,550	Air Dried As Received Dry Basis
<u>skr 508</u> 1766 .	-	.7 .7	33.4 33.4 33.6	15.6 15.6 15.7	50.3 50.3 50.7	.39 .39 .39	.02	10,025 10,025 10,095	4 1/2	1.58	5,650	Air Dried As Received Dry Basis
<u>SKR 509</u> . 1767	-	1.9 1.9	2.4 2.4 2.4	23.6 23.6 24.1	72.1 72.1 73.5	• 53 • 53 • 54	.02	14,940 14,940 15,230	2 1/2 2 1/2	1.33	10,000	Air Dried As Received Dry Basis
<u>SKR 510</u> 1768	- ,	.9 .9	32.7 32.7 33.0	17.8 17.8 18.0	48.6 48.6 49.0	.61 .61 .61	.03	10,075 10,075 10,165	2 · 2	1.55	4,630	Air Dried As Received Dry Basis

SUKUNKA D.D.H. Pl-1

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (St)	Remarks
OVERBURDEN	4.00	4.00		No core - tricone drilling
SANDSTONE, fine to medium grained, light grey, bedding wavy and cross bedded; mudstone and carbonaceous partings on bedding planes; carbonaceous in lower 0.50'.	16.20	20.20	10.40	
COAL, bright	0.25	20.45	0.25	÷
MUDSTONE, dark grey to carbonaceous, containing silty phases.	3.10	23.55	3.10	
SANDSTONE, as above	1.70	25.25	1.70	Roof of seam
COAL, dull and bright.	1.95	27.20	1.95))	
dull and bright, contains stone coaly bands, core broken.	0.90	28.10	0.90))	SKEETER SEAM
dull and bright; trace shearing	1.00	29.10	1.00 }	

SUKUNKA D.D.H. P1-1

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
STONE, coaly.	0.20	29,30	0.20	SKEETER SEAM
COAL, bright and dull.	0.60	29.90	0.60	
MUDSTONE AND SILTSTONE,LAMINITE, contains occassional sandy lense ranging between 0.02 to 0.20'.	22.10	52.00	15.20	Floor of seam
MUDSTONE, light to mid grey.	7.90	59.90	7.10	Seam roof
COAL, sheared.	0.73	60.63	0.72)	
dull and bright, minor shearing.	0.63	61.26	0.63)	CHAMBERLAIN
sheared.	0.60	61.86	0.60)	DEAM
dull and bright; minor shearing throughout in planes at 35 ⁰ and 45 ⁰ to core axis. Cleat vertical spaced 0.01' apart and well developed.	4.34	66.20) 4.30)	
SANDSTONE, light to mid grey, carbonaceous minor vertical jointing, ironstained; medium grained, quartz-	15.80	82.00	. 7.50	Seam Floor Core ends 72.00'.
joint fillings.		· ·		Cuttings from 72' - 82' T.D.

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GAMMA RAY INCREASES



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Grid Reference:	47690N 76870E
Date Commenced:	Nov. 14/74 Date Completed: Nov. 15/74
Collar R.L.:	4027 ft. Standard Datum.
Total Depth:	81 ft.
Drilled by:	Sedco Drilling Ltd.
For:	Coalition Mining Ltd.
Using:	Christensen Core Barrel, 3½" Diamond core.
Radiation Logs:	Gamma Ray, Neutron and Density
By:	Roke Oil Enterprises Ltd.
Logged by:	G. R. Wallis

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3995.71	5.94	46.3%	
Chamberlain	3963.60	6.00	97.5%	

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Analytical Results

D.D.H. P1-2

<u>Sample No</u> .	Seam	Interval (feet)	
511	Skeeter.	25.35 - 27.22	
512	Skeeter	27.75 - 31.29	
513	Chamberlain	57.40 - 58.40	
514	Chamberlain	58.40 - 63.40	

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COALITION MI	NING			• •							Jar	uary 22, 1975	
<u>Client Tag</u> Lab No.	<u>A.D.L.</u>	Moist.	Ash	Vol.	<u>F.C.</u>	<u>s.</u> (P.)	B.T.U.	<u>F.S.I.</u>	<u>s.c.</u>	<u>GM Wt.</u>	Calc. Factors	
						· .			-		, .•		
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<u>SKR 511</u> 1769	2.0	1.0 3.0	4.2 4.1 4.2	24.2 23.7 24.4	70.6 69.2 71.4	.51 .50 .52	.02	14,705 14,410 14,855	7 1/2	1.31	4,150	Air Dried As Received Dry Basis	
<u>SKR 512</u> 1770	-	.6 .6	19.1 19.1 19.2	20.0 20.0 20.1	60.3 60.3 60.7	.46 .46 .46	.01	12,475 12,475 12,550	٤ <u>ـ</u> ٤ <u>ـ</u>	1.43	847.3	Air Dried As Received Dry Basis	
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Birtley Engineering Subsidiary of Great West Steel Industries

P1-2

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COALITION MI	NING ·							·	Februa	ry 27, 1975	
Sample: SKR	513 and	514								• • •	
Client # Lab No. SKR 513 2115	<u>A.D.L.</u> 2.9 Raw	<u>R.M.</u> 0.8 3.7	<u>Ash %</u> 4.4 4.3 4.4	<u>Vol.</u> 22.7 22.0 22.9	F.C. 72.1 70.0 72.7	<u> </u>	<u>B.T.U.</u> 14,800 14,370 14,920	<u>S.G.</u> 1.32	F.S.1. 2 1/2	Calc. Fac Air Dry B As Rec'd Dry Basis	tors asis
SIZE ANALYSE	<u>s</u>						·				
Size Fractic	n	Wt %		<u>Ash %</u>		Cum	<u>Wt %</u>	Cum As	<u>sh %</u>	<u>F.S.I.</u>	
+ 28 M - 28 M		71.0 29.0		4.1 4.8		71 100	.0 .0	4. 4.:	1 3	3 1/2 1 1/2	
SINK-FLOAT A	NALYSES	+ 28 M								,	
-1.30 1.30-1.40 1.40-1.60 +1.60		36.5 55.4 4.8 3.3		1.8 2.9 13.9 36.0		36 91 96 100	.5 .9 .7-	1.1 	8 5	6 1 1/2 1/2- 1/2	
FROTH FLOTAT	FION ANAL	YSES -	28 M				-			•	``
Stage Stage Tails		50.4 5.9 43.7		2.9 5.1 7.0		50 56 100	.4 .3 .0	2.: 3. 4.	9 1 8	1 1/2 1 1/2 1 1/2	
F.F. Parame	ters		1						~		
		Pulp I Reagen Condi Stage Stage	Density nt Dosage tioning Ti 1	ψe	- - · ·	10% 0.24 60 s firs Seco	lbs/Ton econds t minute ond minute	' Kerosen froth froth	e:MIBC (4:	· 1)	

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Birtley Engineering Subsidiary of Great West Steel Industries

P1-2

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COALITION MINING

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February 27, 1975

Sample: SKR 513 and 514

Client #									۰.	
Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	<u>Ash %</u>	V.M.	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	S.G.	F.S.1.	Calc. Factors
<u>SKR 514</u> 2116	2.1 Raw	0.3 2.4	3.5 3.4 3.5	25.3 24.8 25.4	70.9 69.4 71.1	0.42 0.41 0.42	15,030 14,720 15,080	1.30	7 1/2	Air Dry Basis As Rec'd Dry Basis
SIZE ANALY	SES		•							-
Size Fraction		Wt %	_	Ash %		Cum Wt %		Cum Ash %		F.S.I.
+ 28 M - 28 M		74.2 25.8	·	3.9 3.1		74.2 100.0		3.9 3.7		7 1/2 · 7 1/2
SINK-FLOAT	ANALYSES	+28 M		•						
-1.30 1.30-1.40 1.40-1.60 +1.60		61:3 34.2 1.8 2.7		1.3 3.2 10.4 68.2		61.3 95.5 97.3 100.0		1.3 2.0 2.1 3.9		8 1 1/2 1/2 N.A.
FROTH FLOT	TATION ANAL	YSES -2	28 M	,						
Stage Stage Tails		81.8 9.7 8.5		2.2 3.2 11.1		81 91 100	.3 .5 .0	2.2 2.3 3.	2 3 1	8 6 1/2 2 1/2
<u>F.F. para</u> r	neters	' r				100		ı		·

Pulp Density-10%Reagent Dosage-0.24 lbs/Ton Kerosene:MIBC (4:1)Conditioning Time-60 secondsStage I-first minute frothStage II-second minute froth

Birtley Engineering

Subsidiary of Great West Steel Industries

P1-2

1 (3) 1
COALITION MINING

February 27, 1975

Sample: SKR 513 and 514

	, • .	<u>R.M.</u>	Ash %	<u>V.M.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	<u>S.G.</u>	Calc. Factors
2178-	10	0.6	3.9	24.5	71.0	.42	14,820	5 1/2	1.31	Air Dry Basis
and 514	13	· •	3.9	24.6	71.5	.42	14,910			Dry Basis
2232	,	0.7	2.4	24.3	72.6	.46	14,950	4 1/2		Air Dry Basis
Comp. 2115 (-1. and 2116 (-1.60	.60) D)		2.4	24.5	73.1	.46	15,060	×		Dry Basis

Birtley Engineering Subsidiary of Great West Steel Industries

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN, Weathered rock and soil	4.00	4.00		No core to 13' .
SILTSTONE	7.00	11.00		(Identified by Radiation Log)
SANDSTONE, medium grained, light to mid grey, salt and pepper, cross bedded, carbonaceous partings and mudstone laminae on bedding planes.	9.50	20.50	7.50	
MUDSTONE, dark grey, slightly carbonaceous	4.85	25.35	4.85	Seam roof
COAL, dull and bright	0,84	26.19	0.84)	
MUDSTONE	0.01	26.20	0.01)	
COAL, dull and bright	0.30	26.50	0.30)	SKEETER SEAM
MUDSTONE	0.01	26.51) 0.01)	
COAL, dull and bright	0.71	27.22	0.71	
MUDSTONE, carbonaceous	0.49	27.71 ·	·) 0.49)	•
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, dull and bright	3.40	31.15	0.21)	SKEETER SEAM
stone, coaly	0.14	31.29) 0.14)	(Radiation Log - correction core loss 3.19)
MUDSTONE, dark grey	0.71	32.00	0.71	Seam floor
SANDSTONE, fine grained, light to mid grey; graded bedded units to siltstone and occassionally mudstone present; occassional calcite filled tension joint.	2.55	34.55	2.55	
SILTSTONE AND MUDSTONE, laminated in upper 0.70' grading downwards into slump structures and swirls, sand blebs.	1.40	35.95	1.23	
COAL AND CLAYSTONE, interbedded. Units to 0.05' maximum.	0.30	36.25	0.30	. <i>'</i>
MUDSTONE AND SILTSTONE, laminated, as above with exception of sedimentary structures.	1.80	38.05	1.80	
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Geological Description of Strata	Estimated Thickness {{t]	Estimated Depth to Stratum Floor_(ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , stoney, quartz filled bedding plane at top of unit; contains occassional partings of bright coal to 0.03'.	0.90	38.95	0.90	
COAL, bright with minor dull bands	0.30	39,25	0.30	
MUDSTONE, mid to light grey carbonaceous partings present; silty laminae and swirls throughout unit.	8.05	47.30	8.00	
SILTSTONE, light grey, containing mudstone laminae throughout.	2.70	50.00	2.40	
LAMINITE, mudstone with siltstone partings on bedding plane, generally fissile; zones of subvertical iron- stained joints.	7.40	57.40	7.40	Seam roof
COAL, sheared intense,	1.00	58.40	1.00)	CHAMBERLAIN SEAM
dull and bright, sheared throughout on plane at 35 ⁰ to 45 ⁰ to core axis. Shearing decreases in intensity toward base of seam; occassional joint	· 5.00	63.40	4.85)	
ironstained subparallel to core axis. $\widehat{\omega}$				κ.

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, grey, medium grained quartz-lithic, carbonaceous at top and containing coaly wisps, calcareous in part.	5.35	68.75		Seam floor Core ends 71.00' Rotary Drill cuttings 71 - 81
MUDSTONE, mid to dark grey, silty, micromicaceous, occassional coaly particles very rare pyrites.	4.25	73.00	· .	
SANDSTONE, as above	8.00	81.00		T.D.
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Recorded By		Truck No.	Operating Time		Rm @ °F		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Death Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measure	Log Measured from	Permanent Datum					TWP	SEC	LSD			RDD	
PETERSON Witnes		35	3 HOURS				6-1/4	38	AIR/WATER			82	77	76	00	76	23 NOVEMBER 1	ONE		1 from GROUND LEVEL	CROIND LEVEL.	GROUND LEVEL	PROVINCE BRITISH			LOCATION		WELL P-1-2	COMPANY COALITI	OIL ENTERPRI			
ssed By SHIELDS	K																1974				Ft. Above Perm. Datum	Elev.	I COLUMBIA					非2	LON MINING LIMITED	SES LTD, CALGARY,		GAMMA RAY NEUTI CALIPER DENSILOG	
	とし	ト												-						G.L.	n CSG	К.В.	NIL	Other Services:						ALBERTA		RON LOG	
											<u>;</u>				E	QL	JIP	ME	NT	D	A٦	ΓA											
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BORE NUMBER R.D.H. P1-4A

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Grid Reference:	47625 N 77984 E	۰.	
Date Commenced:	Nov. 16/74	Date Completed:	Nov. 18/74
Collar R.L.: Total Depth:	4115 ft. 191 ft.	Standard Datum.	
Drilled by: For: Using:	Sedco Drilling Coalition Mining Mayhew 1500 Rotar	Ltd. ry Mud Rig	
Radiation Logs: By:	Gamma Ray, Neutro Roke Oil Enterpri	on and Density ises Ltd.	
Logged by:	G. R. Wallis		

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COAL SEAM INTERSECTIONS

	Floor	Thickness		
Seam	R.L.	(ft.)	Recovery	Remarks
Skeeter	3983	6.50	No Core	
Chamberlain	3942.5	6.3	No Core	





COALITION MINING

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February 27, 1975

Client # Lab No. A.D.L. R.M. Ash % Vol. F.C. S. B.T.U. F.S.I. Calc. Factorial SKR 530 SKR 530	actors
<u>SKR 530</u>	
2124 Raw 22.1 44.9 8,200 2 Air Dry	Basis
SIZE ANALYSES.	
Size Fraction Wt % Ash % Cum Wt % Cum Ash % B.T.U. F.S.I. Calc. F.	actors
+ 100 M 92.5 43.2 92.5 43.2 8,490 - Air Dry	Basis
- 100 M 7.5 52.5 100.0 43.9 6,920 1/2 Air Dry	Basis
SINK-FLOAT ANALYSES +100 M	
- 1.60 48.2 5.4 48.2 5.4 14,810 4 Air Dry	Basis
+ 1.60 51.8 78.3 100.0 43.2 - 1/2 Air Dry	Basis
<u>Analytical Results</u> - <u>R.D.H. P1-4</u>	
Sample No. Seam Interval (feet)	
530 Skeeter 125.5 - 132.0	

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Birtley Engineering Subsidiary of Great West Steel Industries

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	2.5	2.5		Rotary cuttings to 20'.
SANDSTONE, very fine to fine grained, lithic, mid grey, calcareous, weathered.	12.50	15.00		
MUDSTONE, mid grey, very silty, calcareous, micro- micaceous.	8.00	23.00	1.60	Seam roof
COAL, dull and bright	5.00	28.00	4.70	CHAMBERLAIN SEAM
SANDSTONE, light to mid grey, carbonaceous, coaly partings on bedding planes in upper 20' of unit, carbonaceous zone between 53.5 and 55.5', vertical ironstained joints between 67 and 72'.	58.00	86.00	58,00	Seam floor T.D.
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Recorded 8y	Truck No.	Operating Time		Rm @ ^O F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	well Depths Measur	Log Measured from	Permanent Datum_		- - -		<u>WM</u>	RGE	SEC	LSD				
PETERSON						 								!	2		ed from (4)		GROUNI	PROVINC		FIELD	LOCATIO		WELL	COMPAN				
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BORE NUMBER D.D.H. P1-3

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Grid Reference:	48784 N 77150 E
Date Commenced:	Nov. 15/74 Date Completed: Nov. 16/74
Collar R.L.:	4113.0 ft. Standard Datum.
Total Depth:	86 ft.
Drilled by:	Sedco Drilling Ltd.
For:	Coalition Mining Ltd.
Using:	2" Diam. Christensen Core Barrel with Mayhew 1500 Drilling Rig.
Radiation Logs:	Gamma Ray, Neutron & Density
By:	Roke Oil Enterprises Ltd.
Logged by:	G. R. Wallis

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COAL SEAM]	INTERSECTIO	<u>NS</u>		
Seam	Floor R.L.	Tḥickness (ft.)	Recovery	Remarks
Chamberlain	4085	5.00	94.0%	



COALITION MINING

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April 3, 1975

LAB NO. 2810

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	RAW ANALYSES					
		<u>A.D.M.</u>		Ash %		
		1.2		3.8		·
	SINK-FLOAT ANALYSES					
	S.G. Fraction	<u>Wt %</u>	<u>Ash %</u>	Cum Wt %	Cum Ash %	<u>F.S.I.</u>
	- 1.60	97.8	2.9	97.8	2.9	1 1/2
	+ 1.60	2.2	64.5	100.0	4.3	
•	Analytical Rescult	<u>s</u> - <u>D.D.H.</u>	<u>P1-3</u>			
	Seam	Interval	l (feet)			
	Chamberlain	23.00 -	- 28.00	٩	•	

Birtley Engineering Subsidiary of Great West Steel Industries

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Recorded By PETERSON Witnessed By	Truck No. 35	Operating Time 3 HOURS		Rm @ ^U F		Min. Diam. 4-1/2	Fluid Type ALR/WATER	Casing Drille:	Casing Roke	Depth Driller 190	Depth Reached 190	Footage Logged 189	Last Reading 000	First Reading 189	Date 29 NOVEMBER 1974	Run. No. ONE		Well Depths Measured from <u>CROUND LEVEL</u>	Log Measured from <u>CROUND LEVEL</u>	Permanent Datum GROUND LEVEL	PROVINCE BRITISH COLUM	· · · · · · · · · · · · · · · · · · ·	FIELD SUKUNKA	WM LOCATION	RGE	TWP WELL P-1-4A		FILE NO COMPANY COALITION MIN	OIL ENTERPRISES L		
SHIELDS	5/4																	GL	Ft. Above Perm. Datum CSG	Elev. K.B.	STA NEL	Other Services:						ING LIMITED	TD. CALGARY, ALBERTA	MMA RAY NEUTRON LOG CALIPER DENSILOG	
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ROTARY DRILL HOLE STRIP LOG

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COMPANY: COALITION MINING LTD.
PROPERTY: SUKUNKA COAL PROJECT
HOLE NUMBER: P1-4, P1-4A
LOCATION: 47625 N 77984 E
DATE COMMENCED: NOVEMBER 16, 1974
DATE COMPLETED: NOVEMBER 18, 1974
DEPTH: 191 FEET
GROUND ELEVATION: 4115 FEET A.S.L.
LOGGED BY: G.R. WALLIS
REMARKS: P1-4, drilled by SEDCO DRILLING using rotary fluid drilling, collapsed before radiation logs run. RDH-P1-4A, redrilled 15 feet from P1-4 by CENTURY GEOPHYSICAL using rotary air (Nov. 27-28, 1974), used for logging.
LEGEND
•••••••••••••••••••••••••••••
SANDSTONE COAL BRIGHT (SOLID) - PERCENT INDICATED G GLAUCONITIC
U U
SCALE:1 in. = 10 ft. VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING GAMMA RAY LITHOLOGY DESCRIPTION
SILTSTONE: mid grey, angillaceous, micromicaceous.
10 - "" "" " " " " " " " " " " " " " " "
SANDSTONE: light grey, quartz-lithic, calcareous cement in part with calcite filled joints / fractures.

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IIIIIIIII	
1 1 1 1 2 3 ANDSTONE: as above	
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1111111 A ANDSTONE: OS Above containing pebble bands.	
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70 - · · OAL: mostly bright (20 %).	· · · · · · · · · · · · · · · · · · ·
111111111 SILTSTONE: mid arey slightly argillaceous, weakly calcareous (V.P.S	. 70-75')
	ingillaceous,
11111111 S I" " " Following optimized over predice to very five Serve	ostone at base.
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	· · · · · · · · · · · · · · · · · · ·
SILTSTONE: as above & MUOSTONE: as above.	
Siltstone: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base, of unit.	
SILTSTONE: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base of unit.	
Superane: likt and this (and amigantly); also approves and the second and the sec	ous flecks
SILTSTONE: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base of unit. 100 SANDSTONE: light grey, lithic (predominantly); calcareous, carbonaceous toward base of unit.	ous flecks
SILTSTONE: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base of unit. 100 SANDSTONE: Light grey, lithic (predominantly); calcareous, carbonaceous throughout. Calcite on fracture plains, evidence of me oresent Question Lithic obsers present to verying dea	ous flecks ovement
SILTSTONE: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base of unit. 100 SANDSTONE: Light grey, lithic (predominantly); calcareous, carbonaceous throughout. Calcite on fracture plains, evidence of ma present. Quartz-lithic phases present to varying deg	ous flecks ovement grees.
SILTSTONE: as above & Muostone: as above. CLAYSTONE: carbonaceous toward base of unit. 100 SANDSTONE: light grey, lithic (predominantly); calcareous, carbonaceous throughout. Calcite on fracture plains, evidence of monopresent. Quartz-lithic phases present to varying deg	ous flecks ovement grees.
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		Mudstone: silty, light brown, calcareous.
-	165	No Sample
	170	CHAMBERLAIN SEAM: COAL: dull and bright, interpreted from radiation logs.
	175	[
		SANDSTONE: quartz-lithic, carbonaceous. Carbonaceous material interpreted from density and neutron logs. V.P.S.
	185	
	190	
	195 -	TOTAL DEPTH 191 feet
	200	
	205	
	210	

BORE NUMBER D.D.H. P1 - 5

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Grid Reference:	47395.0 N 77659.0 E
Date Commenced:	Nov. 18/74 Date Completed: Nov. 19/74
Collar R.L.: Total Depth:	4090 ft. Standard Datum. 160 ft.
Drilled by: For: Using:	Sedco Drilling Ltd. Coalition Mining Ltd. 2" Diam. Christensen Core Barrel with a Mayhew 1500 Drilling rig.
Radiation Logs:	Gamma Ray, Neutron and Density
By:	Roke Oil Enterprises Ltd.
Logged by:	G. R. Wallis

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COAL SEAM IN	NTERSECTION	<u>ns</u>		
Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3990.50	5.40	18.48%	Type of barrel used.
Chamberlain	3945.00	6.20	48.39%	Type of barrel used.





COALITION MINING

SKR Cores (HQ TT)

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Client # Lab No.		<u>A.D.L.</u>		<u>Ash %</u>	<u>B.T.U.</u>	<u>.</u>	.
SKR 518 2195	· /	1.2	x •	3.5	14,940	;	7 1/2
	•						• .

Analytical Results - D.D.H. P1-5

<u>Sample No</u> .	<u>Seam</u>	Interval (beet)
518	Chamberlain	138.80 - 145.00

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Birtley Engineering Subsidiary of Great West Steel Industries

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Foo <i>t</i> age Recovered (ft)	Remarks
OVERBURDEN	3.0	3.0		Tricone drilling to 21.0'
SANDSTONE, light grey, fine grained, calcareous, occassional subvertical ironstained joints.	36.65	39.65	18.45	,
SILTSTONE AND MUDSTONE INTERBEDS, mudstone dominant in lower part of unit; unit average 0.10'; vertical joints throughout.	6.35	46.00	6.35	•
SANDSTONE, as above.	4.20	50.20	4.20	
SILTSTONE AND MUDSTONE INTERBEDS, units varying between 0.05 to 0.10'. Both lithologies dark grey and calcareous.	8.70	58.90	8.70	
SILTSTONE, light grey, calcareous, minor mudstone lenses in lower 0.50'.	1.50	60.40	1.50	, ,
SILTSTONE AND MUDSTONE INTERBRDS, as above.	2.20	62.60	2.20'	

SUKUNKA D.D.H. P1-5

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Foo <i>t</i> age Recovered (ft)	Remarks
SILTSTONE, light grey, slightly calcareous, containing occassional mudstone partings	3.90	66.50	3.90	-
MUDSTONE, grading to siltstone in lower section of unit; weakly laminated; silty fractions calcareous.	4.50	71.00	4.70	t
SILTSTONE,	4.80	75.80	`j	
MUDSTONE,	3.50	79.30		Seam roof Interpretation
SANDSTONE, fine grained, light to mid grey, carbonac-	10.70	90.00	16.35	from radiation log. Core mis- placed in core
MUDSTONE, possibly carbonaceous in part.	4.10	94.10		box and markers incorrectly
COAL AND CLAYSTONE, carbonaceous.	0.90	95.00		marked.
SILTSTONE, dark grey.	1.00	96.00		SKEETER SEAM (Thickness inter-
COAL, weathered.	3,50	99.50)	preted from radiation log)

(2)

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE, dary grey grading to mudstone, carbonaceous in part in lower 3.0' of unit. Shelly fossils present.	8.70	108.20	4.10	Seam floor
SANDSTONE, fine to medium grained, light-mid grey, coaly partings throughout.	5.00	113.20	5.00	
SILTSTONE AND VERY FINE SILTSTONE, light grey inter- bedded with mudstone, light to mid grey.	14.80	128.00	10.70	,
MUDSTONE AND CLAYSTONE, carbonaceous.	2.00	130.00	0.40	
SILTSTONE AND MUDSTONE, laminite. Mid to dark grey, occassional phases of siltstone; lower 2.0' silty mudstone.	8.80	138.80	8.80	Seam roof
<u>COAL</u> , dull and bright, with numerous bright bands; minor shearing and evidence of oxidation.	6.20	145.00	3.00	CHAMBERLAIN SEAM (Seam thickness interpreted from radiation log.)
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, medium grained, mid grey, carbonaceous in upper part of unit.	15.00	160.00	1.90	Seam floor (Hole drilled with tri-cone bit from 148' to 160') T.D.
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(4)				

Recorded By		Truck No.	Operating Time			Rm @ Ct	T	Min, Diam,	Liquid Leve:	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Beading	Date	Run, No.		Well Depths Meas	Log Measured fro	Permanent Datum					RGE	TWP	SEC		FILE NO				
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NEUTRON INCREASES



BORE NUMBER R.D.H. P1-6

Grid Reference: 47090 N 77302 E

Date Commenced:	Nov. 20/74	Date Completed:	Nov. 21/74
Collar R.L.: Total Depth:	3997 ft. 77 ft,	Standard Datum.	
Drilled by: For: Using:	Sedco Drilling Coalition Mining Mayhew 1500 Rota:	Ltd. ry Mud Rig	
Radiation Logs: By:	Gamma Ray, Neutro Roke Oil Enterpri	on and Density ses Ltd,	

Logged by: G. R. Wallis

COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3987.0	4.0	No Core	
Chamberlain	3938	8.0	No Core	





Recorded By PETERSON Witnessed By SHIE		Truck No. 35	Operating Time 3 HOURS			Rm @ ⁰ F		Min. Diam. 4	Liquid Level	Fluid Type AIR/WATER	Casing Dritter	Casing Roke	Depth Drifler 77	Depth Reached 77	Footage Logged 76	Last Reading 00	First Reading 76	Date 23 NOVEMBER 1974	Run. No. ONE		Well Depths Measured from GROUND LEVEL	Log Measured fromCROUND LEVEL Ft. Abow	Permanent Datum <u>GROUND LEVEL</u> Elev.	PROVINCE BRITISH COLUMBIA		FIELD SUKUNKA				TWP WELL P-1-6		FILE NO. COMPANY COALITION MINING LIN					GAMMA R
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ROTARY DRILL HOLE STRIP LOG

COMPANY: COALITION MINING LTD. PROPERTY: SUKUNKA COAL PROJECT HOLE NUMBER: P1-6 LOCATION: 47090 N 77302 E DATE COMMENCED: NOVEMBER 20, 1974 DATE COMPLETED: NOVEMBER 21, 1974 DEPTH: 77 FEET GROUND ELEVATION: 3997 FEET A.S.L. LOGGED BY: G.R. WALLIS REMARKS: Drilled by SEDCO DRILLING using rotary mud drilling.

			· · · · · · · · · · · · · · · · · · ·
			LEGEND
	CONGLOMERATE		MUDSTONE "" (PERCENTAGE OF EACH ROCK "" COMPONENT INDICATED)
	SANDSTONE		COAL BRIGHT (SOLID) - PERCENT INDICATED G GLAUCONITIC DULL PERCENT INDICATED
	и о в и и и и в и и и В и и и		STONE COALY OR CLAYSTONE CARBONACEOUS
	· · · · · · · · · · · · · · · · · · ·	SCALE	1 in. = 10 ft. V.P.S. VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING RATE MIN/FT	GAMMA RAY API	LITHOLOGY	DESCRIPTION
	5		DVERBURDEN: Sandstone and Siltstone: thickness not recorded.
			- SKEETER SEAM: COAL: dull and bright - fresh appearance.
		н [.] н ц н п п п	E SILTSTONE: light brown grey, orgilloceous, colcoreous
			CLAVSTONE: Carbonaceous.
	20		
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	30		SANDSTONE: OS ABOVE
			SUITSTONE: OS ODOVE
	35	11 11 11 1 11 11 	
	40	- 11 11 (1) - 11 	- SANDSTONE: as above
	45		
	50	· · · · · · · · · · · · · · · · · · ·	MUDSTONE: interpreted from log - No SAMPLE.
	5		<u>CHAMBERLAIN SEAN</u> : COAL: bright and duil.
	60		- Sampstonis: fire and medium argined, light arex, quartz - lithic and carbanaceaus.
	65		
	70	• • • • • • • •	
		· · · · · · · ·	
		· · · · · · ·	Tore DEPTH 77 Pert
	80		
	- 85		
	90		
	95		
	I IUU		

BORE NUMBER R.D.H. P1-7

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Grid Reference: 48090 N 77510 E

Date Commenced:	Nov. 24/74	Date Completed:	Nov,	26/74
Collar R.L.: Total Depth:	4121 ft. 130 ft.	Standard Datum.		
Drilled by: For: Using:	Century Geophysic Coalition Mining Rotary Air Rig	cal Corporation Ltd.		
Radiation Logs: By:	Gamma Ray, Neutro Roke Oil Enterpr:	on and Density ises Ltd.		
Logged by:	G. R. Wallis			

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COAL SEAM INTERSECTIONS

	Floor	Thickness		
Seam	R.L.	(ft.)	Recovery	Remarks
Skeeter	4042.5	4.50	No Core	
Chamberlain	4008.8	6.20	No Core	





COALITION MINING

1

February 27, 1975

Sample: SKR 5	530 to 5	34						
Client # Lab No.	A.D.L.	<u>R.M.</u>	<u>Ash %</u>	<u>Vol. F.</u>	<u>c. s.</u>	<u>B.T.U.</u>	F.S.I.	Calc. Factors
<u>sKR 531</u> 2125 Raw 1	12 . 7		32 . 0			10,350	4 1/2	Air Dry Basis
SIZE ANALYSES	•							
Size Analyses		Wt %	Ash %	• Cum Wt %	Cum Ash %	<u>B.T.U.</u>	F.S.I.	Calc. Factors
+ 100 M	•	87.6	29.3	87.6	29.3	10,800	-	, Air Dry Basis
- 100 M		12.4	44.8	100.0	31.2	8,210	1/2	Air Dry Basis
SINK-FLOAT AN	ALYSES	+100 M			`			
- 1.60		65.4	4.0	65.4	4.0	15,010	7 1/2	Air Dry Basis
+ 1.60		34.6	77.0	100.0	29.3	-	N.A.	Air Dry Basis

Analytical Results - R.D.H. P1-7

Sample No.	Seam .	Interval (heet)
531	Chamberlain	106.0 - 112.2

Birtley Engineering Subsidiary of Great West Steel Industries

Recorded By	Truck No.	Operating Time		Rm @ ^O F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No.	Well Depths Measured 1	Log Measured from	Permanent Datum				<u>W</u> M	RGE	SEC	LSD FILE NO.			え	
PETERSON Witnessed By	35	3 HOURS			4-3/4	73	AIR/WAIER			130	130	129	000	129	26 NOVEMBER 1974	ONE	rom GROUND LEVEL	GROUND LEVEL.	GROUND LEVEL	PROVINCE BRITISH COL		FIELD SUKUNKA	LOCATION		WELL P1-7	COMPANY <u>COALITION M</u>	OIL ENTERPRISES L			
SHIELDS																		Ft. Above Perm. Uatum	Elev,	UMBIA						INING LIMITED	TD. CALGARY,		DENSILOG	AMMA RAY NEUTRO
					-													CSC	K.B.	NIL	Other Services:						ALBERTA			ON LOG
													E	Ol	JIP	ME	NT	DA	TA	· ·										
						GA	мм	A F		7							PLIN								NEUTI	RON	7			
тоо Тоо	L MO	DEI	NO.				 			<u> </u>	1							TY	PF							NE	UTRO	N/N	IEUTF	ION
		<u>ter</u>								$1\frac{1}{10}$	5						<u>тоо</u>	<u>L</u> N	10D		0						1분			
	YPE			<u>NU.</u>						GE	IG	ER					DET	EC1		MOD	ELN	۷ 0 .					10			
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						Ģ	ENE	RAI	L									SEI		<u>. NO,</u>						59	8			
HOIS	<u>st tr</u>	UCK	<u>K NO</u>					35										SP/	ACIN	G						17	/ INCH			
	<u>'RUM</u> E LISER	<u>INT</u>	<u>TR</u> UÇ NO	<u>K NO.</u>														TY STI	PE REN	GTH						<u>А</u> П З (UB1Ed			
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ROTARY DRILL HOLE STRIP LOG

	R	DTARY DI	RILL HOLE	STRIP LOC	9	65	57
	COMPANY: COA PROPERTY: SUB	ALITION (UNKA (MINING COAL PRO	LTD. DJECT			
	HOLE NUMBER: PI-		7510 5				
	DATE COMMENCED:			071			
	DATE COMPLETED:		SER 24, 1 SER 26 1	974			
	DEPTH: 130	FEET	JER 20, 1	· · ·			
	GROUND ELEVATION	I: 4121 FE	ET A.S.L.				
	LOGGED BY: G.R	WALLIS			、		
	REMARKS: Smc Dril Usin	all amount led by CE g rotary d	of water ma NTURY GE air drilling.	de above SK OPHYSICAL (EETER S CORPORA	SEAM. TION	
			LEGE	ND			
		ATE	MUDS	TONE	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	INTERBEDDED SILTSTON (PERCENTAGE OF EAC COMPONENT INDICAT	e, mudstone etc. H rock Ed)
	SANDSTONE		COAL	BRIGHT (SOLID) – PERCENT INDICATED DULL PERCENT INDICATED	G	GLAUCONITIC	
	SILTSTONE		STONE OR CI	COALY		ESTABLISHE FAULT PROBABLE POSSIBLE	
		SCALE:1	in. = 10 ft.		V. P. S.	VERY POOR SAMPLI (ABUNDANT CAVING	ES GS)
DRILLING RATE	GAMMA RAY	LITHOLOGY		DE	SCRIPTION		
MIN/FT			,				
			OVERBURDEN				
			SANDSTONE: Weat	thered and fresh, fine .	grained, S+P,	calcareous, quartz-1	ithic,
	3						
			SILTSTONE: mid to	dark grey, micromicace	ous, argillazeo	us, slightly calcareous	
		20 - ", ", ", ", ", "		•			

SANDSTONE: as above Siltstone: as above, containing minor pyrites as veinlets and disseminations COAL AND CLAYSTONE: CORDONACEOUS SANDSTONE: fire grained, light grey, StP, quartz-lithic, calcoreous joint fillings. occasional silty phases toward base at unit. COALY partings and flecks throughout most of unit. 60 70 MUDSTONE: dark grey to carbonaceous with cooly flecks. COAL: dull with minor bright bands (85 /15 %): MUDSTONE: dark SKEETER <u>Seam</u> grey, lense toward base. 80 SILTSTONE: mid grey, micromicaceous. CLAYSTONE: Carbonaceous with cooly partings. 85 Siltstone: mid grey, slightly argillaceous, calcareous containing minor amounts of MUDSTONE: mid grey. MUDSTONE mid grey, micromicaceous. 105 CHAMBERLAIN SEAM: COAL dull with minor bright bands. V.P.S. ·110 SANDSTONE: fine to medium grained, quartz-lithic, carbonaceous. -120 125 -130 TOTAL DEPTH 130 Peet 135 140



BORE NUMBER R.D.H. P1-8

Grid Reference: 46986 N 77085 E

Date Commenced: Nov. 27/74 Date Completed: Nov. 27/74 Collar R.L.: 3938 ft. Standard Datum. Total Depth: 20 ft. Drilled by: Century Geophysical Corporation For: Coalition Mining Ltd. Using: Rotary air rig

Not logged

Logged by: G. R. Wallis

COAL SEAM INTERSECTIONS

	Floor	Thickness		
Seam	R.L.	(ft.)	Recovery	<u>Remarks</u>

Hole drilled to 20 feet in sandstone floor of Chamberlain Seam. Stopped due to hole collared below Chamberlain Seam.

BORE NUMBER R.D.H. P1-9

Grid Reference: 47528 N 76701 E

Date Commenced: Nov. 29/74 Date Completed: Nov. 29/74

Collar R.L.: 3965 ft. Standard Datum. Total Depth: 60 ft.

Drilled by: Century Geophysical Corporation For: Coalition Mining Ltd. Using: Rotary Air Rig

Radiation Logs: Gamma Ray, Neutron and Density By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

COAL SEAM INTERSECTIONS

	Floor	Thickness		
Seam	R.L.	(ft.)	Recovery	Remarks
Chamberlain	3929.0	6.60	No Core	





COALITION MINING							February 27, 1975
Sample: SKR 530	to 534						
Client # Lab No. A.D.I	L. <u>R.M.</u>	Ash %	<u>Vol.</u> <u>F</u>	<u>.c.</u> <u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
SKR 532 2126 Raw 3.2		13.3		·	13,430	1 1/2	Air Dry Basis
SIZE ANALYSES							
Size Fraction	Wt %	Ash %	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
+ 100 M	86.0	13.0	86.0	13.0	13,500	-	Air Dry Basis
- 100 M	14.0	9.9	100.0	12.6	14,000	1 1/2	Air Dry Basis
SINK-FLOAT ANALYS	ES +100 M						.
- 1.60	79.6	3.3	79.6	3.3	15,100	1 1/2	Air Dry Basis
+ 1.60	20.4	50.7	100.0	13.0	7,230	N.A.	Air Dry Basis
						· ·	

Analytical Results. - R.D.H. P1-9

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Sample No.	<u>Seam</u>	Interval (feet)
532	Chamberlain	29.4 - 36.0

Birtley Engineering Subsidiary of Great West Steel Industries

Recorded By	Truck No.	Operating Time		∃o @ wצ		Min. Diam.	Liquid Level	Fluid Type	Casing Dritler	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measur	Log Measured from	Permanent Datum_	-				WM	RGE	SEC	LSD	FILE NO.				5	
PETERSON	35	3 HOU				4-1/2		*AIR*	,			57	56	00	56	29 NO	ONE		ed fromGR	GROUN	GROUND L	PROVINCE				LOCATION		WELL		COMPANY	OILEN				
Witnessed By		RS .														VEMBER 1974			OUND LEVEL	D LEVEL	EVEL.	BRITISH COLU		DUKUNKA				P-1-9		ריט איז איזיין איז	ITERPRISES L			G/	
SHIELDS																				Ft. Above Perm. Da	Elev.	MBLA								NTWE T THEFT	TD. CALGA		DENSIL	AMMA RAY NE	
	S S																		G.L.	atum CSG	K.B.	NIL	Other Servic	Other Canal							RY, ALBE		DC N	UTRON LOG	
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GAMMA RAY											DEPTHS											·		N	IEU	TR	NC								



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MUDSTONE: mid grey, calcoreous (V.R.S.)

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			-			CHAMBERLAIN SEAM- COAL 2011 and Dright
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				ן ג <u>⊥</u> .	· · · · · · · · ·	SANDSTONE: fine to medium grained, quartz-lithic; quartz filled joints;
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BORE NUMBER R.D.H. P1-10

Grid Reference:	47748 N 77116	E	
Date Commenced:	Nov. 30/74	Date Completed:	Nov. 30/74
Collar R.L.: Total Depth:	4064 ft. 95 ft.	Standard Datum.	
Drilled by: For: Using:	Century Geophysi Coalition Mining Rotary Air Rig	cal Corporation Ltd.	
Radiation Logs: By:	Gamma Ray, Neutr Roke Oil Enterpr	on and Density ises Ltd.	
Logged by:	G. R. Wallis		

COAL SEAM INTERSECTIONS

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Seam	Floor <u>R.L.</u>	Thickness (ft.)	Recovery	Remarks
Skeeter	4032.8	3.20	No Core	
Chamberlain	3995	6.00	No Core	





COALITION MINING

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February 27, 1975

Client #						·	
Lab No. A.D.L	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>s.</u>	<u>B.T.U.</u>	F.S.I.	Calc. Factors
<u>SKR 533</u> 2127 Raw 3. 6		22.3			11,950	2 1/2	Air Dry Basis
SIZE ANALYSES							
Size Fraction	Wt %	Ash %	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
+ 100 M	90.8	23.1	. 90.8	23.1	11,800	-	Air Dry Basis
- 100 M	9.2	14.3	100.0	22.3	13,300	1 1/2	Air Dry Basis
SINK-FLOAT ANALYSE	<u>s</u> +100 M						
- 1.60	· 3.7 ·	3.6	3.7	, 3.6	14,990	1 1/2	Air Dry Basis
+ 1.60	96.3	24.9	100.0	24.1	11,500	1/2	Air Drv Basis

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Sample No.	Seam	Interval (feet)	
533	Chamberlain	63.0 - 69.0	

Birtley Engineering Subsidiary of Great West Steel Industries

Recorded 8y	Truck No.	Operating Time		Rm @ 0F		Min. Diam.	Liquid Level	Fluid Type	Casing Dritler	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measured	Log Measured from _	Permanent Datum						TWP	SEC					<u>گر</u>	フラ	:
PETERSON Witnessed By	AIR 4-1/2 4-1/2 3 HOURS 35 Witnessed By										85	85	84 -	00	84	30 NOVEMBER 1974	ONE		from CPOINT TRVET	GROUND LEVEL	GROUND LEVEL	PROVINCE BRITISH COI		FIELD SUKUNKA	·	LOCATION	MELL	wein p_1_10	COMPANY COALITION M		OIL ENTERPRISES I				
y SHIELDS	SHITET DS																			Ft, Above Perm. Datum	Elev,	JUMBIA							TINING LIMITED		LTD. CALGARY,		DENSIL OG	AMMA RAY NEUTRON	
																			G.L	CSG	K.B.	NIL	Other Services:								ALBERTA			V LOG	
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ROTARY DRILL HOLE STRIP LOG	7
COMPANY: COALITION MINING LIMITED	
PROPERTY: SUKUNKA COAL PROJECT	
HOLE NUMBER: P1-10	
LOCATION: 47748 N 77116 E	ľ
DATE COMMENCED: NOVEMBER 30, 1974	
DATE COMPLETED: NOVEMBER 30, 1974	
DEPTH: 95 FEET	
GROUND ELEVATION: 4064 FEET A.S.L.	
LOGGED BY: G.R. WALLIS	
REMARKS: Drilled by CENTURY GEOPHYSICAL CORPORATION	
using rotary air drill. Samples generally very poor	
throughout no recovery of Skeeter Sedm.	
LEGEND	
•••••••• •••••••	IONE ETC.
SANDSTONE COAL BRIGHT (SOLID) - COAL DULL PERCENT INDICATED G GLAUCONITIC	
SILTSTONE SILTST	
SCALE:1 in. = 10 ft. VERY POOR SAMPLES (ABUNDANT CAVINGS)	
DRILLING GAMMA RAY LITHOLOGY DESCRIPTION	
Sanostone: fine grained, light grey, quartz-lithic, argillaceous, dolomitic.	

 -10^{2} (V.P.S.) SILTSTONE: as above and CLAYSTONE: carbonaceous SKEETER SEAM: Coal dull and bright (V.P.S.) 30 -MUDSTONE: (?) V.P.S. ΰ. н н SILTSTONE: mid grey, argillaceous, calcareous. CLAYSTONE: corbaneceous and coal: (?) V.P.S. 40 SANDSTONE: fine groined, light grey, quartz-lithic, calcoreous; minor to trace corbonaceous Sandstone (VPS) 4.5 50· SILTSTONE: OS above Minor dolomitic joint fillings. 60 CHAMBERLAIN SEAM: COAL: Jull and bright, sheared in upper part of unit. 65 70 SANDSTONE: light grey, fine to medium grained, quartz-lithic, minor carbonaceous material. CLANSTONE: Carbonaceous & COAL: V.P.S. SANDSTONS: 95 above. 80 85 90-TOTAL DEPTH 95 feet 95 100-105 110 -115 **-1**20 –

BORE NUMBER R.D.H. P1-11

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Grid Reference: 48493 N 76834 E

Date Commenced:	Dec. 1/74	Date Completed:	Dec.	1/74
Collar R.L.: Total Depth:	4099 ft. 46 ft.	Standard Datum.		
Drilled by: For: Using:	Century Geophysi Coalition Mining Rotary Air Rig	cal Corporation Ltd.		
Radiation Logs: By:	Gamma Ray, Neutro Roke Oil Enterpr:	on and Density ises Ltd.		
Logged by:	G. R. Wallis			

COAL SEAM INTERSECTIONS

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	Floor	Thickness		
Seam	<u>R.L.</u>	(ft.)	Recovery	Remarks
Chamberlain	4069.2	6.00	No Core	

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February 27, 1975

Sample:	SKR	530	to	534	
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Client # Lab No. A.D.L	<u>. R.M.</u>	Ash %	<u>Vol.</u> <u>F</u>	<u>.c. s.</u>	<u>B.T.U.</u>	F.S.I.	Calc. Factors
<u>SKR 534</u> 2128 Raw 3.8		27.9			11,010	1 1/2	Air Dry Basis
SIZE ANALYSES							
Size Fraction	Wt %	<u>Ash %</u>	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
.+ 100 M	85.8	26.1	85.8	26.1	11,300	-	Alr Dry Basis
- 100 M	14.2	22.Ż	100.0	25.5	11,920	1 1/2	Air Dry Basis
FROTH FLOTATION 4	+100 M ·						
- 1.60	71.3	3.6	71.3	3.6	15,080	2	Air Dry Basis
+ 1.60	28.7	81.9	100.0	26.1	- •	1/2	Air Dry Basis
Analytical Resu	lts - <u>R.</u>	<u>D.H.</u> P	1-11				
Sample No.	Seam	<u>T</u> ,	nterval (be	et)		1	
534	Chamberlai	n	24.7 - 29.8				

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Birtley Engineering Subsidiary of Great West Steel Industries

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Recorded By P	Truck No.	Min, Diam.	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	Eirst Reading	Date	Run. No.		Well Depths Measured	Log Measured from	Permanent Datum		•			TWP		FILE NO.]				
ETERSON Witnessed By SHIE	35	2-1/2 HOURS			1	4-1/2	AIR			46	46	45	00	45	I DECEMBER 1974	ONE		from GROUND LEVEL	GROUND T.EVET. Et A	GROTIND I THET			FIELD SUKUNKA	LOCATION	WELL P.1-11		COMPANY COALTEION MINING	UL ENTERPRISES LTD.			
SQ	4							-								NIL	Uther Services:						LIMITED	CALGARY, ALBERTA		DENCIO	RAY NEUTRON LOG				
		_[GAN				<u> </u>			EC	201	IPM			DA	TA		 	 					<u> </u>	<u></u>			
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		<u>2 N. s</u>	SOUR	CE		GEI		AL.	18 8,	55	FT	ł 					<u>s</u> Ol	TYP LEN URCE SER	E GTH MQI	DEL	<u>NO.</u>					P M 59	ROPO 6 RC-N 8	ORTI 6 INC -SS-V		<u> </u>	
		<u>TRL</u> NO.	ICK N	10.		55 55										SPAC TYPI STRE		і ТН						17 Aı 3	<u>INC</u> m Be CUR11	H ES					
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	GA	¥MIV	IA R	AY			DEPTHS	_			•								Ν	1E(UTR	ON					<u> </u>				
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	COMPANY	COALITION	N MININ	NG LTD.		
	PROPERTY	SUKUNKA	COAL	PROJECT		
	HOLE NUMBER:	P1-11				
	LOCATION	48493 N	76834	E		
	DATE COMMENC	CED: DECE	MBER 1,	1974		
	DATE COMPLETE	D: DECE	MBER 1,	1974		
	DEPTH:	46 FEET				
	GROUND ELEVAT	10N: 4099	FEET			
	LOGGED BY:	G.R. WALL	.15			
	REMARKS	Drilled by		GEOPHYSICA	L CORPOR	ATION
					•	
			LEO	GEND	• •	
		OMERATE	L E (G E N D MUDSTONE		INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED)
		OMERATE		GEND MUDSTONE COAL PERCENT INDIC	-ATED G	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC
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	••••••••• ••••••• •••••••• •••••• •••••••• SANDST ••••••• SILTSTO	OMERATE TONE NE SCALE	L E (GEND MUDSTONE COAL BRIGHT (SOLID) PERCENT INDIC DULL PERCENT INDIC DULL PERCENT INDIC STONE COALY OR CLAYSTONE CARBONACEOUS ft.	G ATED ATED ATED V.P.S.	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC FAULT PROBABLE POSSIBLE VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING RATE	GAMMA RAY	OMERATE FONE NE SCALE	L E (GEND MUDSTONE COAL BRIGHT (SOLID) PERCENT INDIC DULL PERCENT INDIC STONE COALY OR CLAYSTONE CARBONACEOUS ft.	G ATED ATED ATED AL PL PL DESCRIPTION	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC FAULT ESTABLISHED FAULT PROBABLE POSSIBLE VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING RATE MIN/FT	GAMMA RAY	OMERATE TONE NE SCALE	L E (GEND MUDSTONE COAL PERCENT INDIC DULL PERCENT INDIC STONE COALY OR CLAYSTONE CARBONACEOUS ft	ATED G ATED G ATED Y P.S. V.P.S.	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC FAULT PROBABLE POSSIBLE VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING RATE MIN/FT	GAMMA RAY	OMERATE TONE NE SCALE	L E (GEND MUDSTONE COAL PERCENT INDIC DULL PERCENT INDIC STONE COALY OR CLAYSTONE CARBONACEOUS ft.	ATED G ATED G ATED V.P.S. DESCRIPTION	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC FAULT ESTABLISHED FAULT PROBABLE POSSIBLE VERY POOR SAMPLES (ABUNDANT CAVINGS)
DRILLING RATE MIN/FT	GAMMA RAY		LEC LEC LEC LEC LEC LEC LEC LEC	GEND MUDSTONE COAL PERCENT INDIC DULL PERCENT INDIC STONE COALY OR CLAYSTONE CARBONACEOUS ft.	G ATED ATED G ATED CATED	INTERBEDDED SILTSTONE, MUDSTON (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) GLAUCONITIC FAULT PROBABLE POSSIBLE VERY POOR SAMPLES (ABUNDANT CAVINGS) , minar quartz, micaceous in par- bed of SILTSTONE: dark to mid g



Grid Reference: 48395 N 76566 E Date Completed: Dec. 1/74 Date Commenced: Dec. 1/74 4046 ft. Collar R.L.: Standard Datum. 28 ft. Total Depth: Century Geophysical Corporation Drilled by: For: Coalition Mining Ltd. Rotary Air Rig Using: Radiation Logs: Gamma Ray, Neutron and Density Roke Oil Enterprises Ltd. By: Logged by: G. R. Wallis 2

COAL SEAM INTERSECTIONS

	Floor	Thickness		
Seam	R.L.	(ft.)	Recovery	Remarks

Driller stopped drilling with no check with geologist after penetrating carbonaceous claystone, interpreted as seam.

Recorded By PETERS	Litist Reading 27 Last Reading 00 Footage Logged 27 Depth Reached 28 Casing Roke 28 Casing Driller 28 Casing Driller 28 Liquid Type AIR Liquid Level 4-1, Min. Diam. 4-1, Min. Diam. 4-1, Truck No. 35												First Reading	Date	Run. No.		well Depths Measured from	Log Measured from	Permanent Datum <u>GR</u>	PRC		FIE		RGE	TWP WE	LSD	FILE NO. CO						
ON Witnessed By	35	2 HOURS			7/1-4	/_1/3	AIR			28	28	27	00	27	1 DECEMBER 1974	ONE		GROUND LEVEL	GROUND LEVEL	OUND LEVEL	DVINCE BRITISH CO		LDSUKUNKA			LL <u>P-1-12</u>		MPANY COALITION	OIL ENTERPRISES				
SHIELDS	5				-														Ft. Above Perm. Datum	Elev.	LUMBIA							MINING LIMPTED	LID. CALGARY,		DENSILOG	AMMINA NAY NEUTRO	
									-	-								G.L.	CSG	K.B	NIL .	Other Services:							ALBERTA			JN LOG	
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	COMPANY:	COALITION MINING LTD.
	PROPERTY:	SUKUNKA COAL PROJECT
	HOLE NUMBER:	P1 - 12
	LOCATION	48395N 76566 E
	DATE COMMENCE	D: DECEMBER 1, 1974
	DATE COMPLETED	DECEMBER 1, 1974
	DEPTH:	28 FEET
	GROUND ELEVATIO	DN: 4046
	LOGGED BY:	G. R. WALLIS
		Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist.
- 235 F - 1 - 275 - 12 - 2 - 275 - 12 - 2 - 275 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -		Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND
ार्थ्याः विकास स्वर्थे "र्थ्व" स्वर्थे	00000 00000 00000 00000 00000	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND MUDSTONE MUDSTONE MUDSTONE MUDSTONE MUDSTONE
	CONGLOM	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND MERATE MUDSTONE (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) NE COAL BRIGHT (SOLID)- DUIL PERCENT INDICATED G GLAUCONITIC
	•••••••• •••••• ••••••• CONGLOM ••••••• SANDSTON •••••• SILTSTONE	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND ARRATE MUDSTONE Image: Store construction of the second constructing constructing construction of the second construction
		Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND MERATE MUDSTONE MUDSTONE EN MUDSTONE MUDSTONE COAL BRIGHT (SOLID)- COAL BRIGHT (SOLID)- CO
RILLING	CONGLOM CONGLOM CONGLOM CONGLOM SANDSTON SANDSTON SILTSTONE	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND AERATE MUDSTONE INTERBEDDED SILTSTONE, MUDSTONE ET (PERCENTAGE OF EACH ROCK COMPONENT INDICATED) NE COAL BRIGHT (SOLID)- PERCENT INDICATED G GLAUCONITIC G STONE COAL OR CLAYSTONE FAULT STONE COALY FAULT PROBABLE POSSIBLE SCALE:1 in. = 10 ft. VPS. UTHOLOGY DESCRIPTION
PRILLING RATE MIN/FT	CONGLOM CONGLOM CONGLOM CONGLOM CONGLOM SANDSTON SANDSTON SILTSTONE GAMMA RAY API 	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND ARRATE MUDSTONE Image: State of the stat
DRILLING RATE MIN/FT	CONGLOM CONGLOM CONGLOM CONGLOM SANDSTON SANDSTON SILTSTONE GAMMA RAY API 	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND LEGEND NE COAL BRIGHT (SOLD)- PERCENT INDICATED GLAUCONITIC DILL STONE COALY OR CLAYSTONE CARBONACEOUS STONE COALY STONE COALY CARBONACEOUS SCALE:1 in, = 10 ft. Overenews CONSTRUCT CONSTRUCT CONSTRUCT CONSTRUCT CONSTRUCT COAL PERCENT INDICATED GLAUCONITIC PERCENT INDICATED GRAULT PROBABLE POSSIBLE SCALE:1 in, = 10 ft. Overenews CONSTRUCT
DRILLING RATE MIN/FT	GAMMA RAY GAMMA RAY API	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND MERATE MUDSTONE INTERBEDDED SILTSTONE, MUDSTONE ET MUDSTONE COAL SEGNET INDICATED G GLAUCONITIC DESCRIPTION FROM COAL PERCENT INDICATED FAULT FROBABLE PERCENT INDICATED FAULT FROBABLE POSSIBLE SCALE:1 in. = 10 ft. VP.S. VERY POOR SAMPLES (ABUNDANT CAVINGS) LITHOLOGY DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION
SRILLING RATE WIN/FT	CONGLOM CONGLOM CONGLOM CONGLOM SANDSTON SANDSTON SILTSTONE GAMMA RAY API I I I I I I CONGLOM	Driller assumed carbonaceous zone was seam and pulled off hole without checking with geologist. LEGEND MERATE MUDSTONE INDECATED COAL BRIGHT (SOLID)- PERCENT INDICATED COAL COAL DESCRIPTION STONE COALY OR CLAYSTONE CARBONACEOUS SCALE:1 in. = 10 ft. Dysesureaw SAMAGIONE: wasthered, calcareous CLAYSTONE: calculated and guertz joint fillings.



BORE NUMBER D.D.H. P1-13

77890 E 48390 N Grid Reference: Date Commenced: Jan. 9/75 Date Completed: Jan. 13/75 4117 ft. Standard Datum. Collar R.L.: 261.0 ft. Total Depth: Canadian Longyear Limited Drilled by: Coalition Mining Limited For: Longyear Model 38 Unitsed Rig - HQ T.T. Using: Gamma Ray, Neutron and Density Radiation Logs: Roke Oil Enterprises Ltd. By: G. R. Wallis Logged by:

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks

SUKUNKA D.D.H. P1-13

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Geological Description of Strata	Estimated Thîckness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN AND WEATHERED ROCK	2.00	2.00	2.00	
SANDSTONE, light-mid grey, fine grained calcareous; upper five feet fine to medium grained. One foot zone at 13.5' containing mudstone blebs to 0.02'. Calcite filled joint at 41'. Bedding dipping 5 [°] .	52.00	54.00	52.00	Tri-cone to 10'
SILTSTONE, grading to silty mudstone in part; mid grey, calcareous. Phases of very fine to fine sandstone throughout either as 0.10' units of graded bedding or as inter-bedded units, rare phases of small shelly fossils (interbeds).	17.35	71.35	17.35	
SANDSTONE, fine grained, light grey, calcareous, even grained, massive. Between 75.5 and 76.5', carbonaceous claystone and weathered coal(?) Calcite filled joints between 72 and 74' at 30 ⁰ to core axis, slickensided joint face after deposition.	6.82	78.17	6.45	·

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
MUDSTONE, dark grey, calcareous; silty in upper 2'. From 80.5 to 85.0' core broken, bedding and joint faces slickensidsided calcite joing fillings.	7.33	85.50	7.33	Established fault
SANDSTONE, fine grained, light to mid grey, calcareous in upper part. Carbonaceous partings on some bedding planes, in conjunction with calcite filling - slip features; joints calcite filled, joints unevenly distributed and exhibiting tension features in upper 15', core generally broken. Dip of bedding 30° at 90', 50° at 101', 30° at 114'. Deformation generally decreasing in intensity from 110' to 120'.	53.45	138.95	52.45	
MUDSTONE, mid to dark grey, carbonaceous in part, containing occassional silty blebs and phases to 0.10'. Slickensided joint and bedding planes throughout, containing rare calcite filling.	9.05	148.00	8.45	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone, mid grey in units to 0.50', mudstone dark grey to carbonaceous in 0.25 units; carbonaceous partings N (Cont'd.)	14.50	162.50	13.30	Fault zone between 145' and 168' - established.

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE AND MUDSTONE INTERBEDS, (Cont'd.) common throughout unit 0.30' coal at 155'. Mudstone: siltstone = 70:30; rare fine quartz and calcite filled joints; slickensided joints throughout unit.				
SANDSTONE, fine grained, light grey, calcareous through- out, though only weakly so in upper 30' of unit. Carbonaceous and coaly zone 2' thick at 166'. Medium grained phases containing clayblebs at 192 and 194'. Calcite filled subvertical tension joints common throughout unit; though is common in between 200' and 215' - possible fault. Bedding flat.	53.00	215.50	53.00	Possible fault 200 - 215'
SANDSTONE, fine grained, mid grey carbonaceous flecks and occassional partings calcite filled joints throughout; slickensided.	5.05	220.50	5.05	Possible fault
SANDSTONE, light grey, fine grained, mudstone partings present in upper 20' of unit, and one 0.15' coaly lense at 246'. Calcite filled joints, usually less than 0.005' between 228 and 246'; zone of fracturing and disturbed bedding between 241 and 246', calcite filled joints and fracture planes, possible fault.	40.45	261.00	40.05	Possible fault 241 to 246'. T.D.

rded By PET	Operating Time Truck No.	ரிற இறி	Min. Diam.	Fluid Type	Casing Driller	Casing Roke	Denth Driller	Footage Logged	Last Reading	First Reading	Date	Run. No.	Log Measured from Well Depths Measurec	Permanent Datum			RGE WM	TWP	LSD	FILE NO.				
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BORE NUMBER D.D.H. P1-14

Grid Reference: 48469 N 77404 E

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Date Completed: Date Commenced: Jan. 14/75 Jan. 15/75 Standard Datum: Collar R.L.: 4115 ft. Total Depth: 104 ft. -Drilled by: Canadian Longyear Ltd. Coalition Mining Limited For: Longyear Model 38 Unitised Drilling Rig NQ.T.T. Using: Radiation Logs: Gamma Ray, Neutron & Sidewall Density. Roke Oil Enterprises Ltd. By: G. R. Wallis Logged by:

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4063.40	4.40	33.4%	Seam weathered
Chamberlain	4025.75	6.75	73.0%	





COALITION MINING

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February 27, 1975

Sample: SKR 520 to 525

<u>Client #</u> Lab No.	<u>A.D.L.</u>	R.M.	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	F.S.I.	Calc. Factors
SKR 520 2136	0.9		10.6	• •	ī	•79	14,240	8	Air Dry Basis
<u>SKR 521</u> 2137	1.5		4.6			.48	14,980	8	Air Dry Basis

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Analytical Results - D.D.H. P1-14

Sample No.	Seam	Interval (feet)
520	Skeeter	47.20 - 51.60
521	Chamberlain	82.60 - 89.25

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Birtley Engineering Subsidiery of Great West Steel Industries

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	11.00	11.00		No core to 15'
MUDSTONE, mid grey, occassional silty phases and one carbonaceous phase. Weathered on bedding planes.	8.00	19.00	4.60	
SANDSTONE, fine grained, light grey, silty in upper 13'; calcareous in upper 10'. Carbonaceous wisps and partings throughout, with more concentrated zone at 33.5'. Small scale current bedding phases present. One foot zone mudstone/ sandstone interbeds 0.70' above base of unit.	23.90	42.90	23,50	· · · · · · · · · · · · · · · · · · ·
MUDSTONE AND SILTSTONE INTERBEDS, grading to silt- stone at base of unit; mudstone dark grey, siltstone light grey. Slickensided bedding plane at top of unit.	4.30	47.20	3.10	· · ·
COAL,	2.10	49.30))	
MUDSTONE,	1.00	50.30		SKEETER SEAM, (Core loss 2.93! -
COAL,	1.30	51.60)	correction by radiation log)

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Geological Description of Strata	Estimated Thickness {ft}	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, grading to siltstone	5.00	56.60		Seam floor
SILTSTONE AND MUDSTONE INTERBEDS, grading to mudstone in lower 0.5'; 2 phases within unit - base of upper phase carbonaceous, siltstone in lower phase calcareous.	4.68	61.28	4.68	
SILTSTONE, light grey, very calcareous, mudstone partings common throughout.	5.22	66.50	3.90	
MUDSTONE, dark grey.	3.20	69.70	3.20	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone light grey calcareous, 0.03' to 0.15' thick. Mudstone mid grey, generally 0.05' to 0.08' thick with occassional 0.25' thick phases.	3.30	73.00	3.30	· .
MUDSTONE AND SILTSTONE LAMINATED,	9.50	82.50	7.20	Seam roof
STONE, coaly, slickensided.	0.10	82.60	0.10))	
COAL, dull and bright	4.05	86.65) 2.77)	CHAMBERLAIN SEAM

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
COAL, stony	0.10	86.75	0.10)	
bright with minor dull bands	1.25	88.00) 0.86)	CHAMBERLAIN SEAM
bright	0.35	88.35) 0.20)	
dull with minor bright bands	0.90	89.25) 0.90)	
SANDSTONE, fine grained, light grey, carbonaceous in upper 10'.	14.75	104.00	11.78	Seam floor T.D.
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Recorded By PET		Truck No.	Operating Time		Rm @ °F		Min, Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No.		Well Depths Measured from	Log Measured from	Permanent DatumG	PR					RGE	SEC	LSD	FILE NO. CC					
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BORE NUMBER D.D.H. P1-15

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Grid Reference:	48085 N 76906 E								
Date Commenced:	Jan. 15/75 Date Completed: Jan. 16/75								
Collar R.L.: Total Depth:	4083 ft. Standard Datum. 83.0 ft.								
Drilled by:	Canadian Longyear Ltd.								
For:	Coalition Mining Limited								
Using:	Longyear Model 38 Unitised Drilling Rig - HQ.T.T.								
Radiation Logs:	Gamma Ray, Neutron and Sidewall Density.								
Ву:	Roke Enterprises Ltd.								
Logged by:	G. R. Wallis								

COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4059.2	3.00	66.6%	
Chamberlain	4017.2	6.50	99.2%	




Analytical Results

D.D.H. P1-15

Sample No.	Seam	Interval	(feet)
522	Skeeter	20.80 -	23.80
523	Chamberlain	59.40 -	59.70
524	Chamberlain	59.70 -	64.75
525	Chamberlain	64.75 -	65.80

Note: Samples 523, 524, 525 composited according to a.d.wt. (Linear recovery 99.2%).

February 27, 1975

Sample: SKR 520 to 525

<u>Client #</u>			_			v		·
Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	<u>Ash %</u>	<u>Vol.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
	•							
						••		
CVD 500								
2.138 Raw	4,1		3.0	•		14.287	2	Air Drv Basis
							-	
SIZE ANALYSE	<u>s</u>							
Size Fractic	on	<u>Wt %</u>	<u>Ash %</u>	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	F.S.I.	
+ 100 M		92.5	3.4	92.5	3.4			
- 100 M		7.5	4.1	100.0	3.5		1 1/2	
SINK-FLOAT A	NALYSES	+100 M			· .			
- 1.60	······································	97.6	2.7	97.6	2.7		2	
+ 1.60		2.4	33.0	100.0	3.4		1/2	

2138 Washed @ 1.60 S.G. to determine any change in F.S.I. (oxidation test)

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February 27, 1975

Sample: SKR 520 to 525

Lab No. A.D.L.	<u>R.M.</u>	<u>Ash %</u>	<u>Vol.</u> <u>F</u>	<u>.c. s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
<u>SKR 523</u> 2139 Raw 11.8		4.6			*	2	Air Dry Basis
SIZE ANALYSES							
Size Fraction	<u>Wt %</u>	Ash %	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
+ 100 M	94.0	5.5	94.0	5.5		-	Air Dry Basis
- 100 M	6.0	4.4	100.0	5.4		2	Air Dry Basis
SINK-FLOAT ANALYSES	+100 M					·	
- 1.60	94.3	2.5	94.3	. 2.5		2	Air Dry Basis
+ 1.60	5.7	54.4	100.0	5.5		N.A.	Air Dry Basis

Birtley Engineering Subsidiary of Great West Steel Industries

P1-15

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February 27, 1975

Sample: SKR 520 to 525

<u>Client #</u> Lab No. A.D.L.	<u>. <u>R.M.</u></u>	Ash %	<u>Vol.</u> F	.c. <u>s.</u>	<u>B.T.U.</u>	F.S.I.	, Calc. Factors
SKR 524 2140 Raw 4.0		2.6	•			1 1/2	Air Dry Basis
SIZE ANALYSES	,						
Size Fraction	<u>Wt 8</u>	<u>Ash %</u>	· Cum Wt %	Cum Ash %	<u>B.T.U.</u>	F.S.1.	Calc. Factors
+ 100 M	93.4	2.7	93.4	2.7		-	Air Dry Basis
- 100 M	6.6	3.7	100.0	2.8		1 1/2	Air Dry Basis
				,			
SINK-FLOAT ANALYSE	<u>s</u> +100 M		•				, , ,
- 1.60	99.3	2.5	99.3	2.5		1 1/2	Air Dry Basis
+.1.60	0.7	27.6	100.0	2.7		1/2	Air Dry Basis

P1-15

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Birtley Engineering Subsidiery of Greet West Steel Industries

COALITION M	INING							February 27, 1975
Sample: SK	R 520 to !	525						
<u>Client #</u>	A.D.L.	R.M.	Ash X	Vol F	r c s	вти	FCI	Calc Factors
	·····			<u></u> 1	<u> </u>	<u></u>		
2141 Raw	13.6		8.8	·			1	Air Dry Basis
SIZE ANALYS	ES							
Size Fracti	оп	<u>Wt %</u>	Ash %	Cum Wt %	Cum Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
+ 100 M		90.5	8.8	90.5	8.8			Air Dry Basis
- 100 M		9.5	5.8	100.0	8.5		1. 1/2	Air Dry Basis
SINK-FLOAT	ANALYSES	+100 M						
- 1.60		96.3	7.3	96.3	.7.3		1 1/2	Air Dry Basis
+ 1.60		3.7	. 48.8	100.0	8.8		1/2	Air Dry Basis
<u>Client #</u>								
Lab No.	<u>R.M.</u>	<u>Ash %</u>	<u> </u>	<u>B.T.U.</u>	F.S.1.	Calc.	Factors	
2142 ** Comp. of	1.2	3.5	•55	14,540	1 1/2	Air Dr	y Basis	
524 & 525	ı	3.5	•57	14,720		Dry Ba	sis	

** Composited according to a.d. wt.

Birtley Engineering Subsidiary of Graat West Stael Industries 1-15

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	4.0	4.0	4.0	No core to 6'
SANDSTONE, light grey, fine grained containing minor phases of very fine grain and mudstone, containing blebs and partings throughout; calcite deposition on occassional bedding planes, mudstone lenses weathered, rest slightly weathered.	9 . 50	13.50	8.45	
MUDSTONE, dark grey, intensely weathered.	4.90	18.40	4.90	
SILTSTONE	2.40	20.80		Seam roof
<u>COAL</u> , dull and bright, slightly sheared throughout subparallel to bedding planes.	3.00	23.80	2.00	SKEETER SEAM (correction from radiation log.)
MUDSTONE, carbonaceous with coaly partings.	2.40	26.20	1.55	Seam floor
SILTSTONE AND MUDSTONE INTERBEDS, tending toward laminite, light-mid grey; mudstone more dominant at base of unit; occassional lenses of siltstone to 0.25'. Siltstone	6.15	32.35	6.15	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE & MUDSTONE INTERBEDS, (Cont'd.) calcareous in units to 0.02'; mudstone to 0.01' or less. Bedding ironstained, occassional calcite filled joints. Dips 22 [°] at 33', 30 [°] at 27'.				
MUDSTONE, intensely weathered, to clay in part, iron- staining and oxidation on planes.	2.65	35.00	0.95	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone, light grey, calcareous, dominant lithology and becoming predominant toward base of unit and grading into underlying unit. Carbonaceous flecks and plant remains on bedding planes. Fault breccia 0.20' at 39.5', calcite filled joints.	10.00	45.00	9.20	Fault established
SILTSTONE, light grey, calcareous with mudstone micaceous and carbonaceous partings throughout.	7.00	52.00	6.40	· .
SILTSTONE AND MUDSTONE LAMINITE, weathered in part.	7.30	59.30	6.57	Seam roof
STONE, coaly	0.10	59.40	0.10)	CHAMBERLAIN SEAM

Geological Description of Strata	Estimated Thickness {ft}	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL AND STONE, sheared.	0.30	59.70	0.30)	
COAL, dull and bright - containing bright bands	3.10	62.80) .) 3.10)	
to 0.03', breaking on planes of weakness though		•-•••		
bright	0.10	62.90	0.10	CHAMBERLAIN SEAM
dull and bright	0.60	63.50	0.60)	
bright	0.25	63.75	0.25	
dull and bright	1.00	64.75	1.00)	
weathered	1.05	65.80) 1.00)	
SILTSTONE, light grey, fine grained, carbonaceous in upper 3', heavily jointed, ironstained in upper 10', decreasing toward T.D.	17.20	83.00	17.20	Seam floor T.D.
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BORE NUMBER D.D.H. P1-16

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Grid Reference:	47969 N 76660 E
Date Commenced:	Jan. 16/75 Date Completed: Jan. 16/75
Collar R.L.:	4043 ft. Standard Datum.
Total Depth:	82.50 ft.
Drilled by:	Canadian Longyear Ltd.
For:	Coalition Mining Limited
Using:	Longyear Model 38 Unitised Drilling Rig - HQ.TT
Radiation Logs:	Gamma Ray, Neutron & Sidewall Density
By:	Roke Oil Enterprises Ltd.
Logged by:	G. R. Wallis

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COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4014.00	5.17	37.1%	Seam weathered
Chamberlain	3976.25	5.05	100.0%	





Analytical Results

D.D.H. P1-16

<u>Sample No</u> .	Seam	Interval	(beet)
526	Skeeter	24.00 -	25.90
527	Chamberlain	61.70 -	62.00
528	Chamberlain	62.00 -	62.70
529	Chamberlain	62.70 -	66.75

February 27, 1975

Sample: SKR 526 to 529

<u>Client #</u> Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u>	F.C.	<u>s.</u>	<u>B.T.U.</u>	F.S.I.	Calc. Factors
SKR 526 2120	1.7		5.2			1.05	14,770	8	Air Dry Basis
<u>SKR 527</u> 2121	9.9 Raw		67.6		• ,			N.A.	Air Dry Basis
SIZE ANALY	SES			• •					. •
Size Fract	ion	<u>Wt %</u>		Ash %		<u>Cum</u> W	t %	Cum Ash %	F.S.1.
+ 100 M	•	78.7		66.8		78.	7	66.8	N.A.
- 100 M		21.3		63.4		100.	0	66.1	1/2
SINK-FLOAT	ANALYSES	+100 M				•			
- 1.60	•	10.1	• •	4.4	•	10.	1	4.4	5 1/2
+ 1.60		89.9		73.8	·	100.	.0	66.8	1/2

Birtley Engineering Subsidiary of Great West Steel Industr

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COALITION M	INING	• .							February 27, 1975		
Sample: SKR 526 to 529											
<u>Client #</u> Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors		
<u>SKR 528</u> 2122	3.0		4.7					3 1/2	Air Dry Basis		
SIZE ANALYS	ES						•				
<u>Size Fracti</u>	on	Wt %		Ash %		Cum \	Wt %	Cum Ash %	F.S.I.		
+ 100 M		83.0		5.5		83	.0	5.5	3 1/2		
- 100 M		17.0		5.6		100	.0	5.5	3.		
SINK-FLOAT	ANALYSES	+100 M									
- 1.60		96.4		4.1	1	96	.4	4.1	3 1/2		
+ 1.60		3.6		41.9		100	.0	5.5	1/2		
Client # Lab No.	A.D.L.	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors		
2123	1.8		2.6				15,050	7	Air Dry Basis		
2181 Comp. of SH 527, 528, 5	KR 529	·	6.9				14,400	6.	Air Dry Basis		

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Birtley Engineering Subsidiary of Great West Steel Industries

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P1-16

SUKUNKA D.D.H. P1-16

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	3.50	3.50		Tri-cone to 6'
SANDSTONE, fine grained, light grey, carbonaceous part- ings and blebs throughout; calcareous in upper 2.5'. Weathered, minor zones extreme.	15.50	19.00	14.75	
MUDSTONE, dark grey, possibly carbonaceous in part; extremely weathered throughout.	3.00	22.00	3.00	·
SILTSTONE, mid grey, with mudstone partings and plant fragments. Weathered.	1.03	23.03	1.03	
MUDSTONE, heavily weathered, plant fragments common on bedding planes.	0.80	23.83	0.35	Seam roof
CLAYSTONE, carbonaceous.	0.17	24.00	0.17)	SKEETER SEAM
COAL, dull and bright, slightly weathered.	1.90	25.90	0.75)	(corrections using Radiation
CLAYSTONE, carbonaceous and coal	1.10	27.00	1.00)	Log)
COAL,	1.00	28.00	0.00)	х.

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
CLAYSTONE, carbonaceous.	1,00	29.00) 0.00)	SKEETER SEAM .
SILTSTONE AND MUDSTONE INTERBEDS: light grey with occassional dark grey zones; calcareous throughout. Siltstone dominant though decreasing in proportion to base of unit. Siltstone phases average 0.03', maximum 0.10'; mudstone generally thinner; graded bedding present in siltstone; bedding planes weathered.	7.10	36.10	6.15	Seam floor
SILTSTONE AND MUDSTONE LAMINITE, calcareous, mid grey.	2.40	38.50	2.40	
MUDSTONE, dark grey and carbonaceous; plant remains common, highly weathered; coaly bands present bedding disturbed.	3.32	41.82	1.38	Possible fault
SILTSTONE AND MUDSTONE INTERBEDS, as above, but essentially fresh.	11.33	53.15	11.33	
SILTSTONE AND MUDSTONE LAMINITE, as above, essentially fresh, with occassional weathered zones.	8, 55	61.70	7.95	Seam roof

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SUKUNKA	D.D.H.	P1-16
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Foo <i>t</i> age Recovered (ft)	Remarks
COAL AND STONE, intensely sheared.	0.30	,62 . 00	0.30)	CHAMBERLAIN SEAM
COAL, dull and bright, sheared in part.	0.70	62.70	0.70)	
dull with minor bright bands	0.80	63.50	0.80)	
bright	0.10	63.60) 0.10)	
dull and bright with bright bands, 0.03 to 0.10', throughout.	3.15	66.75) 3.15)	
SANDSTONE, fine to medium grained, carbonaceous in upper 7'; mudstone partings present; cross bedded; ironstaining on bedding planes.	15.75	82.50	15.25	Seam floor T.D.
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(3)				

Recorded By PE	Truck No.	Operating Time			Rm @ °r		Min, Diam,	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No.		Well Denths Measured	Permanent Datum				W M	RGE	TWP	LSD	FILE NO.				5	
PETERSON Witnessed By WALLIS	35	2 HOURS	-				H.Q.	18	AIR/WATER			83	82	81	00	81	22 JANUARY 1975	ONE		RIG FLOOR 1.5 Ft. Above Perm. Datum	GROUND LEVEL Elev.	PROVINCE BRITISH COLUMBIA		FIELD SUKUNKA		I OCATION	WELLP-1-16		COMPANY COALITION MINING LIMITED	OIL ENTERPRISES LTD. CALGARY,			GAMMA RAY NEUTI	
	1					× .		-							E	ŌL		ME		DA		NIL	Other Services:							ALBERTA			ON LOG	
RUN NI TOOL M	0. MO[MET)el Er	NO					GA	.MM	A F		$\frac{1}{1}$	<u>}</u>						RU((<u>N NQ</u> 3. TY DL M	PE ODE	LN	0,				NEU	N	N IEUT		NE I/N	EUT	RON	
DETECT TYPE LEN DISTAN		мс 1 то	N.S	<u>. N</u>	O. RCE							SC1 4 1 8.8	INT INC 55	11.1 H FT.	AT	`10	N 		DE 1 SOL	DIA TECT TYP LEN JRCE	ME OR IGTI		DEL N	NO.				P	ROP IRC-	0RT 6 IN N-SS		NAL		
HOIST I INSTRU TOOL S	TRU IME ERI	NT AL	NO. TRU NO.	ск	<u>NO.</u>			G		RAI	L	35 177	7	· · · · ·						SER SPA TYP STR		NO. G STH	•					A	mBe	# 1 ; 3	50 7 I 	INCH	3	
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<u>1</u> REMAR	KŞ	<u>33</u> 00	· · · · · ·		8	33			1	2	3			500) DE	INS	ILO	0L)G				20			3 3 1	10 10 10)00)00)00	то	0L :)L .5R .5R		200 4.6) CPS/ 128	
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BORE NUMBER D.D.H. P1-17

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Grid Reference: 48350 N 76842 E

Date Commenced:	Jan. 17/75	Date Completed:	Jan. 17/75
Collar R.L.: Total Depth:	4094 ft. 59.50 ft.	Standard Datum.	
Drilled by: For: Using:	Canadian Longy Coalition Minin Longyear Model	ear Ltd. ng Limited 38 Unitised Dri	lling Rig - HQ.TT
Radiation Logs: By:	Gamma Ray, Neu Roke Oil Enter	tron & Sidewall) prises Ltd.	Density.
Logged by:	G. R. Wallis		

COAL SEAM	INTERSECTION	<u>S</u>		
Seam	Floor R.L.	Thìckness (ft.)	Recovery	Remarks
Skeeter	4087.90	Not det	erminable - roo:	f eroded.
Chamberlai	n 4049.50	6.50	70.8%	Seam weathered

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February 27, 1975

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Sample: SKR 535 to 540

Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>		
<u>SKR 535</u> 2129	2.5		25.8	•			11,230	3	7	
<u>SKR 536</u> 2130	1.4		5.2				14,730	6 1/2		D.D.H. P1-17
2179 Some of ski	P	0.4	8.1				14,180	4 1/2	J	
535 & 536	n	•	8.1				14,240			

Analytical Results - D.D.H. P1-17

<u>Sample No</u> .	Seam	Interval (feet)
535	Chamberlain	38.00 - 38.90
536	Chamberlain	38.90 - 44.50

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	3.00	3.00	·	No core to 5'
COAL, extremely weathered and sooty.	3.10	6.10	1.10	SKEETER SEAM
MUDSTONE, mid grey to carbonaceous.	2.00	8.10	0.91	Seam floor
SILTSTONE AND MUDSTONE INTERBEDS, light to mid grey, weathered throughout to various degrees, calcareous throughout unit, siltstone more so. Maximum thickness of phases - siltstone 0.10', mudstone 0.20'; graded phases common.	7.65	15.75	7.65	
CLAYSTONE, carbonaceous	2.00	17.75	0.50	
SILTSTONE AND MUDSTONE INTERBEDS, as above; with plant remains on bedding planes.	5.55	23.30	5.55	<i>.</i> .
SILTSTONE, light grey, calcareous, mudstone partings and phases on bedding plane, and occassionally as sections of graded bedding units; upper 3.0' cross bedded. Lower foot of unit contains calcite filled joints, possibly due to tectonic activity.	8.90	32.20	8.90	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE AND MUDSTONE LAMINITE, grading to predominantly	5.80	38.00	4.40	Established
mudstone in lower 2' of unit. Fault breccia between	,			fault
34 and 35'; mudstone sheared and slickensided at				Seam roof
37.5'; disturbed zones calcite cemented.				• • •
COAL, intensely sheared.	0.90	38.90	0.90)	CHAMBERLAIN SEAM
dull and bright, but broken; identification not possible. Iron oxide staining on weathered surfaces (cleats).	5.60	44.50	3.70)	· · · · · · · · · · · · · · · · · · ·
SANDSTONE, fine grained, quartz-lithic, carbonaceous in upper 4'; iron oxide staining on both bedding planes and sub-vertical joints.	15.00	59.50	14.50	Seam floor T.D.
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BORE NUMBER D.D.H. P1-19

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Grid Reference: 48270 N 76454 E

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Date Commenced:	Jan. 18/75	Date Completed	d: Jan. 18/75				
Collar R.L.: Total Depth:	4029 ft 56.0 ft	Standard Datum	n .				
Drilled by: For: Using:	Canadian Longyear Ltd. Coalition Mining Limited Longyear Model 38 Unitised Drilling Rig - HQ.TT						
Radiation Logs: By:	Gamma Ray, Ner Roke Oil Enter	tron and Sidew prises Ltd.	all Density.				
Logged by:	G. R. Wallis						

COAL SEAM IN	TERSECTIO	NS		
Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Chamberlain	3988.0	5,25	77,1%	Seam weathered

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COALITION M Sample: SK	INING R 535 to 5 ¹	40		•					February 27, 1975
<u>Client #</u> Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	
SKR 539 2133			4.0			.50	14,760	7	D.D.H. P1-19
<u>Analytica</u>	l Results	<u> </u>	.D.H. P1-	.19					
<u>Sample No</u> 539	. <u>Sec</u> Cha	<u>ım</u> ımberla	<u>Ina</u> in 36	<u>terval</u> 5.00 - 4	<u>(feet</u>) 41.00				

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Birtley Engineering Subsidiary of Great Wast Steel Industries

SUKUNKA 1	D.	D.	H.	P	1-	19
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SUKUNKA D.D.H. P1-19							
Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks			
OVERBURDEN	13.00	13.00		No core to 16' .			
SILTSTONE AND MUDSTONE INTERBEDS, light to mid grey, calcareous, occassional units of graded bedding; siltstone and mudstone phases varying from 0.01' to 0.10', commonly 0.20'. Weathered.	6.00	19.00	2.80				
MUDSTONE, mid grey, calcareous, contains occassional silty phases. Weathered.	3.15	22.15	3.15				
SILTSTONE AND MUDSTONE INTERBEDS, as above, but more sharply defined units; contains 0.15' unit of fine siltstone. Occassional sedimentary slump and penetration structures. Weathered.	4.85	27.00	7.53				
MUDSTONE AND SILTSTONE LAMINITE, mid grey; mudstone dominant. One calcite filled fracture (tension) joint at 32'. Weathered and containing a number of clay units.	8.75	35.75	7.05	Seam roof			
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SUKUNKA D.D.H. P1-19

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
COAL AND STONE, weathered.	0.25	36.00	0.25)	CHAMBERLAIN SEAM
COAL, dull and bright, with bands of bright coal to 0.10'. Weathered.	5.00	41.00	3.80)	
SANDSTONE, light to mid grey, carbonaceous in upper	15.00	56.00	15.00	Seam floor
phases.				
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN AND CLAY	4.00	4.00	0.95	No core to 6.0'
SILTSTONE	3.00	7.00	0.50	
CLAY AND MUDSTONE, extremely weathered, 0.30' of coaly material.	3.00	10.00	3.00	
MUDSTONE WITH SILTSTONE INTERCALATIONS, heavily weathered and clayey.	3.20	13.20	3.20	
COAL AND WEATHERED MUDSTONE	1.80	15.00	1.15	
MUDSTONE, silty, weathered, mid to dark grey, calcareous becoming more silty toward base of unit and grading towards interbeds in lower 1.5'.	8.90	23.90	8.05	
SILTSTONE, light grey, calcareous, containing mudstone lenses and partings on bedding planes, occassional carbonaceous plants remains, iron staining on joint planes.	3.20	27.10	3.20	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE AND MUDSTONE LAMINITE, mid to dark grey, weathered.	8.70	35.80	8.70	Seam roof
COAL AND STONE, sheared.	0.50	36.30	0.50)	CHAMBERLAIN SEAM
<u>COAL</u> , dull with numerous bright bands to 0.10'. Minor weathering.	6.10	42.40	4.25 ý	
SANDSTONE, light grey, carbonaceous in upper 6'. Iron staining on sub-vertical joints.	15.60	58.00	15,60 [′]	Seam floor T.D.
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(2)				

Recorded By PETERS	Truck No.	Operating Time		Rm @ °F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Oriller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measured from	Log Measured from	Permanent Datum	PR			<u>WM</u> L(RGE	TWP	LSD	FILE NO.				
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GAMMA RAY INCREASES



18 A.

BORE NUMBER D.D.H. P1-18

Grid Reference: 48157 N 76581 E

Date Commenced: Jan. 17/75 Date Completed: Jan. 18/75 4029 ft. Collar R.L.: Standard Datum. 58.0 ft. Total Depth: Canadian Longyear Ltd. Drilled by: For: Coalition Mining Limited Longyear Model 38 Unitised Drilling Rig - HQ.TT Using: Gamma Ray, Neutron and Sidewall Density. Radiation Logs: Roke Oil Enterprises Ltd. By: G. R. Wallis Logged by:

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Chamberlain	3986.6	6.60	72.0%	Seam weathered


COALITION MINING

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Sample: SKR 535 to 540

Client <u>#</u> Lap No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u> <u>F.C.</u>	<u> </u>	<u>B.T.U.</u>	<u>F.S.1.</u>			
<u>5KR 537</u> 2131	3.8		51.6		.70	7,070	1/2	}	D.D.H. P1-18	
<u>SKR 538</u> 2132	4.8		3.8		.45	15,010	7 1/2	J		
2180	κρ	0.4	7.4			14,380	6 1/2			
537 ¢ 538		••	7.4	•		14,440				

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<u>Analytical Results</u> - D.D.H. PJ-18

<u>Sample No</u> .	Seam	Interval (seet)
537	Chamberlain	35.80 - 36.30
538	Chamberlain	36.30 - 42.40

Birtley Engineering Subsidiary of Great West Steel Industries

P1-18

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February 27, 1975

Recorded	Truck No.	Operating		R m @ o		Min, Diam	Liquid Le	Fluid Typ	Casing Dri	Casing Ro	Depth Dri	Depth Rea	Footage L	Last Read	First Reac	Date	Run. No.		Well Depth	Log Measur	Permanent					RGE	TWP	LSD	FIL		X	
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#### BORE NUMBER D.D.H. P1-20

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Grid Reference: 48411 N 76696 E

Date Commenced: Jan. 18/75 Date Completed: Jan. 19/75

Collar R.L.: 4071 ft. Standard Datum. Total Depth: 50.0 ft.

Drilled by: Canadian Longyear Ltd. For: Coalition Mining Limited Using: Longyear Model 38 Unitised Drilling Rig - HQ.TT

Radiation Logs: Gamma Ray, Neutron & Sidewall Density. By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

COAL SEAM IN	TERSECTIO	<u>NS</u>		
Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
CHAMBERLAIN	4031.80	5.70	35.1%	Seam weathered



COALITION MINING

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February 27, 1975

Sample: SKR 535 to 540

Client # Lab No.	<u>A.D.L.</u>	<u>R.M.</u>	Ash %	<u>Vol.</u>	<u>F.C.</u>	<u>s.</u>	<u>B.T.U.</u>	<u>F.S.l.</u>	i i
<u>SKR 540</u> 2134	9.1		4.6			.39	14,560	1 1/2	D.D.H. P1-20

<u>Analytical Results</u> - D.D.H. P1-20

Sample No.	Seam	Interval (feet)
540	Chamberlain	33.50 - 39.20

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN, coal reported by driller between 7 and 10' (Skeeter Seam).	12.00	12.00		No core to 12'
SILTSTONE AND MUDSTONE INTERBEDS, calcareous, mid grey in general. Interbeds generally small scale, 0.01' to 0.05', with occassional units to 0.15'. One sub-vertical calcite filled joint at 19'. Unit weathered throughout.	10.60	21.60	9.50	
SILTSTONE, light grey, calcareous, containing mudstone intercalations and partings. Weathered and calcite filled joint containing breccia filling at 22.5'.	2.20	23.80	2.20	Possible fault
SILTSTONE AND MUDSTONE LAMINITE, mid grey, very weakly calcareous. Calcite filled joint at 26.5'. Lower 4' of unit extemely weathered.	7.10	30.90	7.10	
CLAYSTONE, carbonaceous, weathered.	2.60	33.50	1.20	Seam roof
COAL, bright and dull, weathered.	5.70	39.20	2.00	CHAMBERLAIN SEAM

SUKUNKA	D.D.H.	P1-20
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
ANDSTONE, medium grained, light grey, carbonaceous n upper 7'.	15.80	55.00	15.30	Seam floor T.D.
·				

Recorded By PETERSO		Truck No.	Operating Time		Rm @ of		Min. Diam.	Liquid Level	Fluid Type	Casing Dritlér	Cesing Roke	Depth Oriller	Depth Reached	Footage Logged	Last Reeding	First Reading	Date	Tun. No.		Well Depths Meesured from	Log Measured from RIG	Permenent Detum	PRO	-		FIEL		RGE	SEC WEL		FILE NO. CON			スピス	J ) ;
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PR- SUKUNKA - 75 (3) A-2

# SUKUNKA COAL PROJECT PLATE 1 AREA

**VOLUME 4** 

DRILL HOLE DATA DIAMOND DRILL HOLES

> P1-21 T0 P1-30 C-30, C-31 S-14, S-49



DETAIL OF GETHING FORMATION	COAL SEAMS
STRIP LOGS Scale: 1" = 10'	Scale: 1" = 2'
UUUU UUUUUUU UUUU MATERIAL	COAL BRIGHT or UNDIFFERENTIATED COAL MAINLY BRIGHT with MINOR DULL BANDS COAL DULL and BRIGHT
0 0 0 pebble to granule   Image: Constraint of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the st	COAL DULL COAL INTERLAYED with NON - COAL
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COAL	
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REFERENCE FOR GRAPHIC SECTION	NS COALITION MINING LTD.
of	SUKUNKA COAL PROJECT PLATE 1 AREA
DRILL HOLE DATA	MARCH 1975
PREPARED BY CLIFFORD MCELROY & ASSOCIATES	PTY, LIMITED

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Grid Reference:	47867 N 77779 E
Date Commenced:	Jan. 19/75 Detereompleted: Jan 2/15
Collar R.L.:	4131 ft. Standard Datum.
Total Depth:	171.0 ft.
	-
Drilled by:	Canadian Longyear Limited
For:	Coalition Mining Ltd.
Using:	Longyear Model 38 Unitised Rig HQ T.T.
Radiation Logs:	Gamma Ray, Neutron and Density
By:	Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4009.60	3.50	60.0%	
Chamberlain	3974.4	5.40	66.7%	





### COALITION MINING

## February 21, 1975

D.D.H. P1-21

	<u>Client #</u> Lab No.	<u>Ash %</u>	<u>B.T.U.</u>	<u>F.S.I.</u>	Calc. Factors
	SKR 541 2163	10.7	13,860	· 8	Air Dried Basis
	<u>SKR 542</u> 2164	30.7	10,600	3 1/2	Air Dried Basis
	<u>SKR 543</u> 2165	3.8	15,100	7 1/2	Air Dried Basis
•	2188 Composites of SKR 541 and 542	17.6	12,800	6	Air Dried Basis
	Analytical Resul	<u>lts</u> - <u>D.D.H.</u>	<u>P1-21</u>		
	Sample No.	Seam	Interval (beet)		
	541	Skeeter	117.90 - 120.69		
	542	Skeeter	120.69 - 121.40		
	543	Chamberlain	150.20 - 155.60		

Birtley Engineering Subsidiary of Great West Steel Industries

P1-21

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	1.00	1.00		No core to 5.0'
SANDSTONE, fine to medium grained, mid grey, calcareous, cross-bedded, calcareous and carbon- aceous partings throughout, with mudstone				
layering also; weathered claystone lense at 21'.	22.70	23.70	16.70	
SANDSTONE, fine grained, light grey, calcareous, massive, occassional cross-bedded zone;	36,80	60.50	36.80	
SILTSTONE AND MUDSTONE INTERBEDS, mid to dark grey, calcareous; siltstone phases lighter in colour, varying in thickness from 0.03' to 0.20', average 0.05'; mudstone, dark grey, 0.05' to 0.20', average 0.10', generally becoming more dominant in lower 5.0' of unit. Sub-vertical joints	17 50	79.00	14.22	·
iron stained.	T/.20	/8.00	14.33	
SANDSTONE, very fine grained with occassional siltstone phases, light grey, calcareous.	4.33	82.33	4.33	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey, calcareous.	0.67	83.00	0.40	
SILTSTONE, light grey, mudstone phases in upper 2', calcareous.	3.45	86.40	3.45	
MUDSTONE, dark grey, calcareous, containing occassional siltstone gradations, carbonaceous in lower 0.4'.	3.60	90.05	3.60	
SANDSTONE, light grey, fine grained, calcareous in upper part of unit and becoming less so toward base; carbonaceous wisps and lenses throughout. Siltstone and mudstone interbed zone between				
106.5 and 108'.	23.95	114.00	22.10	
MUDSTONE, dark grey to carbonaceous, becoming silty toward base of unit.	3.90	117.90	3.70	Seam roof
COAL, dull and bright, sheared coal present, but location not identifiable.	2.79	120.69	1.60 ) )	SKEETER SEAM
CLAYSTONE, carbonaceous.	0.15	120.84	0.15 )	

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	Geological Description of Strata	Estimated Thickness (6t)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
	COAL, dull and bright.	0.47	121.31	0.27 )	SKRETER SEAM
	CLAYSTONE, carbonaceous.	0.09	121.40	) 0.09)	
	MUDSTONE, mid grey, calcareous for the most part;				
	carbonaceous toward base of unit.	6.60	128.00	5.20	Seam floor
	COAL, dull.	1.50	129.50	0.30	
	CLAYSTONE, carbonaceous.	0.20	129.70	0.20	
	MUDSTONE, dark grey, rare contained coaly blebs, becoming silty toward base of unit.	2.23	131.93	2.23	
	SILTSTONE, light grey, calcareous, contains mudstone partings throughout.	3.00	134.93	3.0	,
•	MUDSTONE, with fine partings of siltstone through- out, occassionally as lenses to 0.10'. Interbedded sequence not fully developed. Basal 8' of unit				-
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SUKUNKA D.D.H. P1-21

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
MUDSTONE, (Cont'd.) grading toward laminite development. Basal 1.0' carbonaceous, slickensided, calcite filled joints present.	15.27	150.20	14.60	Seam roof
COAL, dull and bright with bright bands to 0.07'.	5.40	155.60	3.60	CHAMBERLAIN SEAM
SANDSTONE, fine to medium grained, carbonaceous in upper 15' of unit, ironstained, sub-vertical joints throughout.	15.40	171.00	15.05	Seam floor T.D.
<b>(4)</b>				

Recorded By	Truck No.	Operating Tim	Rm @ OF	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Reached	Footage Logge	Last Reading	First Reading	Date	Run, No.	Well Depths Mea	Log Measured fro	Permanent Datur			-	W		SEC.	LSD			
PETERSON Witnessed By WALLIS	35	me 2 HOURS		Н, Q,	50	AIR/WATER			100 171 1	19ed 170	000	g 170	23 JANUARY 1975	ONE	teasured from <u>RIG FLOOR</u>	from RIG FLOOR 1.5 Ft. Above Perm. Datum	tum GROIJND LEVEL Elev.			FIELD SUKUNKA	M LOCATION		WELL P-1-21	COMPANY COALLION PINING LIPITED	NO COMPANY COALTERON MINING INVITED		
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					GA	MM.	A R	AY														,		RON	· ·		
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RUN	<u> </u>		PTHS		s	PEEI		т.с.		SEN	IS			ZEI	80	API	G.F	1. UN	NITS	;   T	C.		SENS		ZERO		APIN, UNIT
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GAMMA RAY INCREASES	·····	
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Recorded By PETERSON Witnessed By WALLIS	ITUEX NO. 35	Operating Time 2 HOURS		P P P		Min Diam. H.Q.	Liquid Level 69	Fluid Type AIR/WATER	Casing Driller	Casing Roke	Depth Driller 117	Depth Reached 117	Footage Logged 116	Last Reading 00	First Reading 116	Date 22 JANUARY 1975	Run. No. ONE		Well Depths Measured from RIG FLOOR G.L.	Permanent Datum     GROUND     LEVEL     Elev.     K.B.       Log Measured from     RTG     FLOOR     1.5     FL Above Perm. Datum     CSG	PROVINCE BRITISH COLUMBIA NIL	Other Services	FIELD SUKUNKA		TWP WELL P-1-22	LSD	FILE NO. COMPANY COALITION MINING LIMITED	OIL ENTERPRISES LTD. CALGARY, ALBERT	BORE GAMMA RAY NEUTRON LOG
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BORE NUMBER D.D.H. P1-22 P1-22A

Grid Reference: 47640 N 77534 E

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Date Commenced:	P1-22 - Jan. 20/75 P1-22A - Jan. 21/75	Date Completed:	Pl-22 - Jan. 21/75 Pl-22A - Jan. 22/75
Collar R.L.:	4097 ft.	Standard Datum.	
Total Depth:	128 ft.		
Drilled by:	Canadian Longyear Lim	ited	
For:	Coalition Mining Ltd.		
Using:	Longyear Model 38 Uni	tised Rig - HQ T.	Τ.
Radiation Logs:	Gamma Ray, neutron an	d density	
By:	Roke Oil Enterprises	Ltd.	
Logged by:	G. R. Wallis		

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#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery		Remarks
Skeeter	4018.55	4.25	43.0%	)	P1-22
Chamberlain	3984.40	5.60	47.78	)	22
Skeeter	4019.00	4.00	65.0%	)	Redrill
Chamberlain	3984.25	5.75	61.7%	)	P1-22A

NOTE: D.D.H. Pl-22A, skidded 4' from D.D.H. Pl-22, was drilled with tri-cone to 68.50'. Stratigraphic column shows lighology of Pl-22 to 68.50' only; basal section from Pl-22A.









## Analytical Results

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## D.D.H. P1-22A

<u>Sample No</u> .	<u>Seam</u>	Interval	(feet)
544	Skeeter	74.00 -	75.00
545	Skeeter	75.00 -	78.00
546	Chamberlain	107.00 -	109.00
547	Chamberlain	109.00 -	111.50
548	Chamberlain	111.50 -	112.75

COALITION MINING

February 21, 1975

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D.	. D	•H	. Р	1-1	22A
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<u>Client #</u> Lab No.	Ash %	B.T.U.	<u>F.S.I.</u>	Calc. Factors
<u>SKR 544</u> 2166	3.4	15,110	6 1/2	Air Dried Basis
<u>SKR 545</u> 2167	39.6	9,160	1 1/2	Air Dried Basis
2189 Comp. of SKR 544 and 545	30.3	10,800	4	Air Dried Basis
<u>SKR 546</u> 2168	23.9	11,650	4 1/2	Air Dried Basis
<u>SKR 547</u> 2169	3.9	14,930	7	Air Dried Basis
<u>SKR 548</u> 2170	6.2	14,390	4	Air Dried Basis
2190 Comp. of SKR 546, 547 ε 548	10.8	13,710	7	Air Dried Basis

Birtley Engineering Subsidiary of Great West Steel Industries

### SUKUNKA D.D.H. P1-22

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	3.0	3.0		No core to 7'
SANDSTONE, fine grained, light grey, ironstained throughout, calcareous.	13.00	16.00	10.00	
MUDSTONE AND SILTSTONE INTERBEDDED, mid grey, calcareous; mudstone, dominant lithology, maximum unit size 0.30'; siltstone units maximum 0.20', average 0.07'; graded bodding common	17 55	22 55	17.05	
SANDSTONE, fine to very fine grained, grading to	17.55	22.22	17.05	
a siltstone, carbonaceous at base of unit; calcareous.	7.45	41.00	7.30	
MUDSTONE, mid grey, calcareous, contains laminae of siltstone throughout, and grading to a silty mudstone toward base of unit.	3.50	44.50	3.50	
SANDSTONE, fine grained, light to mid grey, contains carbonaceous partings and flecks through- out; generally even bedded, mudstone on bedding planes with occassional zone of cross-bedding,				

SUKUNKA D.D	•п.	- FT 77
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, (Cont. d.) $\frac{31}{2}$ magging sandstone at 551. Dip of hodding 50	25 50	70.00	23.90	See redrill -
5 massive sandslone at 55. Dip of bedding 5.	23.30	/0.00	23,90	
				for description
				from 68 5' to T D
				TTOW OD: D CO T.D.
in upper part slightly calcareous	4 20	74 20	3 75	Seam roof
in apper part, singhtly carcareous.	1.20	/1.20		Deam room
COAL, dull and bright, cleat well developed.	2.00	76.20	1.23 )	
COAL AND CLAYSTONE, intermixed, proportions				
indeterminate.	1.30	77.50	0.60 }	SKEETER SEAM
COAL	0.95	78.45	) )	(See D.D.H. Pl-22A
SILISTONE AND MUDSTONE LAMINITE, grading toward				
interbeds; mid to dark grey, slightly calcareous.	4.05	82.50	4.05	Seam floor
MUDSTONE, dark grey, carbonaceous in part,				
occassional coaly parting, minor zones of both				
interbedded and laminated lithologies; all				
(2)				

# SUKUNKA D.D.H. P1-22

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, (Cont'd.)			1	
phases gradational, silty in part.	12.70	95.20	10.91	
SILTSTONE, light grey, containing minor mudstone	1			
partings and phases. Calcareous.	1.65	96.85	1.75	
MUDSTONE AND SILTSTONE LAMINITE, mid grey, upper				
2' interbedded with units of each lithology to				
0.04' thickness. Calcareous.	2.50	99.35	2.50	
MUDSTONE WITH MINOR PARTINGS OF SILTSTONE, tending				
toward laminations. Quartz filled tension joint				
at base of unit.	7.65	107.00	6.35	Seam roof
	1.00	1.000	0.00	
COAL, dull and bright with bright bands to 0.03'.				
cleat well developed. coal sheared in upper				
0.501 required Becovered genly wwenthered	5 60	112 60	2 69	OUNDEDT NTM. CEDM
0.50 recovered. Recovered coar diweathered.	5.00	112.00	2.00	CHAMBERLAIN SEAM
				(See D.D.H. PI-22A
SANDSTONE, line to medium grained, carbonaceous in				Fault possible at
upper 10', dip of bedding 20° at 121'; sub-vertical		×		base of seam.
joints and tension joints heavily ironstained.	15.40	128.00	16.20	Seam floor
				T.D.

SUKUNKA D.D.H. P1-22A

 Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No core	68.50	68.50		Tri-cone drilling to 68.50'
SANDSTONE, light grey, carbonaceous, weakly calcar- eous, weak development of cross bedding.	1.75	70.25	1.75	
MUDSTONE, grading to siltstone at base of unit CLAYSTONE, carbonaceous.	1.93 0.65	72.18	1.93 0.65	
SILTSTONE, dark grey, carbonaceous	1.00	73.83	1.00	
CLAYSTONE, carbonaceous	0.17	74.00	0.17	Seam roof
COAL, dull with minor bright bands	1.00	75.00	1.00 )	
CLAYSTONE	0.10	75.10	0.10)	
COAL, sheared intensely, possibly weathered.	2.10	77.20	1.30)	SKEETER SEAM
dull with minor bright bands	0.80	78.00	0.20 )	
	1	1		1

SUKUNKA D.D.H. P1-22A

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Foo <i>t</i> age Recovered (ft)	Remarks
		•		
MUDSTONE AND SILTSTONE LAMINITE, light to mid				
grey, siltstone content increasing toward base				
of unit and calcareous.	4.50	82.50	3.75	Seam floor
MUDSTONE, dark grey, carbonaceous, coaly wisps	ł	1		
and partings; sub-vertical joints ironstained.	4.60	87.10	4.10	
SILTSTONE WITH MUDSTONE INTERCALATIONS, light to				
mid grey, becoming sandy toward base of unit,				
calcareous.	6.45	93.55	6.45	
OCCARCIONAL MUDCHONE INVERCALATIONS AND				
increasing toward have of write and concert				
increasing toward base of unit; calcareous,		0.0.05	4.50	
vertical and sub-vertical joints ironstained.	4.50	98.05	4.50	
MUDSTONE AND SILTSTONE LAMINITE, mid grey,				
carbonaceous in part and toward base of unit,				
calcite filled joints.	8.95	107.00	8.20	Seam roof
· ·				
(2				

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
CLAYSTONE, carbonaceous.	1.00	108.00	0.40)	
COAL, sheared.	1.00	109.00	0.20)	
dull and bright, sheared in part; possibly weathered at unit base(?)	2.50	111.50	2.00	CHAMBERLAIN SEAM
sheared.	1.00	112.50	0.70	
dull and bright.	0.25	112.75	0.25	
SANDSTONE, light to mid grey, carbonaceous; core broken, serrated joint planes, possible fault.	5.25	118.00	5.00	Seam floor T.D.
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Recorded By	Truck No.:	Operating Time		Ят @ 0г	Min, Diam.	Liquid Leve	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Enntage   moded	l ast Reading	Cint Danding	Date	Run. No.		Well Depths Measuree	Log Measured from _	Permanent Datum					RGE M	TWP	SEC	FILE NO.					
PETERSON Witnessed By WALLIS	35	2 HOURS			п. с.		AIR/WATER			86	98	85	00	85	23 JANUARY 1975	ONE		ad from RIG FLOOR	RIG FLOOR 1.5 Ft. Above Perm. Datum	GROUND LEVEL	PROVINCE BRITISH COLUMBIA	•	FIELD SUKUNKA				WELL P-1-23	COMPANY COALITION MINING LIMITED	OIL ENTERPRISES LTD. CALGARY,			GAMMA RAY NEUTR	
																		G.L.	CSG	K.B.	NIL	Other Services.	D+Fax Carringe		-				ALBERTA			DN LOG	
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#### BORE NUMBER D.D.H. P1-23

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Grid Reference: 47416 N 77092 E

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Date Commenced: Jan. 22/75 Date Completed: Jan. 23/75 4011 ft. Standard Datum. Collar R.L.: 83.35 ft. Total Depth: Drilled by: Canadian Longyear Limited Coalition Mining Ltd. For: Longyear Model 38 Unitised Rig - HQ T.T. Using: Radiation Logs: Gamma Ray, Neutron and Density Roke Oil Enterprises Ltd. By: Logged by: G. R. Wallis

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3981.00	5.45	79.5%	
Chamberlain	3941.00	6.00	100%	





# Analytical Results

# D.D.H. P1-23

<u>Sample No</u> .	Seam	Interval (feet)
549	Skeeter	24.55 - 27.00
550	Skeeter	27.00 - 27.15
551	Skeeter	27.15 - 30.00
552	Chamberlain	64.00 - 64.75
553	Chamberlain	64.75 - 66.86
554	Chamberlain	66.86 - 70.00

	5-14		2
Structure	Description of Strata	Formation or Member	Depth t Base of Stratum (ft)
	SANDSTONE, fine grained.		215.0
	LAMINITE, siltstone and mudstone, mudstone and coal partings at base.		220.0
	SILTSTONE, mudstone phases.		228.0
•	SANDSTONE, fine grained.		231.0
	LAMINITE, siltstone and mudstone,		246.0
	COAL.	CHAMB. SM.	257.0
	SANDSTONE, coarse at top, becoming fine, 263' mottled (worm casts).		278.0
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor ({t)	Footage Recovered (ft)	Remarks
OVERBURDEN	6.00	6.00		No core to 7'
SANDSTONE, fine grained, grading to fine to medium grained in lower 5' of unit; light grey, calcareous in upper part of unit; sporadic phases of cross bedding and occassional carbonaceous wisps				
mudstone partings common.	15.20	21.20	13.30	
MUDSTONE, mid grey, weathered.	1.90	23.10	1.80	
SILTSTONE, light grey.	1.45	24.55	1.45	Seam roof
COAL, weathered.	2.45	27.00	2.45 ) )	
MUDSTONE, mid grey.	0.15	27.15	) 0.15 )	SKEETER SEAM
COAL, weathered.	2.85	30.00	) 1.73)	
SILTSTONE, with occassional fine sandstone phases; light grey, calcareous; mudstone laminae sporadically developed. Bedding dipping at 15 ⁰ .	5.00	35.00	4.65	Seam floor

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks .
CLAYSTONE, carbonaceous with coaly lenses to 0.01'.	1.80	36.80	1.80	· · ·
SILTSTONE, as above.	1.70	38.50	1.70	
MUDSTONE, dark grey, carbonaceous plant remains on bedding planes throughout; calcareous. Sub- vertical joints ironstained.	5.15	43.65	5.15	
SILTSTONE AND MUDSTONE INTERBEDS, light to mid grey, calcareous, junction between phases both wavy	7 55	51 20	7 55	
SILTSTONE, as above.	0.77	51.97	0.77	
SILTSTONE AND MUDSTONE LAMINITE, mid grey; lower 2.5' broken and sheared, slickensided faces, calcite filled joints.	12.03	64.00	10.90	Seam roof
COAL, sheared and mudstone.	0.75	64.75	0.75 )	, ,
dull, minor shearing	0.82	65.57	0.82)	CHAMBERLAIN SEAM
Ω .		·		

		}	Estimated		1
	Geological Description of Strata	Estimated Thickness (ft)	Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
CO	AL, dull and bright, partly sheared.	1.29	66.86	1.29 ) )	CHAMPERTATM CEAM
	sheared.	3.14	70.00	) 3.14 )	CHAMBERLAIN SEAM
SA in fi	NDSTONE, light grey, fine grained, carbonaceous upper 2.5'. Core fractured and broken, calcite lled joints with probable brecciation noted;				
po: lo	wer 7' ironstained.	12,00	82.00	11.25	Seam floor
<u>C0.</u>	AL, dull with numerous bright bands.	0.60	82.60	0.60	
	sheared.	0.35	82.95	0.35	
SA	NDSTONE, fine grained, light grey, carbonaceous.	2.40	83.35	2.40	T.D.
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Recorded By PETERSO	Truck No.	Operating Time		Rm @ 0F	Min, Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driffer	Footage Logged	Last Reading	First Reading	Date	Run. No.		well Depths Measured from	Log Measured from KLG	Permanent Datum	PRO	•	FIEL		RGE	SEC WEL	LSD	FILE NO.		NON	DOK
M Witnessed By	35	2 HOURS			H. Q.	14	AIR/WATER	-		184	107	100	183	31 JANUARY 1975	ONE		RIG FLOOR	<u>FLOOR</u> 1.	GROUND LEVEL	/INCE BRITISH CO		DSUKUNKA	ATION		LP-1-24	PANY COALITION		OIL ENTERPRISES LI		G
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#### BORE NUMBER D.D.H. P1-24

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Grid Reference:	47199 N 77932 I	E -,						
Date Commenced:	Jan. 23/75 I	Date Completed: Jan. 24/75						
Collar R.L.:	4094 ft.	Standard Datum.						
Total Depth: 185.85 ft.								
Drilled by:	Drilled by: Canadian Longyear Limited							
For:	Coalition Mining	g Ltd.						
Using:	Longyear Model 38 Unitised Rig ~ HQ T.T.							
Radiation Logs:	Gamma Ray, Neutr	con and Density						
By:	Roke Oil Enterprises Ltd.							

Logged by: G. R. Wallis

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3966.1	3.80	84.7%	
Chamberlain	3922.4	6.85	61.2%	





# Analytical Results

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## D.D.H. P1-24

Sample No.	Seam	Interval	(feet)		
555	Skeeter	124.10 -	126.42		
556	Skeeter	126.42 -	126.89		
557	Skeeter	126.89 -	127.90		
558	Chamberlain	164.75 -	168.48		
559	Chamberlain	168.48 -	171.60		

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SKR Cores (HQ TT)

February 27, 1975

F.S.I.

<b>6</b> 1			
Lab No.	A.D.L.	Ash %	<u>B.T.U.</u>

<u>SKR 555</u> 2196	5.0	5.2		8
<u>SKR 556</u> 2197	16.3	9.7		8 1/2
SKR 557 2198	. 10.8	19.1	<i>.</i>	5
2235 Comp. of SKR 555, 556, 557		9.9	14,060	8

Birtley Engineering Subsidiary of Great West Steel Industries

P1-24

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## COALITION MINING

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SKR Cores (HQ TT)

February 27, 1975

Lab No.	A.D.L.	Ash %	. <u>B.T.U.</u>	<u>F.S.I.</u>
SKR 558 2199	7.1	5.2		6
SKR 559 2200	3.4	7.8		7 1/2
2236 Comp. of Skr 558 & 559		6.8	14,580	7

Birtley Engineering Subsidiary of Great West Steel Industries

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	7.00	7.00		No core to 10'
SANDSTONE, medium grained, massive, mid grey				
with grey-white speckled appearance. Occassional				
calcite filled joint parallel to bedding planes.	8.00	15.00	4.00	
SANDSTONE, fine to medium grained, mid grey,				
evenly bedded to massive, slightly calcareous.				
Mud blebs and wisps 10' from top of unit.				
Becoming finer toward base of unit, grading			-	
toward siltstone. Rare calcite filled joint.	53.00	68.00	50.83	
MUDSTONE AND SILTSTONE INTERBEDS, mid to dark grey,				
siltstone phases varying from 0.01' to 0.20';				
average 0.08', mudstone phases averaging 0.08'				
and even. Occassional sub-vertical joint.	16.00	84,00	16.00	
SANDSTONE, fine grained with fine to medium				
grained phase in upper 1' of unit, containing				
mud blebs and wisps, light grey, massive.	4.95	88.95	4.95	
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey, grading to very fine sandstone				
at base of unit. Siltstone partings in mudstone	4			
phases in upper 2' of unit, mud swirls present,				
one curved sub-vertical joint in unit.	3.55	92.50	3.55	
MUDSTONE AND SILTSTONE LAMINITE, dark grey.	3.85	96.35	3.85	
SANDSTONE, fine grained, light grey, massive in				
upper 8', evenly hedded in lower part of unit.				
Zone of coaly and carbonaceous wisps and lenses	ļ			
between 105' and 109', and coaly partings on				
bedding planes throughout lower section of				
unit.	23.49	119.84	23.49	
MUDSTONE, mid to dark grey, becoming partly				
carbonaceous at base. Large shelly fossils at				
121', 0.30' coal at 122'.	4.26	124.10	4.26	Seam roof
COAL, stony.	0.06	124.16	0.05)	SKERTER SEAM
dull with minor bright bands.	0.89	125.05	) 0.75)	
2				

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, stony.	0.12	125.17	0.10 )	
dull and bright.	0.42	125.59	0.36 )	
dull with minor bright bands.	0.42	126.01	0.36)	
bright with minor dull bands.	0.41	126.42	0.35 )	SKEETER SEAM
weathered.	0.47	126.89	0.40)	
bright with minor dull bands.	0.54	127.43	0.45)	
MUDSTONE AND COAL MIXED.	0.47	127.90	0.40)	
SILTSTONE, mid grey, with occassional mudstone lenses.	2.70	130.50	2.70	Seam floor
MUDSTONE, light grey, occassional slickensided joints; carbonaceous zone at 133'. Rare silty phases at base of unit.	6.60	137.20	5.15	•
3				

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor ({t)	Footage Recovered (6t)	Remarks
MUDSTONE AND SILTSTONE INTERBEDS, containing silty units to 0.50', grading toward laminite in part. Mudstone phases maximum 0.40', siltstone phases 0.70', commonly closely bedded and averaging				
0.02' thick for both lithologies. Graded bedding common, occassional slump feature and distorted bedding, grades into unit below.	13.20	150.40	13.00	
SILTSTONE, grading from above unit, light grey. Sharp contact with underlying unit.	3.87	154.27	⁻ 1.60	- -
MUDSTONE AND SILTSTONE LAMINITE, dark grey. Two joint fractures, planar at 35 ⁰ to core axis.	10.48	164.75	10.48	Seam roof
COAL, dull and bright.	2.46	167.21	1.50 )	
dull with minor bright bands.	1.27	168.48	) 0,78 ) )	
dull.	0.59	169.07	0.36)	CHAMBERLAIN SEAM
dull with minor bright bands.	0.21	169.28	0.13 )	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, bright.	0,08	169.36	0.05)	
dull and bright.	0.16	169.52	0.10 )	
bright.	0.20	169.72	0.12)	
dull and bright	0.54	170.26	0.33)	CHAMBERLAIN SEAM
bright.	0.60	170.86	0.37)	
dull and bright	0.74	171.60	) 0.45)	
SANDSTONE, light grey, fine to medium grained, carbonaceous in upper 2.5'. Between 175' and 178' white flecked appearance. Becoming finer grained toward base of unit. Occassional joint iron- stained. Basal 4.0' core broken, calcite joint filling, possible fault at 184'.	14.25	185.85	14.25	Seam floor (Possible fault) T.D.
(5)				

Recorded By I		Truck No.	Operating Time		Rm @ OF		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No.	Welt Depths Measured fro	Log Measured from	Permanent Datum	P.		Ťī		RGE M L			FILE NO. C		D D X	
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#### BORE NUMBER D.D.H. P1-25

Grid Reference: 47244 N 78238 E

Date Commenced: Jan. 24/75 Date Completed: Jan. 26/75

Collar R.L.: 4121 ft. Standard Datum. Total Depth: 268 ft.

Drilled by:Canadian Longyear LimitedFor:Coalition Mining Ltd.Using:Longyear Model 38 Unitised Rig - HQ T.T.

Radiation Logs: Gamma Ray, Neutron and Density By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

COAL SEAM I	NTERSECTION	<u>NS</u>		
Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Bird	4078.00	6.00	35.8%	Weathered
Skeeter	3923.00	3.80	28.9%	Sheared
Chamberlain	3869.20	8.00	73.1%	







# COALITION MINING

February 27, 1975

SKR Cores	(но т	T)
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Client # Lab No.		A.D.L.	<u>Ash %</u>	<u>s.</u>	B.T.U.	<u>F.S.1.</u>
<u>SKR 581</u> 2223		8.1	33.7		10,152	4
<u>SKR 582</u> 2224		6.7	9.7			6
<u>SKR 583</u> 2225		18.3	6.4			8 1/2
2242 Comp. of SKR 58	2ε 583		7.7		14,370	7 [.] 1/2
<u>SKR 584</u> 2226		14.4	29.0	6.0	10,873	5 1/2
Analytical Re	sults - D.D.H.	P1-25		`		
Sample No.	Seam	Interval (bee:	<u>t</u> )			
581	Skeeter	194.20 - 198.	00			
582	Chamberlain	244.21 - 249.	58			
583	Chamberlain	249.68 - 251.	80			
584	Bird	37.00 - 43.	00			

Birtley Engineering

Subsidiary of Great West Steel Industries

P1-25

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN and weathered rock.	28.00	28.00	9.30	No core to 10'
MUDSTONE, extremely weathered.	2.70	30.70	2.70	
SANDSTONE, medium grained, grey-greenish, carbon- aceous flecks throughout, glauconitic.	6.30	37.00		Base of Moosebar Formation. Seam roof.
COAL, weathered.	1.80	38.80	1.60 ) )	10010
MUDSTONE, weathered.	2.00	40.80	) 0.75) )	BIRD SEAM
COAL, weathered.	2.20	43.00	) 0.80)	
MUDSTONE, dark grey, occassional siltstone partings.	1.60	44.60	1.60	Seam floor
SANDSTONE, fine to medium grained, grey-white, quartz-lithic, cross bedding common, otherwise even bedded. Rare mudstone lense to 0.10'. 3' of white flecked sandstone below upper 5' of unit. Quartz and calcite filled fracture				
zones at 56', 58' and 63'; minor calcite filled joints throughout.	24.85	69.45	24.85	
		-		

Geologic	al Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, fine gr weakly bedded, cal 81.5', 83', 89', 9 fractures/joints p unit	ained, grey white, massive to careous. Fracture zones at 2' and 97'; other minor resent. Generally less disturbed	20 55	108.00	28.00	
unt c.	·	30.33	100.00	30.00	
SILTSTONE AND MUDS grey, both phases Fractures of minor	TONE INTERBEDDED, light to mid varying between 0.05' to 0.10'. nature throughout - tension,				
severe zone at 109	'; bedding horizontal.	18.00	126.00	16.80	
SILTSTONE, mid gre	y, minor mudstone.	2.80	128.80 [.]	2.80	
SANDSTONE, fine gr toward base of uni cement, massive. calcite filled ten angles to core axi	ained, becoming finer grained t; light grey, dolomitic Fracture zones represented by sion joints at irregular s. Dip at top of unit 25 ⁰ (?)	11.70	140.50	11.70	
SILTSTONE, mid to dipping at 75 ⁰ to	dark grey, bedding disturbed - 85 ⁰ ; slickensided planes 45 ⁰				Fault established
to $85^{\circ}$ to core axi	5.	6.75	147.25	5.55	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, very fine to fine grained, massive.				
Occassional mudstone lense and slickensided plane.		1		
Core fractured to minor degree. Bedding dipping				
at 75 ⁰ with mudstone of underlying unit.	7.45	154.70	7.45	Fault established
MUDSTONE, dark grey, becoming silty in lower 2.5',				
basal 0.50' carbonaceous. Dipping 25 ⁰ . Calcite	ļ			T
filled joints and slickensided planes.	10.40	165.10	7.70	
SANDSTONE, fine grained, light grey. Coaly partings				
and wisps 174' and sporadically throughout rest of				
unit. Calcite filled joints present but not				
common. Bedding generally undisturbed; evenly				
bedded, occassional cross bedding and massive				
phases.	24.90	190.00	23.35	
MUDSTONE, with minor silty interbeds, dark grey,				
carbonaceous plant remains on bedding.	3.30	193.30	3.30	
SILTSTONE, mid grey, rare carbonaceous flecks.	0.90	194.20	0.90	Seam roof
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 Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, broken throughout, sheared.	3.80	198.00	1.10	SKEETER SEAM
SILTSTONE AND MUDSTONE LAMINITE, mid grey.	4.58	202.58	4.58	Seam floor
COAL, dull.	0.35	202.93	0.35	
CLAYSTONE, carbonaceous to dark grey.	1.00	203.93	1.00	
MUDSTONE, mid grey, grading to silt in basal part of unit.	1.70	205.63	1.70	
SILTSTONE AND MUDSTONE INTERBEDS, mid to light grey, carbonaceous remains on bedding planes but not universal. Bedding fluted and cuspate in centre				
of unit, even elsewhere. Phases commonly less	14 02	219 65	11 95	
	T1.02	210.00		
SILTSTONE, light grey, minor mudstone intercalations.	2.17	221.82	2.17	
MUDSTONE AND SILTSTONE LAMINITE, mudstone dominant.	5.28	227.10	5.28	
		1	1 /	1

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, mid to dark grey; fracturing evident, calcite filled joints. Carbonaceous zone at 236'.	16.70	243.80	14.20	'Probable fault
COAL AND SHEARED ROCK, coal dominant.	0.41	244.21	0.30)	
<u>COAL</u> , dull and bright with bright bands, to 0.15' sheared for most part.	5.47	249.68	4.40)	CHAMBERLAIN SEAM
sheared, possibly oxidised.	2.12	251.80	1.55 )	
SANDSTONE, fine to medium grained, carbonaceous, mid grey.	16.20	268.00	16.20	Seam floor T.D.
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Recorded By		Truck No.	Operating Time		Rm © oF		Min Diam,	Liquid Level	Fluid Type	Casing Dritler	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Well Depths Measure	Log Measured from	Permanent Datum			- -		N N	TWP	SEC	FILE NO.		ス				
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#### BORE NUMBER D.D.H. P1-26

Grid Reference: 47100 N 77712 E

Date Commenced: Jan. 26/75 Date Completed: Jan. 27/75

Collar R.L.: 4070 ft. Standard Datum.

Total Depth: 152 ft.

Drilled by: Canadian Longyear Limited For: Coalition Mining Ltd. Using: Longyear Model 38 Unitised Rig - HQ T.T.

Radiation Logs: Gamma Ray, Neutron and Density By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	3979.05	4.55	92.3%	
Chamberlain	3933.00	8.00	87.1%	





# Analytical Results

# D.D.H. P1-26

Sample No.	Seam	Interval	(feet)		
585	Skeeter	86.40 -	86.67		
586	Skeeter	86.67 -	90.03		
587	Skeeter	90.03 -	90.46		
588	Skeeter	90.46 -	90.95		
589	Chamberlain	129.00 -	137.00		
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## COALITION MINING

February 27, 1975

# SKR Cores (HQ TT)

<u>Client #</u> Lab No.	<u>A.D.L.</u>	<u>Ash % S.</u>	<u>B.T.U.</u>	<u>F.S.l.</u>
<u>SKR 585</u> 2227	2 3	24 0		1
<u>SKR 586</u> 2228	3.8	8.4		7 1/2
<u>SKR 587</u> 2229	10.8	53.8		1
<u>SKR 588</u> 2230	2.8	19.5		3
2243 Comp. of SKR 585, 586, 587 ε 588		15.3	13,150	7 1/2

SKR 589				- 4	
2231		20.8	5.0	14,622	4
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## SUKUNKA D.D.H. P1-26

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered ({t)	Remarks
OVERBURDEN	3.00	3.00		No core to 6'
SANDSTONE, light grey, fine grained, weakly bedded with massive units to 3'. Calcareous, occassional weathered sub-vertical joint in upper 10'.	24.00	27.00	21.00	
MUDSTONE AND SILTSTONE INTERBEDDED, bedding generally planar with zones of fluted and cuspate bedding. Siltstone phase 0.05' to 0.15', average 0.10'; mudstone phases commonly thinner. Calcareous.	16.85	43.85	16.85	
SANDSTONE, as above.	5.00	48.85	5.00	
SILTSTONE, with mudstone interbeds, but latter lithology minor.	2.80	51.65	2.80	
MUDSTONE AND SILTSTONE, laminated, dark grey.	3.30	54.95	3.30	
SANDSTONE, fine grained, light grey, carbonaceous wisps throughout, with occassional coaly lenses to 0.03'. Very rare calcite filled joint.	24.00	78.95	24.00	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE, grading to mudstone; slightly carbonaceous.	2.55	81.50	2.55	
CLAYSTONE, carbonaceous to dark grey; occassional slickensided joint.	3.30	84.80	0.90	
SANDSTONE, fine to medium grained, dark grey to carbonaceous.	1.60	86.40	1.30	Seam roof
COAL AND ROCK, sheared.	0.27	86.67	0.25)	,
COAL, bright with minor dull bands.	1.96	88.63	) 1.80 )	
dull.	0.40	89.03	0.37)	
dull and bright.	0.25	89.28	0.23)	
sheared.	0.43	89.71	0.40)	SKEETER SEAM
dull with minor bright bands.	0.32	90.03	) 0.30 )	
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## SUKUNKA D.D.H. P1-26

Geological Description of Strata	Estímated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , dull and rock intermixed (mainly coal).	0.43	90.46	0.40)	SKEETER SEAM
dull and bright.	0.49	90.95	) 0.45 )	
SILTSTONE, mid grey, plant fragments throughout; mudstone lenses to 0.01' throughout. Dipping 35 ⁰ .	5.19	96.14	5.19	Seam floor
COAL, dull and bright.	0.13	96.27	0.13	
CLAYSTONE, carbonaceous to dark grey.	1.93	98.20	0.83	
CLAYSTONE, carbonaceous and coal lenses to 0.10'.	0.55	98.75	0.55	
SILTSTONE, mid grey, grading to silty mudstone in part. Carbonaceous plant remains on bedding planes. One sub-vertical joint. Calcareous.	12.95	111.70	12.35	
SILTSTONE AND MUDSTONE LAMINITE, calcareous, mid grey.	4.30	116.00	4.30	
SILTSTONE, light grey, calcareous.	1.80	117.80	1.80	

Geological Description of Strata	Estimated Thickness {ft}	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, silty	1.70	119,50	1.70	×
MUDSTONE, dark grey, contains plant remains in bedding planes.	9.50	129.00	8.70	Seam roof
<u>COAL</u> , dull and bright with bright bands to 0.05' throughout.	8.00	137.00	6.97	CHAMBERLAIN SEAM
SANDSTONE, light to mid grey, fine to medium grained, carbonaceous, massive.	15.00	152.00	15.00	Seam floor T.D.
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1 - -	Truck No.	Operating Time		Rm @ of		Min, Diam,	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Log Measured from Well Depths Measured	Permanent Datum			RGE	SEC	FILE NO.				
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GAMMA RAY

NEUTRON



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Grid Reference: 48549 N 77520 E

Date Commenced: Jan. 27/75 Date Completed: Jan. 28/75

Collar R.L.: 4108 ft. Standard Datum.

Total Depth: 100.00 ft.

Drilled by: Canadian Longyear Limited For: Coalition Mining Ltd. Using: Longyear Model 38 Unitised Rig - HQ T.T.

Radiation Logs: Gamma Ray, Neutron and Density By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

COAL SEAM IN	NTERSECTION	NS		
Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4057.85	3.65	100%	
Chamberlain	4024.1	5.50	92.5%	





# Analytical Results

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# D.D.H. P1-27

<u>Sample No</u> .	Seam	Interval	(beet)
562	Skeeter	46.50 -	47.50
563	Skeeter	47.50 -	48.45
564	Skeeter	48.45 -	49.65
565	Skeeter	49.65 -	50.15
566	Chamberlain	78.89 -	83.90

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COALITION MINING

February 27, 1975

SKR Cores (HQ TT)

<u>Client #</u> Lab No.	<u>A.D.L.</u>		<u>Ash %</u>	B.T.U.	F.S.1.
SKR 562 2203	22.5		2.9	•	8 1/2
<u>SKR 563</u> 2204	59.3		3.7		8
<u>SKR 564</u> 2205	22.0		31.9		1
<u>SKR 565</u> 2206	6.6		4.3		8
2238 Comp. SKR 562, 563, and 565	564, Raw		9.2	14,180	7 1/2
SIZE ANALYSES	AB NO. 2238		Σ		
Size Fraction	<u>Wt %</u>	Ash %	Cum Wt %	Cum Ash %	<u>F.S.I.</u>
+ 100 M	92.1	7.5	92.1	7.5	
- 100 M	7.9	16.3	100.0	8.2	7 1/2
SINK-FLOAT ANALYSES	+ 100 M				
Size Fraction	<u>Wt %</u>	Ash %	<u>Cum Wt %</u>	Cum Ash %	<u>F.S.I.</u>
-1.40	89.1	2.5	89.1	2.5	8
1.40-1.50	1.6	18.9	90.7	2.8	1 1/2
1.50-1.60	1.5	30.8	92.2	3.2	1
+1.60	7.8	57.2	100.0	7.5	1/2
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Birtley Engineering Subsidiary of Great West Steel Industries

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P1-27

- COALITION MINING

February 27, 1975

SKR Cores (HQ TT)

Client # Lab No.	 A.D.L.	Ash %	<u>B.T.U.</u>	<u>F.S.l.</u>
<u>SKR 566</u> 2207	12.7	19.6	12,227	4 1/2

Birtley Engineering

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Subsidiary of Great West Steel Industries

SUKUNKA	D.D.	H.	P1-27
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	3,00	3.00		No core to 10'
MUDSTONE, weathered.	11.20	14.20	1.15	
SILTSTONE, light grey, partly weathered.	4.55	18.75	3.30	i
MUDSTONE, mid grey, carbonaceous phase 0.50' thick at base.	2.25	21.00	2,25	
SANDSTONE, light grey, fine grained, evenly bedded to massive, cross bedding phases present. Carbona- ceous wisps and partings throughout, especially between 29' and 31'. Broken zone at 39', mudstone/siltstone lense - no evidence of faulting.	19.05	40.05	19.05	
MUDSTONE, dark grey, with lenses of siltstone ranging from 0.05' to 0.20', associated small scale slump structures common: Small shelly fossils				
to base of unit	6.45	46.50	3.45	Seam roof
COAL, weathered (?)	1.00	47,50	1.00 )	SKEETER SEAM

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (6t)	Remarks
COAL, dull.	0.70	48.20	0.70)	
STONE, coaly.	0.10	48.30	0.10	
COAL, dull and bright	0.15	48.45	0.15 )	SKEETER SEAM
broken and sheared, possibly weathered.	1.20	49.65	1.20)	
stony.	0.50	50.15	) 0.50)	
MUDSTONE, with siltstone intercalations.	1.45	51.60	1.45	Seam floor
SILTSTONE, light grey; mudstone partings on bedding planes, tending toward laminated; basal				
calcite filled joint.	5.40	57.00	5.25	
MUDSTONE, carbonaceous and coal.	2.80	59.80	1.60	
SILTSTONE, light grey with minor mudstone laminations.	4.50	64.30	4.50	
				1

Geological Pescription of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE AND MUDSTONE, laminated but laminations weakly developed.	3.93	68.23	3.93	
SILTSTONE, light grey.	0.60	68.83	0.60	
SILTSTONE AND MUDSTONE INTERBEDDED.	9.57	78.40	7.98	Seam roof
CLAYSTONE, carbonaceous.	0.49	78.89	0.45 )	
COAL, dull and bright	3.82	82.71	3.54)	CHAMBERLAIN SEAM
dull and bright, minor shearing.	1.19	83.90	) 1.10 )	
SANDSTONE, fine to medium grained, light grey, carbonaceous partings throughout, massive in upper 10', evenly bedded remainder of unit.	16.10	100.00	16.10	Seam floor T.D.
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#### BORE NUMBER D.D.H. P1-28

Grid Reference: 48846 N 77344 E

Date Commenced: Jan, 28/75 Date Completed: Jan. 28/75

Collar R.L.:4096 ft.Standard Datum.Total Depth:46.0 ft.

Drilled by: Canadian Longyear Limited For: Coalition Mining Ltd. Using: Longyear Model 38 Unitised Rig - HQ T.T.

Radiation Logs: Gamma Ray, Neutron and Density By: Roke Oil Enterprises Ltd.

Logged by: G. R. Wallis

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Th	ickness (ft.)	Recovery	Remarks	
Chamberlain	4066.20		4.80	100%		



COALITION MINING

February 27, 1975

SKR	Cores	(HQ	TT)
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<u>Client #</u> Lab No.		<u>A.D.L.</u>	<u>Ash &amp;</u>	<u>B.T.U.</u>	<u>F.S.I.</u>
SKR 560 2201	·	3.9	49.1		1/2
<u>SKR 561</u> 2202	,	26.8	3.8		7 1/2

2237 Comp. of RAW ANAL	SKR 560 & <u>-YSES</u> La	561 ab No. 2237							са.
,	<u>R.M.</u>	<u>Ash %</u>	Vol.	<u>F.C.</u>	<u>s.</u>	B.T.U.	<u>F.S.I.</u>	<u>S.G.</u>	Calc. Factors
•	.8	6.8	24.6	67.8	.62	14,260	7	1.36	Air Dry Basis
		6.9	. 24.8	68.3	.63	14,380			Dry Basis

Analytical R	esults - D.D.H.	P1-28
<u>Sample No</u> .	Seam	Interval (feet)
560 -	Chamberlain	25.00 - 25.30
561	Chamberlain	25.30 - 29.80

Birtley Engineering Subsidiary of Great West Steel Industries

P1-28

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN .	3.00	3.00		No core to 6'
MUDSTONE AND SILTSTONE INTERBEDS, light grey, mudstone phases deeply weathered; siltstone phases to 0.40', averaging 0.05'.	7.00	10.00	4.00	· · ·
SILTSTONE, mid grey; calcite filled joint at 15.00'.	6.50	16.50	6.50	
MUDSTONE AND SILTSTONE LAMINITE, mid grey, weathered in part. Basal 0.30' broken and slickensided.	8.50	25.00	7.30	Seam roof
COAL, sheared, containing minor rock.	0.30	25.30	0.30)	CHAMPEDIAIN SFAM
dull and bright, minor weathering.	4.50	29.80	) 4.50)	CINDERIN DEM
SANDSTONE, fine to medium grained, light grey, carbonaceous in upper 5'. Mudstone with carbonaceous partings and wisps in lower part of unit.	16.20	46.00	16.20	Seam floor T.D.

	Truck No.	Operating Time				Min, Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Log Measured from	Permanent Datum			FIE		RGE M LO	TWP		FILE NO. CO	-				
	35	2 HOURS				H.Q.	65	AIR/WATER		-	187	187	186	00	186	1 FEBRUARY 1975	ONE		RIG FLOOR	GROUND LEVEL	OVINCE BRITISH (	•	LD SUKUNKA		CATION		P-1-29	MPANY COALITION	OIL ENTERPRISES L			G	
6																	· · ·		<u>5</u> Ft. Above Perm. Datum	Elev.	COLUMBIA	· · · · · · · · · · · · · · · · · · ·						N MINING LIMITED	LTD. CALGARY,	DENSILOG		AMMA RAY NEUTRI	
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### BORE NUMBER D.D.H. P1-29

Grid Reference: 48602 N 77632 E Date Commenced: Jan. 28/75 Date Completed: Jan. 30/75 Standard Datum. 4100 ft. Collar R.L.: 189 ft. Total Depth: Canadian Longyear Limited Drilled by: Coalition Mining Ltd. For: Longyear Model 38 Unitised Rig - HQ T.T. Using: Gamma Ray, Neutron and Density Radiation Logs: Roke Oil Enterprises Ltd. By: G. R. Wallis Logged by:

### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4039.50	5.00	1.00%	
Chamberlain	4003.00	7.25	100%	
Chamberlain (Repetition)	3926.50	21.50	5.5%	Faulted









# Analytical Results

# D.D.H. P1-29

Sample No.	Seam	Interval	(seet)
567A	Skeeter	55.50 -	57.30
567B	Skeeter	57.30 -	60.50
568	Chamberlain	89.75 -	90.50
569	Chamberlain	90.50 -	90.95
570	Chamberlain	90.95 -	92.75
571	Chamberlain	92.75 -	94.51
572	. Chamberlain	94.51 -	97.00
573	Chamberlain*	152.00 -	173.50

*) Seam repetition due to faulting.

COALITION MINING

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February 27, 1975

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SKR Cores (HQ TT)

<u>Client #</u> Lab No.	A.D.	· L.	Ash %	B.T.U.	F.S.1.
······································			· ·		
<u>SKR 567A</u> 2208	40.9		9.9	•	8
SKR 567B	12.6		35.1	·	2 1/2
2239 Comp. of SKR 567A &	567в		26.0	11,510	5 1/2
SIZE ANALYSES LAB	NO. 2239				
Size Fraction	Wt %	<u>Ash %</u>	Cum Wt %	Cum Ash %	F.S.I.
+ 100 M	80.2	23.9	80.2	23.9	
- 100 M	19.8	29.3	100.0	25.0	4 1/2
SINK-FLOAT ANALYSES	+100 M		•		د
S.G. Fraction	<u>Wt %</u>	<u>Ash %</u>	Cum Wt %	Cum Ash %	<u>F.S.I.</u>
-1.40	56.1	4.3	56.1	4.3	8
1.40-1.50	5.6	23.8	61.7	6.1	1 1/2
1.50-1.60	6.4	33.1	68.1	8.6	1
+1.60	31.9	56.7	100.0	23.9	1/2

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Birtley Engineering Subsidiary of Great West Steel Industries

## COALITION MINING

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SKR Cores (HQ TT)

<u>Client #</u> Lab No.		A.D.L.	Ash %	B.T.U.	F.S.1.
SKR 568 2210		14.3	25.8		. 3
SKR 569 2211		3.6	2.5		6
SKR 570 2212		6.0	3.8		6 1/2
<u>SKR 571</u> 2213		10.3	2.7		8 1/2
<u>SKR 572</u> 2214		16.9	6.7		8
2240 Comp. of SKR 568,	569, 570, 571 e	572	7.1	14,630	7 1/2
SIZE ANALYSES	LAB NO. 2240	,		•	
Size Fraction	Wt %	Ash %	Cum Wt %	Cum Ash %	F.S.1.
+ 100 K	92.7	6.4	92.7	6.4	
- 100 M	7.3	6.7	100.0	6.4	8 1/2
SINK-FLOAT ANALYSE	<u>es</u> + 100 M				
S.G. Fraction	Wt %	Ash %	Cum Wt %	Cum Ash %	F.S.1.
-1.40	92.5	2.9	92.5	2.9	8
1.40-1.50	1.1	19.6	93.6	3.1	1 1/2
1.50-1.60	0.4	29.4	94.0	3.2	. <b>I</b>
+1.60	6.0	58.6	100.0	6.4	1/2

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February 27, 1975

P1-29

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Birtley Engineering Subsidiary of Great West Steel Industries

SKR Cores (HQ TT)		•		
<u>Client #</u> Lab No.	<u>A.D.L.</u>	Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>
SKR 573 2215	16.7	20.5	12,122	3 1/2

Birtley Engineering Subsidiary of Great West Steel Industries

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	16.00	16.00		No core to 17'
WEATHERED ROCK	1.00	17.00	1.00	
SILTSTONE, light grey.	2.75	19.75	2.00	
SILTSTONE AND MUDSTONE INTERBEDS, grading to laminite in lower part of unit. Bedding uneven, swirls and slump features present. Phases generally thin, less than 0.15'. Core broken, commonly by sub-vertical jointing in lower 8'. SANDSTONE, fine grained, light grey, bedding generally even, occassional massive phases, dip at 42' to 7°. Carbonaceous partings common particularly in lower 5.0', occassional mudstone	11.90	31.65	11.90	
lenses.	13.70	45.35	13.70	
MUDSTONE AND SILTSTONE INTERBEDS, as above.	3.75	49.10	3.75	
SANDSTONE, as above.	1.80	50.90	1.80	
			1	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey; 0.50' slickensided joints at 55.0' - possible fault.	4.60	55.50	3.75	Seam roof
COAL, weathered, sheared coal present.	5.00	60.50	5.00	SKEETER SEAM
SILTSTONE, light grey, calcite filled joints at 80 ⁰ to core axis; fine mudstone laminae throughout.	6.00	66.50	4.50	Seam floor
MUDSTONE, mid grey, calcite filled joints, possible faults at 68' and 86'; bed dips at 30 ⁰ - 82' to 88', siltstone between 75' and 77'.	23.25	89.75	21.10	Seam roof
COAL, sheared.	0.75	90.50	0.75)	Possible fault
stony.	0.45	90.95	0.45)	
dull.	1.10	92.05	1.10	CHAMBERLAIN SEAM
dull with minor bright bands.	0.70	92.75	0.70	
dull and bright, sheared.	0.83	93.58	0.83	
2	]			

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE	0.03	93.61	0.03)	
COAL, sheared.	0.60	94.21	0.60	
dull and bright.	0.30	94.51	0.30	CHAMBERLAIN SEAM
sheared.	2.49	97.00	2.49)	
SANDSTONE, fine to medium grained, light grey. Carbonaceous, core broken for most part to varying degrees; intense fracturing and jointing between 110' to 112', 115' to 116', 133' to 134' at 137', 146' and 151'. Bedding 80° to 90° at 132', 60° at 143'. Joint planes irregular throughout, generally slickensided, occassional calcite filled ones; both tension and shear planes present.	55.00	152.00	55.00	Seam floor Fault established

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, intensely sheared throughout.	7.00	159.00	2.50)	CHAMBERLAIN SEAM Repetition (cor-
MUDSTONE OR SILTSTONE, sheared.	3.00	162.00	)	rected from radia
COAL, intensely sheared throughout.	11.50	173.50	) 1.44 )	fion log) Fault probable.
SANDSTONE, fine to medium grained, light grey, car- bonaceous. Fractured and broken, slickensided at 172' to 173' and 177' to 178'. Some joints recemented with calcite. Possible dip of bedding immediately below seam at 45°.	15.50	189.00	15.00	T.D.
- -				

Recorded By PETER	Truck No.	Operating Time		Rm @ ^O F	Min. Dam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	veel Deptns Measured from	Log Measured from	Permanent Datum	PR				TWP	SEC	FILE NO. CO			
SON Witnessed By WALLIS	35	2 HOURS				<u>1</u> 9	AIR/WATER			201	201	200	00	200	31 JANUARY 1975	ONE		RIG FLOORFt. Above Perm. Datum	GROUND LEVEL Elev.	OVINCE BRITISH COLUMBIA			CATION		ELL P-1-30	MPANY COALITION MINING LIMITED	OIL ENTERPRISES LTD. CALGARY	DENSILOG	GAMMA RAY NEUT
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#### BORE NUMBER D.D.H. P1-30

Grid Reference: 47991 N 77911 E

Date Completed: Jan. 31/75 Date Commenced: Jan. 30/75 Collar R.L.: 4131 ft. Standard Datum. Total Depth: 201 ft. Canadian Longyear Limited Drilled by: For: Coalition Mining Ltd. Longyear Model 38 Unitised Rig - HQ T.T. Using: Radiation Logs: Gamma Ray, Neutron and Density Roke Oil Enterprises Ltd. By: G. R. Wallis Logged by:

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Remarks
Skeeter	4003.00	8.00	6.7%	Faulted
Skeeter	3987.70	4.90	100%) )	Fault
Skeeter	3959.70	8.80	91.5%)	Repetitions






## Analytical Results

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#### D.D.H. P1-30

<u>Sample No</u> .	Seam	Interval (feet)
574	Skeeter	120.00 - 128.00
575	Skeeter*	138.40 - 143.30
576	Skeeter )	162.50 - 164.96
577	Skeeter	164.96 - 168.57
578	Skeeter 🗼	168.57 - 169.94
579	Skeeter	169.94 - 170.43
580	Skeeter/	170.43 - 171.30

*) Seam repetition due to faulting.

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COALITION MINING

February 27, 1975

SKR Cores (HQ TT)

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<u>Client #</u> Lab No.	<u>A.D.L.</u>	Ash %	<u>B.T.U.</u>	<u>F.S.I.</u>
<u>SKR 574</u> 2216	10.0	9.8	13,978	7
<u>SKR 57<b>5</b></u> 2217	. 4.8	14.0	. ·	3 1/2
<u>SKR 576</u> 2218	12.8	13.0		6 1/2
<u>SKR 577</u> 2219	11.6	2.8		8
<u>SKR 578</u> 2220	10.8	9.6		7 1/2
<u>SKR 579</u> 2221	7.6	45.4		١
<u>SKR 580</u> 2222	6.4	13.4		7
2241 Comp. of SKR 576, 577, 578, 579 & 580		10.5	13,930	8

Birtley Engineering Subsidiary of Great West Steel Industries

P1-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
OVERBURDEN	3.00	3.00		No core to 6'
SANDSTONE, very fine to fine grained, top 15' fine to medium grained and lower 2' grading to siltstone; light grey colour. Occassional phases of cross-bedding, otherwise bedding even to massive in part. Occassional sub-vertical to vertical joint; upper 10' slightly weathered.	61.85	64.85	58.85	
SILTSTONE AND MUDSTONE INTERBEDS, mid grey, graded bedding common within phases; phase thickness of each lithology ranging from 0.02' to 0.15', with minor zones of laminite.	17.15	, 82.00	17.01	
SANDSTONE, fine grained, light grey, massive.	3.35	85.35	3.35	
SILTSTONE AND MUDSTONE INTERBEDS, as above.	5.40	90.75	5.40	
SILTSTONE AND MUDSTONE, laminated.	4.25	95.00	4.25	

SUKUNKA D.D.H. P1-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, fine grained, light grey, coaly wisps				;
throughout as discrete lenses or on hedding				,
planes Cross bedded and evenly bedded	20.20	115 20	10.05	
pranes. Cross bedded and evening bedded.	20.30	113.30	19.95	
MUDSTONE dark group alightly weathered a let			ł	:
Modsions, dark grey, singhtly weathered. 0.15	4 70	7.20.00	4 40	for an and f
COAL AT ILY IT.	4.70	120.00	4.40	Seam roor
		100.00	1.00	
COAL, dull and bright.	8.00	128.00	1.20	SKEETER SEAM
				Fault established
MUDSTONE, dark grey, rare carbonaceous wisps.	1.20	129.20	1.20	Seam floor
	1.20	125.20		
SANDSTONE, very fine to fine grained, light grey				1
calcite filled joints present Dipping 30 ⁰				
at 131' and $60^{\circ}$ at 133' Tension planes				1
folded(2)	1 00	13/ 10	4 20	
	4.90	124.10	4.20	
MUDEFONE ciltu mid to dark group Calcita filled				
MODSIONE, SILCY, Mid to dark grey. Calcite lilled,	4.20	120 40	2 20	Corm wooff
sickensided Joint/Hactured surfaces.	4.30	138.40	3.30	Seam roor
COAL, duil with minor bright bands. Fractured				
and proken throughout.	4.90	143.30	4.90	SKEETER SEAM
	1	4		

SUKUNKA	D.D.H.	. P1-30
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Geological Description of Strata	Estimated Thickness [ft]	Estimated Depth to Stratum Floor_(ft)	Footage Recovered (ft)	Remarks
MUDSTONE, mid grey. Core broken throughout; slickensided surfaces, dip of bedding 55 ⁰ .	1.90	145.20	1.90	Seam floor Fault possible
SILTSTONE, light grey, fractured; slickensided surfaces and tension fractures; bedding dipping 50 ⁰ at 148'. Joints calcite filled. Zone of intense deformation ends at 149' beds dip 5 ⁰				
at 150'.	5.25	150.45	5.25	Fault possible
COAL, sheared.	1.55	152.00	• 0.25	
SANDSTONE, fine grained, light grey, coaly wisps.	3.40	155.40	3.40	
CLAYSTONE, dark grey to carbonaceous sheared.	1.00	156.40	1.00	
MUDSTONE, dark grey to carbonaceous.	4.35	160.75	4.35	
SILTSTONE, dark grey, coaly wisps.	1.75	162.50	0,95	Seam roof
<u>a</u>				
	1	1	1	•

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, intensely sheared, plies unidentifiable.	2.46	164.96	2.25 )	·
dull with minor bright bands, moderately sheared.	3.61	168.57	) ) 3,30 )	
extremely sheared.	l.37	169.94	1.25 )	SKEETER SEAM Positive fault
stony, containing band of bright coal 0.08'.	0.49	170.43	0.45 ) )	
dull and bright.	0.87	171.30	) 0.80 )	
SILTSTONE, light grey, grading from mudstone in upper l'. Slickensided fracture planes present but not common. Bedding dipping at 45°.	6.30	177.60	6.10	Seam Floor
CLAYSTONE, dark grey to carbonaceous, rock fractured throughout.	2.30	179.90	2.30	Possible fault
COAL, with minor rock bands, broken.	0.60	180.50	0.60	
(4)				

SUKUNKA D.D	.H. P	2-30
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, mid grey, slickensided slip planes throughout. Becoming silty toward base of unit.	8.00	188.50	8.00	
SANDSTONE, light grey, very fine grained; calcareous. Dipping 45 ⁰ .	1.80	190.30	1.80	
SILTSTONE, mid to light grey, calcite filled joints throughout, some slickensided. Occassional sandy phase. Generally dipping 60 ⁰ where observable.	10.70	201.00	9.85	т.р.
·				
G				

48657.0 N 77698.0 E Grid Reference Exploration Grid Reference A + 450'N / I + 375'E Completed 5th Oct., 1971 Date Commenced 2nd Oct., 1971 4094.6ft. Collar R.L. Standard Datum Electrically Logged Yes/No Total Depth 408.0 ft. Drilled by Connors Drilling Ltd. For Coalition Mining Limited Logged by F.H.S. Tebbutt

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#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Т	hickness (ft.)	Recovery	Comment
Chamberlain - upper plate	3910.7	ft.	26.60	Not calcula	ted - faulted
Skeeter - lower plate	3742.4	ft.	7.15	78%	
Chamberlain - lower plate	3718.2	ft.	5.99	80%	



					ASH CUMULAT FROM FI	% TIVE LOOR
SKEETER SEAM UPPER PLATE		WT%	ASH%	C.S.Nº	IN CL. BAN DS	EXCL. Bands
101.07						
	2.43	-	NOT	ANA I	YSED ·	
	4.81		not	ana]	ysed	
108.31	· · ·		-			1
· ·						
			- -	•		
Prepared by: CLIFFORD McELROY & ASSOCIA for	ATES PTY, LTD.			SEAM DD	SECT H C-30	IONS
DRAWN BY pm DATE J	an 172	SCALE: Í'to 2'			PAGE	1 of 1

							ASH Cumula From F	% TIVE LOOR
	CHAMBI UPPI	ERLAIN SEAM ER PLATE		₩т%	ASH %	C. S.Nº	INCL. Bands,	EXCL. Bands
	157.30				NOT	ANA	LYSED	
	 Co:	ntinued						
Prepared CLIFFORD	by: McELROY	8: ASSOCIATE for	: ES PTY. LTD.			SEAM	SECT H C-30	FIONS
DRAWN BY	COALITION pm	MINING LIMIT DATE Jan	ED 172	SCALE: ("to 2"			PAG	El of 2



### STRATIGRAPHIC LOG SUKUNKA D.D.H. C-30

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Structurc	Deceription of Strata	Formation or Member	Depth to Base of Stralum (j1)
	No core to 14.0 ft.	GETHING FM.	
	SANDSTONE, grey, fine grained, quartz lithic, dip angle 40°, mud blebs at 23'.		26.0
	SILTSTONE AND MUDSTONE INTERBEDS, core broken in part, no slickensides,		
	to base.		48.0
	SANDSTONE, grey, fine grained, quartz-lithic, dip 10 ⁰ .		52.0
Fault, possible	SANDSTONE, fine, silty interbeds, 0.15' fractured mudstone band at 50', pyritic worm casts, coaly		×
	wisps and irregular masses. SILTSTONE, grey, sandy interbeds,		58.0
Fault, possible	pyritic worm casts, from 58' to 61'.Beds dip from 10 ⁰ to vertical with slickensides. Beds below dip		
	5 ⁰ . A few calcite veins.		61.0
	SANDSTONE, medium grained.		63.0
	SILTSTONE, grey, sandy interbeds, nyritic worm casts. Dip steepening		
	to $45^{\circ}$ at base.		68.0
Fault, possible	MUDSTONE, dark grey, fractures with		
		-	

	Structure ·	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
	~	slickensides 20 ⁰ to core axis, core broken, carbonaceous at base (1').		73.0
		SANDSTONE, medium grained, dip starting at 40 [°] steepening to 75 [°] at 83' and abruptly back to 10 [°] at 87' with no brecciation. A little calcite, coaly wisps and partings.		92.0
		CLAYSTONE, carbonaceous, some displacement within the bed itself. Sandy interbeds at base.		95.0
		SANDSTONE, coaly wisps.		98.0
		CLAYSTONE, carbonaceous.		99.0
		SILTSTONE, sandstone and claystone interbeds.		101.0
		COAL, 2 sandstone	SKEETER SM.	
		coal at base, shattered and with listric surfaces. SANDSTONE, grey, fine grained, silty		108.5
	Fault, possible	interbeds, core broken from 110'-121' calcite fillings, variable dips and slickensides. Mudstone bands at	P.	
		brecciated from 132'-134' with other minor zones at 137' and 138.5'. At 142' dip 40°. At 150' beds above		
•		met abruptly (at 90 [°] ) by beds apparently overfolded with steep dips flexing one way and then the		
		other. Calcite veins and fillings.		

	C30	· · · · · · · · · · · · · · · · · · ·	5
Structure	Description of Strata	Formation or Membcr	Depth t Base of Stratum (ft)
-	Slickensides. At 158' terminates abruptly in coal band (0.1') and siltstone dipping at 20 ⁰ .		158.0
Fault, possible	<u>COAL</u> , stony, listric surfaces, core fractured.		<b>164.</b> 0
	SILTSTONE, grey.		165.0
	<u>COAL</u> , fractured.		171.0
	COAL, stony, coaly phases, frag- mented at base.		183.0
	SANDSTONE, grey, variable dips brecciated in parts, calcite fillings and veins throughout. SILTSTONE, grey, dip 40 ⁰ , core fragmented in part, and brecciated at 193'.		193.0 ` 198.(
	COAL, broken.		198.5
	SANDSTONE, medium grained, coaly wisps and partings, carbonaceous claystone bands at 200' and 201'. Dips steepen from 60° at 200' to 80° at 205' and back to 45° at 212'. 1.5' breccia zone at 214' calcite veins below to base.		225.(
Fault, possible	<u>COAL</u> , broken into small pieces.		225.
	SANDSTONE, grey, medium grained becoming finer. Silty bands at 248'. Mottled (worm casts at 230').	-	286.

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Structure	Description of Strata	Formation or Member	Dcpth to Base of Stratum (ft)
~	SILTSTONE AND MUDSTONE INTERBEDS, worm casts, granules at base.		302.0
	SANDSTONE, grey.		304.0
	SANDSTONE, silty interbeds, pyritic worm casts.		312.0
	SANDSTONE, medium grained, coaly wisps, mudstone at base and coal		
	band within it.		346.0
	COAL.	SKEETER SM.	352.0
	SILTSTONE, sandy interbeds.		357.0
	MUDSTONE, dark grey.		359.5
	SANDSTONE, silty interbeds, fine bedding towards base.		364.0
	LAMINITE, siltstone and mudstone.		370.5
	<u>COAL</u> .	CHAMB. SM.	376.0
	SANDSTONE, grey, medium grained, coal band at 406'.		408.0
			Base of Hole
		•	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
No core, tri-cone roller bit.	-	14.84		
SANDSTONE, grey, fine grained, quartz-lithic, brown stained phases (weathering), band (0.07') mud blebs 8.2' from top. Bedding angle 58 ⁰ to core axis.	11.61	26.45	11.12	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey interbedded. Some sandy interbeds. Worm casts and mud blebs. From 0.2' to 0.5' core broken, a little calcite at centre where dips of top and bottom half seem discordant. Bedding angle 55 [°] to core axis.	6.44	32.89	6.07	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey interbedded, a few sandy interbeds. Worm casts and mud blebs. Bedding angle increases to $70^{\circ}$ at base. 6.5' from top, two calcite veins along fractures (one along bedding, one at $35^{\circ}$ to core axis). Slickensides. Fractures 0.4' apart.	15.63	48.52	14.72	
SANDSTONE, grey, medium grained, quartz-lithic, one fracture with some slickensides at 17 ⁰ to core axis and 2 fine calcite veins at similar altitude.	4.17	52.69	3.92	

SUKUNKA D.D.H. C-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
SANDSTONE, as above.	0.81	53.50	0.76	
MUDSTONE, dark grey, broken in top 0.20' with slickensides.	0.61	54.11	0.57	
SANDSTONE, grey, fine grained, quartz-lithic, numerous silty interbeds, pyritic worm casts. 0.09' zone crushed at base.	2.75	56.86	2.59	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps towards base.	0.94	57.80	0.89	
MUDSTONE, dark grey.	0.18	57.98	0.17	
SANDSTONE, grey, fine grained, quartz-lithic, numerous silty interbeds and phases. Bedding angle at top $57^{\circ}$ to core axis, steepening till parallel to core axis and overfolding slightly (slickensides). Abrupt junction (along calcite vein with some slickensides) with beds below dipping at $80^{\circ}$ to core axis. Pyritic worm casts. 0.45' zone of broken core 7.1' from top with calcite and slickensides.	7.81	65.79	7.36	

SUKUNKA D.D.H. C-30

(2)

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remark
MUDSTONE, dark grey, some silty interbeds. At 2.6' slickensides along vertical planes, at 3.5' 34 [°] to core				
axis, at 5' from top, 58 [°] to core axis.	4.89	70.68	4.61	
MUDSTONE, dark grey, some silty interbeds.	0.96	71.64	0.90	
CLAYSTONE, carbonaceous.	0.83	72.47	0.78	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and irregular coaly masses. Calcite veins along bedding, and across bedding at angles within $10^{\circ}$ of $90^{\circ}$ to bedding. Bedding angles measured from top - at $1.2' - 58^{\circ}$ , at $4.2' - 50^{\circ}$ , at $6.6' - 34^{\circ}$ , at $8.8' - 24^{\circ}$ , at 11.9' bedding indistinct but possibly vertical at $13.1' - 24^{\circ}$ , at $14.2' - 85^{\circ}$ to $90^{\circ}$ . Core broken at 9.8' with slickensides on surfaces for 1' either side. Core broken with no slickensides at $14.15'$ .	17.33	89.80	16.33	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps.	1.91	· 91.71	1.80	

SUKUNKA D.D.H. C-30

SUKUNKA D.D.H. C-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
CLAYSTONE, dark greyish brown, fine sandy interbeds. In top 0.75' bedding severely distorted and possibly displaced. At 1.55' from top bedding angle 82 [°] from core				
axis.	3.08	94.79	2.90	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and fine carbonaceous phases.	3.04	97.83	2.86	
CLAYSTONE, dark brown, carbonaceous, sandy interbeds and phases towards base. Bedding angle 85-90°, core broken	7.04	101 07	7 05	, ,
in 0.15' zone with listric surfaces 1.25' from top.	3.24	101.07	3.05	
COAL, mainly dull with minor bright bands.	0.17	101.24	0.17 )	
SANDSTONE, grey, medium grained, quartz-lithic, tending		101 70	)	
carbonaceous.	0.40	101.70	0.46 )	SKEETER
COAL, dull, broken.	0.53	102.23	0.26)	SEAM
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous.	1.27	103.50	) 1.27 ) )	appor prac
<u>COAL</u> , core badly broken, sheared, highly listric surfaces.	4.81	108.31	0.85)	

(4)

SUKUNKA D.D.H. C-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remari
SANDSTONE, grey, fine grained, quartz-lithic, numerous silty interbeds, current bedding. Bedding angle $47^{\circ}$ 1.05' from top, minor? displacement and brecciation at 0.3', 1.1' and 1.9' from top, calcitic fillings throughout, but brecciation with heavy calcitic infillings con-	-			
core axis. Slickensides throughout.	4.61	112.92	3.27	
MUDSTONE, dark grey, numerous silty interbeds. Bedding angle 85 ⁰ -90 ⁰ 0.4' from top increasing to 53 ⁰ to core axis with slickensides at 1' from top. Below this core is fragmented.	2.33	115.25	2.16	
SANDSTONE, grey, medium to fine grained, quartz-lithic.	0.46	115.71	0.43	
MUDSTONE, dark grey, core badly broken, listric surfaces at various angles - mostly small in relation to core axis.	3.33	119.04	3.09	
SANDSTONE, grey, fine grained, quartz-lithic, numerous silty interbeds, brecciated in top 0.33', heavy vertical calcite vein from 0.75'-0.95' from top and				

Estimated Estimated Depth to Footaae Geological Description of Strata Remark: Thickness Stratum Recovered (ft)Floor(ft) (ft)142.70 2.98 3.21 MUDSTONE, dark grey. SILTSTONE, grey, mudstone interbeds and fine sandy interbeds. Some irregular sandy masses towards base. Bedding angle 43[°] to core axis. 6.08 148.78 5.68 0.54 149.32 0.54 MUDSTONE, dark grey, heavy calcite vein at top. SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey interbedded, some sandy interbeds. Bedding angle at top  $50^{\circ}$  to core axis. Beds below this in recumbent folds with local displacements and brecciation, numerous calcite veins and heavy infillings, calcite crystals in large cavity (width of core x 0.2') at 1.2' from base. 7.98 7.98 157.30 COAL, highly sheared with listric surfaces between 45° and  $0^{\circ}$  to core axis. 162.04 1.90 4.74 MUDSTONE, dark grey. 0.29 162.33 0.29 CHAMBERI SEAM upper pla 0.44 163.43 COAL, highly sheared, listric surfaces, badly broken. 1.10

SUKUNKA D.D.H. C-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remark
MUDSTONE, dark grey.	<b>0.78</b>	164.21	0.78)	
<u>COAL</u> , highly sheared, listric surfaces core badly broken in most of length, bedding angle $50^{\circ}$ to core axis. 0.6' from top and $65^{\circ}$ 3.3' from top.	8.81	173.02	) 3.53 )	
COAL, highly sheared and badly broken. Shear angle at $1.15$ ' from top $35^{\circ}$ to core axis.	4.00	177.02	) 1.60 )	
COAL, sheared at 50° to core axis, cleat destroyed.	4.40	181.42	1.76 )	CHAMBERLA
SANDSTONE, grey, fine grained, quartz-lithic, coaly			)	SEAM
wisps and irregular calcitic veining.	0.45	181.87	0.45 )	upper piz
COAL, sheared and very friable, cleat destroyed.	0.72	182.59	0.29)	
CLAYSTONE, carbonaceous.	0.56	183.15	0.56)	
COAL, powdered.	0.75	183.90	) 0.30 )	
			)	

SUKUNKA D.D.H. C-30

SUKUNKA D.D.H. C-30

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
SANDSTONE, grey, fine to medium grained, quartz-lithic, coaly wisps and irregular masses, calcite veins numerous.				
1' breccia zone 4.6' from top, core broken in part with slickensided mudstone bands at 0.2', 1.35', and 3.0' from base. Bedding angle 45 [°] to core axis 3.7' from base.	8.42	192.32	8.42	
MUDSTONE, dark grey, brecciated in top 0.5', vertical calcite vein. Slickensided along oblique shears below this.	1.02	193.34	1.02	
MUDSTONE, dark grey, sheared obliquely, slickensides, broken into small fragments at base.	0.27	193.61	0.27	
SANDSTONE, grey, fine grained, quartz-lithic, brecciated and broken in top 1, with calcite infillings.				
mudstone below oblique (35° to core axis) and slickensided.	2.27	195.88	2.14	
MUDSTONE, dark grey.	0.23	196.11	0.22	
COAL, core broken and slickensided.	2.30	198.41	0.19	
<i>,</i>				

Thickness (ft)	Stratum Floor(ft)	Footage Recovered (ft)	Remarks
2.60	121.44	2.41	
0.84	122.48	0.78	
3.00	125.48	2.78	
2.65	128.13	2.46	
2.33	130.46	2.16	
5.72	136.18	5.30	
3.31	139.49	3.07	
	2.60 0.84 3.00 2.65 2.33 5.72 3.31	InternessStratum Floor(ft)2.60121.440.84122.483.00125.482.65128.132.33130.465.72136.183.31139.49	Intervent $(ft)$ Stratum Floor(ft)Recovered $(ft)$ 2.60121.442.410.84122.480.783.00125.482.782.65128.132.462.33130.462.165.72136.185.303.31139.493.07

SUKUNKA D.D.H. 30

Grid Reference48321.8 N77152.5 EExploration Grid ReferenceA + 450'N / 1 - 1700'EDate Commenced7th Oct., 1971CompletedCollar R.L.4119.3 ft.Standard DatumTotal Depth541.0 ft.Electrically LoggedDrilled byConnors Drilling Ltd.ForCoalition Mining LimitedLogged byF.H.S. Tebbutt

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	•	Thickness (ft.)	Recovery	Comment
Skeeter - upper plate	4087.2 e	ft.	4.89	44%) )	
Chamberlain - upper plate	4053.5 e	ft.	6.80	75%) )	Close to Chamberlain Fault
Skeeter - lower plate	3624.6 e	ft.	6.85	59%) )	
Chamberlain - lower plate	3600.1 e	ft.	5.32	49%) )	













Telagrams and Cables: "Visor", Sydney

Telephone: 241 1105

Scottish House, 19 BRIDGE ST., SYDNEY, 2000

# Certification

CARGO

**SUPERINTENDENTS** 

CO. (A/SIA.) PTY. LTD.

This is to Certify

APPLICANT:

COALITION MINING



REPORT ON:

SUKUNKA SAMPLE NO. 176-178 CORE NO. C31 SKEETER UPPER SEAM (UPPER PLATE)

REPORT NO. K71-1856

RECEIVED: 17. 11. 1971

REPORTED:

31. 12. 1971



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This Laboratory is Registered by the National Association of Testing Authorities Australia. The tests reported herein have been performed in accordance with the terms of registration.

A.R.A.C.I. Chief

For CARGO SUPERINTENDENTS CO. (A/SIA.) PTY. LTD.

0 FORM 81-7
SHEET TWO ATTACHING TO AND FORMING PART OF CERTIFICATE K71-1856

INTRODUCTION: One (1) Coal Sample designated CORE NO. C31 SKEETER UPPER SEAM was received on 17. 11. 1971 from Clifford McElroy & Associates.

<u>METHOD</u>: The Coal Sample No. 176-178 was hand crushed to %", sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.30 to 1.60 specific gravity in 0.05 steps.

> The float and sink fractions, raw -30 mesh coal fraction were weighed, prepared and analysed for Ash and Crucible Swelling Number and the composite raw coal sample reconstituted and the true specific gravity of the sample determined.

A cumulative Floats 1.60 SG fraction was prepared for Sample No. 176-178 and the analysis are given in this report.

<u>NOTE</u>: The sample weight has not been adjusted to compensate for core loss.

<u>RESULTS:</u> <u>TABLE 1</u>: gives the sizing, washability and analytical data for the sample after hand crushing to ¾" top size.

TABLE 1	WASHABILITY DATA FOR SAMPLE NO. 176-	- <u>178</u> (after hand crushing to ¾")
	INDIVIDUAL	CUMULATIVE
FRACTION	WEIGHT WT.% ASH% C.S.NO.	WT. % ASH% C.S.NO.
F1.30 SG S1.30 - F1.35 SG S1.35 - F1.40 SG S1.40 - F1.45 SG S1.45 - F1.50 SG S1.50 - F1.55 SG S1.55 - F1.60 SG S1.60 SG -30 Mesh RC	$701$ $52.6$ $1.9$ $8$ $190$ $14.3$ $5.0$ $7\frac{12}{2}$ $95$ $7.1$ $9.0$ $1$ $89$ $6.7$ $14.8$ $1$ $41$ $3.1$ $19.3$ $1$ $37$ $2.8$ $22.8$ $1$ $8$ $0.6$ $28.5$ $1$ $172$ $12.8$ $84.3$ $0$ $92$ $6.5$ $13.2$ $8$	52.6 1.9 8 $66.9 2.6 8$ $74.0 3.2 7$ $80.7 4.1 7$ $83.8 4.7 6%$ $86.6 5.3 6%$ $87.2 5.5 6$ $100.0 15.5 5%$
	Total Weight of Sample = 1425 gram True Specific Gravity = 1.376 Thickness = 4.89'	1S
<i>.</i>	ANALYSIS OF F1.60 SG FRACTION OF SAM Yield % Air Dried Moisture % Ash % Volatile Matter % Fixed Carbon % Total Sulphur % C.S.NO. Calorific Value Phosphorus %	IPLE NO. 176-178         87.2         1.0         5.3         23.6         70.1         0.60         6½         14470 BTU/LB         0.007

SYDNEY 31st December 1971



terms of registration. IMBradler A.R.A.C.I. Chief Gamist. CARGO SUPERINTENDENTS CO. (A/SIA.) PTY. LT

SHEET TWO ATTACHING TO AND FORMING PART OF CERTIFICATE K71-1857

INTRODUCTION: One (1) Coal Sample designated CORE NO. C31 CHAMBERLAIN UPPER SEAM was received on 17. 11. 1971 from Clifford McElroy & Associates.

<u>METHOD</u>: The Coal Sample No. 179-180 was hand crushed to ¼", sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.30 to 1.60 specific gravity in 0.05 steps.

> The float and sink fractions, raw -30 mesh coal fraction were weighed, prepared and analysed for Ash and Crucible Swelling Number and the composite raw coal sample reconstituted and the true specific gravity of the sample determined.

A cumulative Floats 1.60 SG fraction was prepared for Sample No. 179-180 and the analysis are given in this report.

NOTE: The sample weight has not been adjusted to compensate for core loss.

<u>RESULTS:</u> <u>TABLE 1</u>: gives the sizing, washability and analytical data for the sample after hand crushing to ¾% top size.

TABLE 1	WASHABILITY DATA FOR SAMPLE NO. 179-	180 (after hand crushing t ¾")
	INDIVIDUAL	CUMULATIVE
FRACTION	WEIGHT WT.% ASH% C.S.NO.	WT. % ASH% C.S.NO.
F1.30 SG S1.30 - F1.35 SG S1.35 - F1.40 SG S1.40 - F1.45 SG S1.45 - F1.50 SG S1.50 - F1.55 SG S1.55 - F1.60 SG S1.60 SG -30 Mesh RC	616 20.2 1.5 4½ 1560 51.0 2.3 1 218 7.1 6.4 0 50 1.6 10.5 0 29 0.9 14.0 0 9 0.3 17.9 0 7 0.2 25.5 0 567 18.7 47.5 0 234 7.1 7.4 2 Total Weight of Sample = 3290 gram True Specific Gravity = 1.332 Thickness = 6.80'	20.2 1.5 4½ 71.2 2.1 2 78.3 2.5 2 79.9 2.6 2 80.8 2.8 2 81.1 2.8 2 81.3 2.9 2 100.0 11.2 1½
	ANALYSIS OF F1.60 SG FRACTION OF SAM Yield % Air Dried Moisture % Ash % Volatile Matter % Fixed Carbon % Total Sulphur % C.S.NO. Calorific Value Phosphorus %	BLE NO. 179-180 81.3 1.0 2.9 22.6 73.5 0.43 2½ 14850 BTU/LB 0.012

SYDNEY 31st December 1971

## STRATIGRAPHIC LOG SUKUNKA D.D.H. C-31

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Structure	Deccription of Strata	Formation or Member	Depth to Base of Stratum (fl)
	No core to 7.0 ft.		
	SANDSTONE, grey, medium grained quartz-lithic, coaly wisps.	GETHING FM	23.0
	MUDSTONE, dark grey, 0.3' coal at base.		25.6
	SILTSTONE, grey, coal band (0.16')? 0.2' from top.	-	27.0
	COAL.	SKEETER SM	. 31.3
	SILTSTONE, grey, sandstone at top, mudstone towards base. Coal band		
	(0.3')? 0.5' from base.		38.0
Dips 0°-10°	COAL.		39.0
	SILTSTONE AND MUDSTONE INTERBEDS.		40.0
	SANDSTONE, fine, brown, current bedded.		43.0
	SILTSTONE, grey, sandstone interbeds.		51.0
	MUDSTONE, dark grey, fine siltstone interbeds, laminite phases, mudstone		
	at base.		60.0
	COAL.	CHAMB. SM.	66.0

	C-31		2
Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
	SANDSTONE, grey, medium becoming fine grained, quartz-lithic, coaly wisps at 87', mottled (worm casts) at 92', 2 narrow siltstone interbeds		133 0
	SILTSTONE AND MUDSTONE INTERBEDS,		155.0
	worm casts, sandstone phases.		153.0
	SANDSTONE, grey, fine grained, quartz lithic. Mudstone blebs at 197', 202', 203', 204', 207', Siltstone phases	-	
	from 209' to base.		212.0
	SILTSTONE AND MUDSTONE INTERBEDS, sandstone interbeds, worm casts.		271.0
	SILTSTONE, grey, sandstone interbeds towards base.		288.0
	SILTSTONE AND MUDSTONE INTERBEDS, sandstone interbeds and phases, some mudstone blebs and worm casts.		321.0
Fault, possible	SANDSTONE, breccia, highly disturbed, much calcite veining and infilling,		
	slickensides. SANDSTONE, grey, medium grained,	, ,	336.0
	coaly wisps, numerous calcite veins, irregular and at various angles, listric surfaces. Dip 30 ⁰ at top,		
	45° to base.		361.0
	MUDSTONE, dark 'grey, highly disturbed, listric surfaces.		362.0

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	G-31		5
Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
Fault,established	SANDSTONE, breccia, core broken, calcite veining.		366.0
	SANDSTONE, grey, medium becoming finer, mottled (worm casts) at 370', current bedding, dip $30^{\circ}$ at top, $20^{\circ}$ at 380', $40^{\circ}$ at 388', heavy calcite vein at 400'. Dip $15^{\circ}$ at 403' and to base. Towards base some calcite filled fractures at $55^{\circ}$ dip.		433.0
	SILTSTONE AND MUDSTONE INTERBEDS, sandstone interbeds, worm casts, granules at base.		450.0
	SANDSTONE, fine, grey.		453.0
	SILTSTONE, grey, sandstone interbeds and phases.		461.0
	SANDSTONE, coaly wisps, coaly band at 478', carbonaceous for 2' beneath, coal band at 486', Dip 20 ⁰ .		487.5
	<u>COAL</u> . )	SKEETER SM.	490.0
	SILTSTONE, mudstone interbeds, dip ) 15 [°] at top, 40 [°] at base, calcite ) filled tension cracks, listric )		
	surfaces. )	1	492.5
	COAL, broken.		494.5
	SILTSTONE, sandstone and mudstone interbeds, dip 25 ⁰ .		502.0
	MUDSTONE, dark grey and soft mud.		505.0
1		1	

Structure	Description of Strata	Formation or Member	Depth t Base of Stratum (ft)
	LAMINITE, siltstone and mudstone, dips 25 [°] at top, 35 [°] at middle, 10 [°] at base.		514.3
	COAL.	CHAMB. SM.	519.3
	SANDSTONE, coaly wisps at top.		541.0
			Base of Hole
	-		
		•	
		, ,	
		]	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
No core; tri-cone roller bit		7.00		
SANDSTONE, grey fine grained becoming medium grained towards base, quartz-lithic, some current bedding, core broken into lengths averaging about 0.2' in top 5', no calcite or slickensides, coaly wisps, irregular masses.	15.92	22.92	15.92	
CLAYSTONE, dark brown, carbonaceous, fine silty inter- beds, two pennybands coal in bottom 0.05'. Bedding angle 80 ⁰ to core axis.	2.55	25.47	2.55	
<u>COAL</u> , mainly dull with minor bright bands.	0.19	25.66	0.19 ) )	
SILTSTONE, grey, brown and carbonaceous at top with a few coaly wisps	0.14	25.80	) 0.14 ) )	SKEETER SEAM
SANDSTONE, grey, fine grained, quartz-lithic, silty at top and base, coaly wisps and irregular coaly masses.	1.41	27.21	) 1.41 ) ) )	upper plate

SUKUNKA D.D.H. C-31

Geological Description of Strata	Estimated Thickness (ft)	E: :imated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , dull, top 0.04' appears weathered, from 0.2' to 0.35' there are joint planes at 20 ⁰ to core axis (no slickensides).	0.32	27.53	0.32 )	
mainly dull with minor bright bands, joint at base at 25 ⁹ to core axis, core broken in top 0.32'.			)	
	0.50	28.03	0.50 )	-
COAL, dull and bright, core broken at top and bottom.	2.47	30.50	1.23 ) )	SKEETER
SILTSTONE, grey, becoming carbonaceous.	0.21	30.71	0.21 ) )	upper plat
<u>COAL</u> , mainly dull with minor bright bands, core badly broken, slickensided fractures 0.25' and 0.65' from		3 -	)	
top at 55 ⁰ to core axis.	1.39	32.10	0.69 )	
SILTSTONE, grey, sandy interbeds and phases in top 3.8' mainly, mudstone interbeds below this, some slump structures, listric surface 0.7' from top at 45 [°] to core axis.	5.56	37,66	) ) 5.57 )	, , , , , , , , , , , , , , , , , , ,
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SUKUNKA D.D.H. C-31

SUKUNKA D.D.H. C-	51			
Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
COAL, mainly dull with minor bright bands, core broken.	0.40	38.06	0.20 ) )	
SILTSTONE, grey, yellow veinlets parallel to bedding at base.	0.68	38.74	) 0.68 )	SKEETER SEAM
<u>COAL</u> , mainly dull with minor bright bands, joint plane at $15^{\circ}$ to core axis in top 0.22'. Bedding angle			)	upper pla
$70^{\circ}$ to core axis 0.33' from top.	0.78	39.52	0.39 ) )	
stony with bright bands.	0.20	39.72	0.10 ) )	
SILTSTONE, grey, coaly wisps at top where core broken in top 0.37', sandy interbeds and phases increasing towards				
base.	3.32	43.04	3.40	
MUDSTONE, grey, silty towards base.	1.35	44.39	1.38	
MUDSTONE, grey, silty.	0.72	45.11	0.74	
SILTSTONE, grey, sandy interbeds towards base.	3.75	48.86	3.84	

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SUKUNKA D.D.H. C-	31			
Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
SANDSTONE, grey, fine grained, quartz-lithic, silty interbeds and coaly wisps. MUDSTONE, dark grey, silty interbeds and phases. Bedding angle 83 ⁰ to core aris	2.79	51.65	2.86	
LAMINITE, siltstone grey and mudstone dark grey, inter-	1.10	58.73	1.11	
MUDSTONE, dark grey.	0.31	59.04	0.31	
<u>COAL</u> , stony, sheared, listric surfaces, shattered into small flaky pieces, angle of shearing 70 ⁰ to core axis.	1.08	60.12	0.98 )	
coal type indeterminable, coal sheared with listric surfaces at 90 ⁰ to core axis, no vertical cleat.	0.19	60.31	) 0.17 ) )	CHAMBERLAI
mainly dull with minor bright bands. At top a joint plane at 70 ⁰ and at 0.25' from top a joint plane at 60 ⁰ to core axis.	0.59	60.90	) ) 0.53 )	upper plat

SUKUNKA D.D.H. C-31

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , dull and bright, joint plane at 45 ⁰ to core axis.	0.22	61.12	0.20 )	
dull, joint plane at 45 ⁰ to core axis.	0.17	61.29	0.15 )	
mainly dull with minor bright bands, through this section there are joint planes at 70 ⁰ to core axis			)	
in two opposing directions.	0.82	62.11	0.74 )	
dull and bright, joint plane at 40 ⁰ to core axis.	0.37	62.48	0.33 ) )	
dull, shear planes (slickensides) at 60 ⁰ in one direction and 75 ⁰ to core axis in opposing dir-			)	CHAMBERLA
ection.	0.19	62.67	0.17 ) )	SEAM upper pla
dull and bright.	0.37	63.04	0.33 )	
mainly dull with minor bright bands.	0.33	63.37	0.30 )	
dull and bright, joint plane at 25 ⁰ to core axis 0.20' from top.	0.45	63.82	) 0.41 )	

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	50K0MKA D.D.III. C-51				
	Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> ,	mainly dull with minor bright bands.	0.34	64.16	0.31 )	
	dull and bright, joints at 60 ⁰ to core axis, vertical cleat absent.	0.19	64.35	0.17 )	
	mainly dull with minor bright bands, joint plane parallel to bedding at 83 ⁰ to core axis.	0.30	64.65	0.27 )	
	dull and bright, joint plane at 80 ⁰ to core axis at base.	0.11	64.76	) 0.10 )	CHAMBERLAIN SEAM
	dull.	0.12	64.88	0.11 )	upper plate
	bright and dull.	0.28	65.16	0.25 )	
	mainly dull with minor bright bands, sheared at 85 ⁰ 90 ⁰ to core axis, vertical cleat absent.	0.26	65.42	) 0.23 ) )	
	dull and bright, joint plane at 75 ⁰ to core axis.	0.23	65.65	0.21 )	
	mainly dull with minor bright bands, sandy.	0.19	65.84	0.17 ) )	

SUKUNKA D.D.H. C-31

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
SANDSTONE, grey, medium grained, quartz-lithic, and few coaly wisps. Bedding angle 85 ⁰ to core axis. Some	-			
current bedding, from 0.35' to 2.4' from top core broken				
at various angles in different directions, some angles				
curved and very oblique to core axis.	15.81	81.65	15.56	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and partings, mottled (worm casts) from 10.4' to				
12.5' from top. Bedding angle 83 ⁰ to core axis.				,
Current bedded.	18.37	100.02	18.08	
SANDSTONE, grey, fine grained, quartz-lithic, current				· · · · · · · · · · · · · · · · · · ·
bedded, and few silty interbeds, in top 2' core				
fractured along planes at 15-20° to core axis, fracture				, ,
surfaces iron stained. Bedding angle 82° to core axis.	18.83	118.85	18,53	
SANDSTONE, grey, fine grained, quartz-lithic. Bedding				
angle 83 ⁰ to core axis.	14.76	133.61	14.53	

SUKUNKA D.D.H. C-31

### BORE NUMBER S-14

78719.5F Grid Reference 46417.8N Exploration Grid Reference B/1 12th March, 1970 Completed 15th March, 1970 Date Commenced ÷ Collar R.L. Standard Datum 4.169.8 Y/e/s// No Electrically Logged Total Depth 498 Drilled by Connors Drilling Ltd. Brameda Resources Limited For F.H.S. Tebbutt and G.R. Jordan Logged by

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### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter	3958.9	11.6	12%	
Chamberlain Upper Pla	3912.9 te	9.6	54.5%	
Chamberlain Lower Pla	3792.7 te	11.7	72%	



## COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

January 25, 1971



P. 0. Box 8596 Vancouver 5, B. C.

CERTIFICATE OF ANALYSIS FOR: BRAMEDA RESOURCES LIMITED 7th Floor, Board of Trade Bldg. 1177 West Hastings Street Vancouver 1, B. C.

Sample identification: Sample No. SK-14-1 Report No. 67-0571 67-0572

SPECIFIC GRAVITY				AIR	DRY BASIS			
Sink Float	% Wt.	% ADM	% Ash	% Vol.	% F. C.	Btu	% Sul.	FSI
1.60	83.5	0.97	5.69	25.02	68.32	14447	0.52	7월 🖄
1.60	16.5	0.94	<u>28.19</u> `			1	0.42	•
	100.0	0.97	9.40				0.50	

% ADM = % Moisture in air dried sample

Weight of as received sample = 1.177 lbs.

Respectfully submitted, COMMERCIAL TESTING & ENGINEERING CO.

se R. A. Houser.

District Manager



RAH/rh

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CHICASE, ILLINDIS + CHARLESTON, W. VA. + CLARKSBURG, W. VA. + CLEVELAND, OHIO + NORFOLK, VA. + TERRE HAUTE, IND. + TOLEDO, OHIO + DERVER, GOLDRADO + BIRMINGHAM, ALABAMA + VAHCOUVER, B.C., CAN-

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PROFESSIONAL SERVICES DIVISION

125 East 4th Ave., Vancouver 10, B. C. Phone 875-4111 - Telex 04-50353

REPORT OF	Chemical Analysis	FILE NO. 465 - 11037
4 T	Vancouver Laboratory	DATE March 20, 1970
РНОЈЕСТ.	Coal Sample	REPORT NO:
REPORTER 10	Brameda Resources Ltd., 7th Floor - 1177 West Hastings Street	GADER NO.
	Vancouver, B.C.	• •

# ATTENTION: Mr. L.S. Trenholme

We have tested four samples of coal submitted by you on March 18, 1970, and report as hereunder:

	UDHBERLOIN	SENM	•	
TEST RESULTS	444.5- 453.0	369.5-381.0	246.0-257.0	224.0-237.5
J - 7 - 7 - 1 -	Sample S12-1	Sample S13-1	Sample S14-1	Sample S15-1
			•	
(as received)	1.92 %	1.64 %	3.44 %	1.92 %
Surface Moisture (as received)	1.53 %	1.13 %	3.00 %	1.50 %
Inherent Moistur (air dry)	e 0.40 %	0.52 %	0.45 %	0.43 %
Ash (air dry)	4.95 %	5.65 %	8.00 %	6.55 %
Volatile Matter (air dry)	23.45 %	. 24.23 %	. 24.80 %	22.25 %
Fixed Carbon (air dry)	71.20 %	69.60 %	66.75 %	70.77 %
B.T.U.'s per lb. (air dry)	15,269	15,170	14,696	14,970
Śulphur (air dry	) 0.46 %	0.47 %	0.52 %	• 0.45 %
Free Swelling Index (air dry)	8 - 1/2	7 - 1/2	7	7
Weights of	"s" samples as	received		
S11-1 S11-2 S12-1		- 2.75 - 6.75 - 13.00	lbs. lbs. lbs.	. ·
\$13-1 \$1/-1		-1, 26,50	1bs	
S15-1	_	- 9,00	lbs.	4
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T.M. Williams

ALL HERDETS AND THE CONFIDENTIAL PROPERTY OF CLIENTS VERY LORAL LABORATORY

## STRATIGRAPHIC LOG SUKUNKA D.D.H. S-14

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Structure	Description of Strata	Formalion or Member	Depth to Base of Firalum (j1)
	No core to 26.0 ft.		26.0
	MUDSTONE, ash bands, pebbles at base.	MOOSEBAR	52.0
	SANDSTONE, glauconitic, pebbles at	GETHING	56.0
	SANDSTONE.		59.0
	COAL.	BIRD SEAM	61.0.
	MUDSTONE.		63.0
	SANDSTONE, mottled (wormrcasts), 69'. Pebbles 85'.		128.0
	SILTSTONE AND MUDSTONE INTERBEDDED, worm casts, granules at base.		150.0
	SANDSTONE, mudstone band 15 '.		163.0
	LAMINITE, siltstone.and mudstone, mudstone base.		167.0
	SANDSTONE, coaly wisps, mudstone band 179'.		200.0
	SILTSTONE WITH MUDSTONE PHASES, mudstone bands at 203' and 201'.		204.0
	COAL.	SKEETER SM	211.0

	5-14		4
Structure	Description of Strata	Formation or Member	Depth t Base of Stratum (ft)
	SANDSTONE, fine grained.		215.0
	LAMINITE, siltstone and mudstone, mudstone and coal partings at base.		220.0
	SILTSTONE, mudstone phases.		228.0
•	SANDSTONE, fine grained.		231.0
	LAMINITE, siltstone and mudstone,		246.0
	COAL.	CHAMB. SM.	257.0
	SANDSTONE, coarse at top, becoming fine, 263' mottled (worm casts).		278.0
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### BORE NUMBER S-49

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Grid Reference 48179.6N 77716.0E Exploration Grid Reference A/1+200' Date Commenced 18th November, 1970 Completed 20th November, 1970 Collar R.L. Standard Datum 4117.3' Total Depth Electrically Logged Y¢\$/No 519' Drilled by Connors Drilling Ltd. For Brameda Resources Limited Logged by F.H.S. Tebbutt and G.R. Jordan

### COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter Upper Plate	4009.5	13.0	83.8%	
Chamberlain Upper Plate	3986.6	4.3	100%	
Skeeter Lower Plate	3704.9	9.9	88.8%	
Chamberlain Lower Plate	3682.5	6.3	100%	

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#### OABLE ADDRESS CONTECO

## COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 80801 · AREA CODE 312 728-8434

January 25, 1971



P. 0. Box 8596 Vancouver 5, B. C.

CERTIFICATE OF ANALYSIS FOR: BRAMEDA RESOURCES LIMITED 7th Floor, Board of Trade Bldg. 1177 West Hastings Street Vancouver 1, B. C.

Sample identification: Sample No. SK-49-1 Report No. 67-0569 67-0570

SPECIFIC GRAVITY			AIR DRY BASIS							
Sink F	loat	% Wt.	% ADM	% Ash	% Vol.	% F. C.	Btu	% Sul.	FSI	
)	1.60	78.1	0.98	7.93	23.69	67.40	14195	0.62	8늘	
1.60		21.9	0.82	51.25				0.46		
		100.0	0.94	17.42				0.58		

, ADM = % Moisture in air dried sample

"eight of as received sample = 3.891 lbs.

Respectfully submitted, COMMERCIAL TESTING & ENGINEERING CO.

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R. A. Houser, District Manager



## COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 80801 · AREA CODE 312 726-8434

January 25, 1971



P. O. Box 8596 Vancouver 5, B. C.

CERTIFICATE OF ANALYSIS FOR: BRAMEDA RESOURCES LIMITED 7th Floor, Board of Trade Bldg. 1177 West Hastings Street Vancouver 1, B. C.

Sample identification: Sample No. SK-49-2 Report No. 67-0563 67-0564

SPECIFIC GRAVITY			AIR DRY BASIS							
Sink	Float	<u>% Wt.</u>	% ADM	% Ash	% Vol.	% F. C.	Btu	% Sul.	FSI	
	1.60	96.4	1.38	4.13	25.06	69.43	14635	0.49	9	
1.60		3.6	1.00	47.81				0.63		
		100.0	1.37	5.70			•	0.50		

% ADM = % Moisture in air dried sample

Weight of as received sample = 5.977 lbs.

Respectfully submitted, COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, District Manager



OABLE ADDRESS COMTECO

COMMERCIAL TESTING & ENGINEERING CO. GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 . AREA CODE 312 726-8434 January 18, 1971 P. 0. Box 8596 Vancouver 5, B. C. CERTIFICATE OF ANALYSIS FOR: BRAMEDA RESOURCES LIMITED 7th Floor, Board of Trade Bldg. 1177 West Hastings Street Vancouver 1, B. C. Report No. 67-0543 Sample identification: 67-0544 Sample No. CH-49 SPECIFIC AIR DRY BASIS GRAVITY % ADM % F. C. Btu % Sul. FSI % Wt. Vol Ash  $\sim$ Sink Float 71.88 8늘 15084 0.44 2.57 24.78: 0.77 1.60_ --92.3 56.12 1.10 0.77 1.60 7.7 0.49 100.0 0.77 6.69 % ADM = % Moisture in air dried sample Weight of sample as received in laboratory = 6.876 lbs. Respectfully submitted, OMMERCIAL TESTING & ENGINEERING CO. R. A. Houser, District Manager RAH/rh

OABLE ADDRESS COMTECO

ICAGO, ILLINOIS • CHARLESTON, W. VA. • CLARKSBURG, W. VA. • CLEVELAND, OHIO • NORFOLK, VA. • TERRE HAUTE, IND. • TOLEDO, OHIO • DENYER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C., CAN.

GABLE ADDRESS COMTECO

### COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 80601 · AREA CODE 312 728-8434

January 25, 1971



P. O. Box 8596 Vancouver 5, B. C.

CERTIFICATE OF ANALYSIS FOR: BRAMEDA RESOURCES LIMITED 7th Floor, Board of Trade Bldg. 1177 West Hastings Street Vancouver 1, B. C.

Sample identification: Sample No. CH-49-2 Report No. 67-0576 67-0575

SPECIFIC GRAVITY				AIR	DRY BASIS			
Sink Float	<u>% Wt.</u>	% ADM	% Ash	% Vol.	% F. C.	Btu	% Sul.	FSI
1.60	97.0	0.84	3.09	23.23	72.84	14937	0.43	8불
1.60	3.0	0.60	<u>50.90</u>	•	•		0.56	
	100.0	0.83	4.52				0.43.	

% ADM = % Moisture in air dried sample

Weight of as received sample = 7.981 lbs.

Respectfully submitted, COMMERCIAL TESTING & ENGINEERING CO.

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R. A. Houser, District Manager



## STRATIGRAPHIC LOG SUKUNKA D.D.H. S-49

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Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (jl)
	No core to 6.0 ft.		
	SANDSTONE, medium grained, pebbles at 13'.	GETHING FM.	38.0
	SILTSTONE AND MUDSTONE INTERBEDDED, worm casts, granules at base.		55.0
	SANDSTONE, mudstone layer at base.		59.0
	SANDSTONE AND MUDSTONE INTERBEDDED.		64.0
	LAMINITE, mudstone layer at base.		69.0
	SANDSTONE, coaly wisps.		92.0
	MUDSTONE.		95.0
	COAL, mudstone band at top.	SKEETER SM.	101.0
	SILTSTONE AND MUDSTONE INTERBEDDED, mudstone layer at top.		104.0
	LAMINITE, siltstone and mudstone, sandy layer at 116', mudstone at base.		126.0
	COAL.	CHAMB. SM.	131.0
	SANDSTONE, coarse grained.		152.0
	<u>COAL</u> , band, 0.5'.		152.5
	SANDSTONE, coarser at top to fine,		

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	Structure	. Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
		mottled (worm casts) 157', mudstone band at 199'.		201.0
		SILTSTONE AND MUDSTONE INTERBEDDED.		204.0
	Fault,established	SANDSTONE, brecciated.		220.0
		SANDSTONE, pebbles 222'.		258.0
		SILTSTONE AND MUDSTONE INTERBEDDED, worm casts.		274.0
		SANDSTONE, medium grained.		277.0
	Fault,established	SANDSTONE, brecciated.		288.0
		SANDSTONE, pebble band 303', coarse becoming fine.		340.0
		SILTSOTNE AND MUDSTONE INTERBEDDED, worm casts, granule conglomerate at base.		357.0
		SANDSTONE, mudstone band at 362'.		366.0
		LAMINITE, siltstone and mudstone, mudstone base.		370.0
		SANDSTONE, coaly wisps, mudstone layer 399'.		402.0
		COAL, mudstone band at top, sandstone band at 410', mudstone base.	SKEETER SM.	413.0
		SILTSTONE, sandy phases.		418.0

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Structure	Description of Strata	Formation or Member	Depth t Base of Stratum (ft)
•	LAMINITE, siltstone and mudstone, mudst one base.		429.0
	COAL.	CHAMB. SM.	435.0
	SANDSTONE, coarse grained.		457.0
	<u>COAL</u> , band, 1.0'.		458.0
	SANDSTONE, mottled (worm casts) 463', pyrite 459', worm casts at 475'.		510.0
	SILTSTONE AND MUDSTONE INTERBEDDED.		518.0
			Base of Hole



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# APPENDIX B

DRILL HOLE DATA

E E PANCH

GATES MEMBER

BORE NUMBER G-1

Grid Reference 47,944.0 N 91,605.4 E Exploration Grid Reference

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Date Commenced Nov. 14, 1975 Completed Nov. 19, 1975

Collar R.L. 5,408.9' Standard Datum

Total Depth 111 ' Electrically Logged Yes/N&

- Drilled by TONTO DRILLING Ltd.
- For Coalition MIning Limited

Logged by P. Antonenko

### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft) Total Seam	Recovery	Comment .
"A"	5,346.1	24.8	100 %	Max. thickness of coal 2.7 ft
"B"	5,311.9	5.4	100%	Total coal 5 ft

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DETAIL OF GATES MEMBER








Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No core .	10.0	10.0		
SILTSTONE, grey-brown, argillaceous, broken & fractured, weathered, parts car-onaceous.	11.0	21.0	11.0	
SANDSTONE, grey-brown, fine-grained, quartzose, salt & pepper, argillaceous, silty and shaly streaks.	10.5	31.5	10.5	0 ⁰ from horizontal
SHALE, dark grey, parts carbonaceous with carbonaceous plant re- mains.	3.5	35.0	3.5	
SILTSTONE, grey-brown, argillaceous.	. 0.8	35.8	0.8	
SANDSTONE, grey-brown, fine to medium grained, quartzose, sub-angu- lar, salt & pepper with carbonaceous partings.	2.2	38	2.2	
SHALE & MUDSTONE, dark grey, carbonaceous.	0.3	38.3	0.3	Top Gates · "A" Seam
COAL	2.7	41.0	2.7	SKR 630
SANDSTONE, grey, quartzose, fine-grained	0.2	41.2	0.2	
SHALE and mudstone, dark grey, carbonaceous, with thin coal wisps	1.8	43.0	1.8	

SUKUNKA D.D.H. G-1
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE and mudstone, dark grey, carbonaceous, with thin coal bands	0.4	43.4	0.4	
SHALE, dark grey, carbonaceous with abundant coaly plant remains	. 1.3	44.7	1.3 (	
SANDSTONE, grey, fine-grained, quartzose, argillaceous with interbed- ded siltstone & shale, some carbonaceous partings	3.0	47.7	3.0	
SHALE, dark grey, carbonaceous, with dark band of coaly plant remains	2.6	50.3	2.6	
SANDSTONE, grey, fine-grained, quartzose, carbonaceous, argillaceous with carbonaceous plant remains	0.7	51.0	0.7	
SHALE, dark grey, carbonaceous, with coaly plant remains	0.7	51.7	0.7	
COAL	0.1	51.8	0.1	
MUDSTONE, dark grey, <u>coaly</u> , with carbonaceous plant remains	0.8	52.6	0.8	•
COAL, stony	0.4 .	53.0	0.4	
MUDSTONE, dark grey, carbonaceous, <u>coaly</u>	0.3	53.3	0.3	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	·Footage Recovered (ft)	Remarks
COAL.	0.1	53.4	0.1	
MUDSTONE, dark grey, carbonaceous and coaly	0.3	53.7	0.3	
COAL, parts stony	0.4	54.1	0.4	
MUDSTONE, dark grey	Q <b>.</b> 3	54.4	0.3	
COAL	0.5	54.9	0.5	
MUDSTONE and shale, dark grey, carbonaceous with coaly plant remains	1.1	56.0	1.1	•
MUDSTONE, dark grey, slightly carbonaceous with some carbonaceous				
plant remains and vertical fracturing	. 4.0	60.0	4.0.	
COAL	1.0	61.0	1.0	
MUDSTONE, dark grey, carbonaceous with thin coaly bands	1.8	62.8	1.8	Base Gates "A" Seam
SILTSTONE, grey, argillaceous, with carbonaceous plant remains, shaly at base	2.2	65.0		

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SUKUNKA D.D.H. G-1

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		Estimated		
Geological Description of Strata	Estimated Thickness (ft)	Depth to Stratum Floor (ft)	Footage Recovered · (ft)	Remarks
	····	<u>F 1001 (11)</u>		
SANDSTONE, grey-brown, fine to medium grained, quartzose, sub-angu-				
lar, salt & pepper, slightly argillaceous, silicaceous, small cross-				
bedding	2.2	67.2	2.2	
·			~	
SHALE, dark grey, silty, with carbonaceous plant remains	1.5	68.7	1.5	
SANDETONE group find to modium grained guartzoso gub-angular				
trace of carbonaceous material	5-3	.74.0	5.3	
SANDSTONE, grey, medium to coarse grained to fine conglomerate,			·	
quartzose, small grey chert pebbles up to 1/16". Shear zone with				
slickenside at 71 ft, 15 ⁰ from horizontal	1.7	75.7	1.7	
SANDSTONE, grev, fine, medium, coarse grained, guartzose, sub-angu-				
lar, slightly calcareous, salt & pepper, medium sorting, occasional			,	· .
trace of carbonaceous matter	8.3	84.0	8.3	
SHALE, dark grey, silty, with slightly carbonaceous plant remains	7.6	91.6	. 7.6	Top Gates
	· ·			
	2.7	94.3	2.1	SKR 631
MUDSTONE, coaly	0.4	94.7	0.4	
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• Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL	2.3	97.0	2.3	Floor Gates "B" Seam; SKR 632
CONGLOMERATE, grey with green, grey and black quartz and chert peb- bles, from $1/8$ " to $1/2$ ", in sandstone matrix	14.0	111.0	14.0	· .
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SEAM	THICK. ANAL. (ft)	LAB. NO.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates	2.7	5988	4,5	0.8	12.5	24.7	62.0	0.50	13,790	8	adb*
'A'		SKR 630		5.3	11.9	23.6	59.2	0.48	13,170		arb*
				12.6 24.9 62.5 0	0.50	13,900		db *			
Gates	2.7	5989	1.1	0.9	6.3	21.7	65.7	0.39	14,370	8 ¹ /2	adb
'B'		SKR 631		2.0	6.2	26.8	65.0	0.39	14,210	_	arb
					6.4	27.3	66.3	0.39	14,500		db
Gates	2.3	5990	0.8	0.9	12.4	25.3	61.4	0.37	13,510	7	adb
'B'		SKR 632		1.7	12.3	25.1	60.9	0.37	13,400		arb
					12 5	25.5	62.0	0.37	13,635		dh

BORE HOLE No. D.D.H. G-1

* adb = air dried basis

arb = as received basis

db = dried basis

GATES MEMBER	R	BORE NUMBE	R G-2
	1		
Grid Referen	ace 40,441.6 N	98,449.7 E	
Exploration	Grid Reference		
Date Commenc	ed Oct. 10, 1975	Completed	Oct. 12, 1975
Collar R.L.	5,968.4 ft	Standard Da	atum
Total Depth	65.8 ft	Electrical	ly Logged Yes/XX6
Drilled by For	Tonto Drilling Ltd. Coalition Mining Limit	ed	

Logged by P. Antonenko

## COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	5,931.9	41	100%	No roof. Max. thickness of coal 10 ft (see Trench adjacent to G-2)
"B"	5,919.9	2.6	100%	Max. thickness of coal 2.6 ft

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DETAIL OF GATES MEMBER



-17

NOTE: G-2 Collared in centre of "A" SEAM

Prepared by: PET-KO GEOLOGICAL SERVICES LTD. STRATIGRAPHIC LOGS for DDH G-2 COALITION MINING LIMITED DRW BY P ANTONENKO DATE: FEB. 20, 1976 SCALE :1" = 50' PAGE 1 of 1





SUKUNKA	D.D.H.	G-2	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
Spudded. <u>COAL</u> , 4 ft Gates "A" Seam outcrop above hole				
COAL, Gates "A" Seam, dull to bright, sooty, wet, weathered	5.0	5.0		
MUDSTONE, grey, carbonaceous streaks	3.6	8.6	3.6	
SILTSTONE, grey, argillaceous with carbonaceous streaks and plant remains, grading to shale	·1.4	10.0	`1.4	
SILTSTONE, grey to dark grey, argillaceous with some carbonaceous plant remains, grading to dark grey, silty, blocky shale	1.0	11.0	1.0	
SILTSTONE, grey, argillaceous, slightly carbonaceous	4.0	15.0		
SHALE, dark grey, carbonaceous	1.2	16.2		-
SANDSTONE, grey-brown, medium-grained, salt & pepper, quartzose, sub- rounded	0.9	17.1		
SHALE, dark grey, blocky, with occasional thin coal wisps	1.2	18.3		
SILTSTONE, grey to dark grey, very argillaceous, carbonaceous	3.2	21.5		·· .

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , interlaminated with dark grey carbonaceous mudstone	0.6	22.1		
MUDSTONE, dark grey, rubbly, carbonaceous	1.5	23.6		
SHALE or Claystone, dark grey to black, blocky, with some carbona- ceous plant remains	4.4	28.0		
MUDSTONE, dark grey, with carbonaceous plant remains	0.7	28.7	-	
COAL, bright and dull	0.9	29.6		
MUDSIONE, dark grey	2.0	31.6		
COAL, with mudstone bands	0.3	31.9		
MUDSTONE, grey-brown	4.1	36.0	4.1	·
MUDSTONE, grey-brown, grading to shale	0.6	36.6		
SILISTONE, grey, argillaceous, part carbonaceous, grading to fine- grained sandstone at base	. 4.2	40.8		

SUKUNKA D.D.H. G-2

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, brown, fine to medium grained, quartzose, dolomitic, sub- angular, with some carbonaceous plant remains; hard, well-cemented				
slightly ferruginous staining	4.5	45.3	4.5	
MUDSTONE, dark grey, carbonaceous, with carbonaceous plant remains	0.7	46.0		
COAL, Gates "B" Seam, bright to dull, hard, appears clean	2.6	48.6	2.6	SKR 619
CONGLOMERATE with quartz and chert pebbles from $1/8"$ to $1/2"$ , and 1" at base	17.2	65.8	17.2	
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SUKUNKA D.D.H. G-2

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SEAM	THICK. ANAL. (ft)	LAB. NO.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates 'A'	5.8	5997 SKR 639	9.2	3.3 12.2	61.1 55.5 63.2	14.9 13.5 15.4	20.7 18.8 21.4	0.09 0.08 0.09	3,675 3,335 3,800	N/A	adb* arb* db *
Gates 'A'	2.8	5998 SKR 640	14.4	3.7 17.6	26.1 22.3 27.1	24.2 20.7 25.1	46.0 39.4 47.8	0.17 0.15 0.18	9,500 8,130 9,865	N/A	adb arb db

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GATES 'A' SEAM TRENCH - 10 ft EAST OF D.D.H. G-2

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* adb = air dry basis arb = as received basis

db = dried basis

BORE HOLE No. D.D.H. G-2

SEAM	THICK. ANAL. (ft)	LAB, NO.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates 'B'	2.6	4729 SKR 615	0.2	4.7 4.9	12.0 12.0 12.6	22.8 22.8 23.9	60.5 60.3 63.5	0.44 0.44 0.46	11,495 11,470 12,060	N/A	adb* arb* db *

* adb = air dried basis

arb = as received basis

db = dried basis

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BORE NUMBER _G-3___

Grid Reference Unsurveyed Exploration Grid Reference 2500 ft SE of K/6 Date Commenced Nov. 21, 1975 Completed Nov. 24, 1975 Collar R.L. 5,805'(Est.) Unsurveyed Total Depth 134' Standard Datum Drilled by Tonto Drilling Ltd. For Coalition Mining Limited

#### COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	5,723	35.1	100%	Max. thickness of coal 3.9 ft
"B"	5,696	2.6	100%	Max. thickness of coal l.6 ft



Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No core 、	10.0	10.0		
UNCONSOLIDATED MATERIAL - clay and gravel	3.0	.13.0	3.0	
SANDSTONE, grey, fine to medium grained, quartzose, sub-angular, salt & pepper, badly broken & fractured	10.0	23.0	7.0	
CONGLOMERATE, grey-brown, weathered pebbles up to 1/4", badly broken	3.0	26.0	2.0	
SANDSTONE, grey, fine-grained, quartzose, argillaceous, banded, weathered and broken	2.0	28.0	2.0	
SANDSTONE, grey, fine-grained, interlaminated with siltstone	3.0	31.0	3.0	
SILTSTONE, grey, argillaceous, interlaminated with shale, broken	21.0	52.0	17.0	
MUDSTONE, dark grey, soft, with interbedded silty, dark grey shale, some carbonaceous plant remains	4.6	56.6	4.6	Gates "A" Seam
SHALE, dark grey, with carbonaceous plant remains, coaly	0.4	57.0	0.4	а 
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL	1.2	58.2	1.2	
MUDSTONE, dark grey, coaly, broken badly	0.8	59.0	0.8	
MUDSTONE, dark brown, carbonaceous	4.0	63.0	4.0	
COAL, stony	0.7	63.7	0.3	
MUDSTONE, dark brown, carbonaceous	1.1	64.8	1.1	
COAL, bony	0.2	65.0	0.2	
MUDSTONE, dark brown, soft	3.0	68.0	3.0	
MUDSIONE, dark brown to dark grey, carbonaceous with $\frac{1}{4}$ " coal band at 68.3	2.0	70.0	2.0	•
COAL, bony	0.4	70.4	0.4	
MUDSTONE, dark grey, carbonaceous, coaly	2.2	72.6	2.2	
COAL	0.l	72.7	0.1	

SUKUNKA D.D.H. G-3

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey, carbonaceous, coaly	1.4	74.1	1.4	
COAL, dull, hard, slightly bony	1.8	75.9	1.8	
COAL, bright and dull	2.1	77.0	2.1	
SHALE, dark grey, carbonaceous, coaly	0.3	77.3	0.3	
MJDSTONE, brown, waxy, broken, with plant fossils	2.9	80.2	, ,	
COAL	· 0.2	80.4	0.2	
SANDSTONE, grey, fine to medium grained, quartzose, salt & pepper, sub-angular, medium sorting	. 1.2	81.6	1.2	
SILTSTONE, dark brown, argillaceous, with occasional carbonaceous plant fossil, laminated with silty shale	5.9	87.5	5.9	
SHALE, dark grey with some carbonaceous plant fossils	3.0	90.5	3.0	
COAL	. l.2	91.7	· 1.2	Base "A" Seam
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE, dark grey, with carbonaceous plant remains	4.3	96.0	4.3	
SANDSTONE, grey, fine to medium grained, quartzose, sub-angular, medium sorting, silicaceous, grading to siltstone at base	2.0	98.0	2.0	- -
SHALE, dark grey, badly broken, with carbonaceous plant remains	6.8	104,8	6.8	
SILTSTONE, brown, argillaceous, grading to argillaceous, very fine- grained sandstone	0.3	105.1	0.3	
SHALE, dark grey, carbonaceous, with thin coaly bands	0.1	105.2	0.1	
SHALE, dark grey with abundant carbonaceous plant remains	11.3	116.5	11.3	
SHALE, dark grey, carbonaceous with thin coaly bands	1.0	117.5	1.0	B Seall
COAL - mud band of 1" at 118.1 ft	1.6	119.1	1.6	
CONGLOMERATE, grey-brown, with grey-green and black quartz and chert pebbles from $1/8$ " to $1/2$ ", in sandstone matrix	4.4	123.6	4.4	, N
SANDSTONE, brown, medium to coarse-grained, quartzose, salt & pep- per, sub-rounded to sub-angular, poor sorting, occasional conglom. pebble	3.0	126.6	3.0	v

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
CONGLOMERATE	[°] 0 <b>.</b> 9	127.5	0.9	7 ⁰ from horizontal
SANDSTONE, grey-brown, medium to coarse-grained with conglomerate lenses	3.5	131.0	3,5	
SANDSTONE, grey, fine - medium - coarse-grained, sub-rounded to sub- angular, salt & pepper, silicaceous, medium to poor sorting, slight-				: : : : :
ly carbonaceous with conglomerate lenses at base	2.7	133.7	2.7	, , ,
CONGLOMERATE, with thin coal bands	0.3	134.0	0.3	- -
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GATES MEMBER BORE NUMBER G-4 1 Grid Reference 33,634.2 N 88,591.7 E Exploration Grid Reference J/1 Date Commenced Nov. 28, 1975 Completed Nov. 30, 1975 Standard Datum Collar R.L. 5,011.0 ft Total Depth 187.0 ft Electrically Logged Yes/NM Drilled by Tonto Drilling Ltd. . Coalition Mining Limited For

Logged by P. Antonenko

#### COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	4,930.0	34.7	90%	Max. thickness of coal 2.0 ft; Total 3.5 ft.
"B"	4,872.0	8.5	518	Max. thickness of coal 4.3 ft.







. Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No Core	10.0	10.0		
SANDSTONE, grey, fine-grained, quartzose, argillaceous, laminated with siltstone and shale, some carbonaceous partings; crumbled and weathered	9.0	19.0	9.0	
MUDSTONE, dark grey with laminated shale, dark grey	5.0	• 24.0	5.0	- - -
SILTSTONE, grey to dark grey, very argillaceous, broken, some carbo- naceous plant remains	6.0	30.0	6.0	
SANDSTONE, grey, fine grained, quartzose, salt & pepper, argilla- ceous, silty, occasional carbonaceous streak, minor cross bedding	· 16.3	46.3	16.3	5 ⁰ from horizontal Gates "A"
COAL	1.5	47.8	1.5	Seam SKR 636
MUDSTONE, dark grey, carbonaceous	1.8	49.6	1.8	·
COAL	1.4	51.0	0.7	SKR 637 (last 51.6)
COAL, crushed, bony	0.6	51.6	0.6 5	-
·				

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Reimarks
MUDSTONE, dark grey, laminated with dark grey shale	5.9	57.5	. 5.9	
MUDSTONE, dark grey, carbonaceous, coaly	2.0	59.5	2.0	
COAL, bony	1.5	61.0	1.5	·
MUDSTONE AND SHALE, dark grey, carbonaceous	1.8	62.8	1.8	
SANDSTONE, grey, fine-grained, quartzose, argillaceous, silty, inter- bedded with grey, argillaceous siltstone	3.2	66.0	3.2	
SHALE AND MUDSTONE, dark grey, carbonaceous	3.1	69.1	3.1	
COAL	0.3	69.4	0.3	
MUDSTONE, dark grey, carbonaceous, with thin coal bands	1.1	70.5	1.1	
COAL	. 0.2	70.7	0.2	
MUDSTONE, dark grey, carbonaceous, coaly	0.4	71.1	0.4	
MUDSTONE, dark brown, some carbonaceous plant remains	2,1	73.2	2.1	

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SUKUNKA D.D.H. G-4

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage , Recovered (ft)	Remarks
MUDSTONE, dark grey, coaly, carbonaceous	0.2	73.4	0.2	
COAL	0.5	74.9	0.5	
MUDSTONE, dark grey	2.1	76.0	2:1	
MUDSTONE, dark grey, carbonaceous, coaly	1.0	77.0	1.0	
COAL	0.2	77.2	0.2	· · · · · · · · · · · · · · · · · · ·
MUDSTONE AND SHALE, dark grey, carbonaceous, with abundant carbona- ceous plant remains	3.8	[.] 81.0	3.8	
SANDSTONE, grey, fine grained quartzose, argillaceous, silty, some carbonaceous wisps	6.0	87.0	. 6.0	
MUDSTONE, dark grey, soft	1.5	88.5	1.5	
SANDSTONE, grey, fine grained, quartzose, argillaceous, interbedded with argillaceous siltstone	23.5	112.0	23.5	
SHALE, dark grey, parts silty, with abundant carbonaceous plant remains	18.5	130.5	18.5	Gates "B" Seam

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE, dark grey, carbonaceous, coaly	0.2	130.7		
COAL, bright and dull	2.3	133.0	1.2	
COAL, bright and dull	2.0	135.0	1.0	SKR 638
MUDSTONE, dark grey, carbonaceous	1.0	136.0	1.0	
SHALE, dark grey, carbonaceous, with carbonaceous plant fossils	0.8	136.8	0.8	
COAL	0.1	136.9	0.1	
SHALE, dark grey, carbonaceous, coaly, broken, crushed	2.1	139.0	0. <u>6</u>	Base Gates "B" Seam
SHALE, dark grey, with abundant carbonaceous plant remains	11.0	150.0	11.0	Dottait
SANDSTONE, brown, fine grained, quartzose, carbonaceous, silty	3.0	153.0	3.0	
SILTSTONE, dark brown, argillaceous, carbonaceous	7.0	160.0	7.0	
SHALE, dark grey, fissile, occasional carbonaceous plant remains	12.2	172.2	12.2	
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SUKUNKA D.D.H. G-4

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
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SILTSTONE, brown, carbonaceous, argillaceous	0.8	173.0	0.8	
SHALE, dark grey, fissile, some carbonaceous plant remains	3.0	176.0	3.0	-
SHALE, dark grey, carbonaceous, coaly	°0.2	176.2	0.2	
COAL, with thin mud band	1.0	177.2	1.0	
SANDSTONE, grey, medium grained, quartzose, sub-angular, medium				
sorting, salt & pepper, carbonaceous at top	9.8	187.0	4.8	
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* Note: 5 ft core lost in hole.				
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BORE HOLE No. D.D.H. G-4 .

SEAM	THICK. ANAL. (ft)	LAB. NO.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates 'A'	1.5	5994 SKR 636	2.2	0.7 2.9	14.9 14.6 15.0	25.5 24.9 25.7	58.9 57.6 59.3	3.55 3.47 3.58	12,935 12,650 13,025	4	adb* arb* db *
Gates 'A'	2.0	5995 SKR 637	3.6	0.9 4.5	25.0 24.1 25.2	25.1 24.2 25.3	49.0 47.2 49.5	0.51 0.49 0.51	11,140 10,740 11,240	6 ¹ 2	adb arb db
Gates 'B'	4.3	5996 SKR 638	2.2	0.9 3.1	19.9 19.5 20.1	24.8 24.3 25.0	54.4 53.1 54.9	0.24 0.23 0.24	12,020 11,755 12,130	4 ¹ 2	adb arb db

* adb = air dried basis

arb = as received basis

db = dried basis

GATES MEMBER		BORE NUMBER G-5	
	/		
Grid Reference	44,606.7 N	98,207.3 E	·
Exploration Gr	id Reference		
Date Commenced	Oct. 12, 1975	Completed Oct. 25,	1975
Collar R.L.	6,357.0 ft	Standard Datum	
Total Depth	115.0 ft	Electrically Logged	Yes/XXXX
Drilled by For	Tonto Drilling Lt Coalition MIning	td. Limited	

Logged by P. Antonenko

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# COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	6,288.5'	18.9'	100%	Max. thickness of coal 12.3 ft
"B"	6,258.3'	` 4.6'	100%	Max. thickness of coal 4.6 ft

## DETAIL OF GATES MEMBER



Prepared by: PET-KO GEOLOGICAL SERVICES LTD. for COALITION MINING LIMITED DRW BY P. ANTONENKO DATE : FEB. 20, 1976

# STRATIGRAPHIC LOGS

DDH G-5

SCALE :1" = 50'




Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No Core	4.9	4.9		•
SANDSTONE, brown, fine grained, quartzose, silty, salt & pepper, slightly weathered, rubbly	4.1	9.0	4.1	
SANDSTONE, grey brown, very fine to fine grained, quartzose, salt & pepper and siltstone, grey, argillaceous	12.0	21.1	,	15 ^{0.}
CONGLOMERATE, brown, with rounded quartz pebble, $\frac{1}{4}$ " to $\frac{1}{2}$ "	0.6	21.7		
SANDSTONE, brown, medium grained, quartzose, subrounded, porous, ferruginous color	1.0	22.7		
SANDSTONE, light grey, quartzose, angular, salt & pepper, medium grained, calcareous, hard	1.2	23.9	- - -	
SILTSTONE, grey, argillaceous with traces of carbonaceous plant remains	0.7	24.6		
MUDSTONE, with coal streaks, weathered	0.2	. 24.8		
SILTSTONE, parts very fine grained sandstone, grey brown argilla- ceous with 45 ⁰ fracture planes; coaly streaks	3.0	27.8		

SUKUNKA D.D.H. G-5

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SANDSTONE, grey, very fine grained, quartzose, interbedded with silty shale	4.2	32.0		
SILTSTONE, grey, argillaceous, with carbonaceous plant remains, 45 ⁰ fracture on shear planes	2.0	35.0		
SANDSTONE, fine grained, and siltstone, laminated with carbonaceous streaks, argillaceous	3.0	38.0		
SANDSTONE, grey, quartzose, fine to medium grained, sub-angular, salt & pepper, calcareous, with calcite veins in sealed fractures	⁻ 6 <b>.</b> 0	44.0		
SHALE or claystone, dark grey, fractured, with silty and sandy bands	3.6	47.6		
SANDSTONE, brown, fine grained, quartzose, salt & pepper, carbona- ceous	2.0	49.6		
MUDSTONE with carbonaceous plant remains	1.4	51.0		Gates "A" Seam
COAL and mudstone, crushed	1.0	52.0	1.0 }	SKR 611
COAL, bright and dull	7.0	59.0	7.0	

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SUKUNKA	D.D.H.	G-5

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE with coaly streaks	İ.0	60.0		· ·
MUDSTONE, dark grey	1.5	61.5		
COAL, 50% mudstone, black	0.5	62.0	0.5	
COAL, 25% mudstone	. 0.2	、		50 SKR 15 ⁰ 612
COAL	0.5	62.7	0.5	
MUDSTONE, carbonaceous, coály	2.7	65.4		
COAL, some stony material top half	3.1	68.5	3.1	SKR 613
SILTSTONE, dark grey to grey, carbonaceous, argillaceous	6.5	75.0		
SANDSTONE, grey to dark grey, fine to very fine grained to siltstone, argillaceous, hard	11.0	86.0		
SECOND RUN: SEE NEXT PAGE.				

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SECOND RUN:			•	1
SANDSTONE, grey, fine to very fine grained to siltstone,				1
argillaceous, with carbonaceous streaks	5.0	91.0	·	
·	<b>ا</b> د'	· 0/ 1		
SHALE or claystone, dark grey	2.1	94.1		Gates "B" Seam
COAL, bright and dull	4.6	98.7	4.6	SKR 614
CONGLOMERATE with green, brown, and black quartz and chert peobles,	16.3	115.0	16.3	;
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SUKUNKA D.D.H. G-5

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BORE HOLE No. D.D.H. G-5

SEAM	THICK. ANAL. (ft)	LAB. NO.	A.D.M.	MOISTURE	.ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates 'A'	8.0	4725 SKR 611	0.4	2.9 3.3	32.9 32.8 33.9	19.2 19.1 19.8	45.0 44.8 46.3	0.24 0.24 0.25	9,225 9,190 10,530	1 ₂₂	adb* arb* db *
Gates 'A'	1.2	4726 SKR 612	0.7	2.5 3.2	28.9 28.7 29.6	21.3 21.2 21.8	47.3 46.9 48.6	0.27 0.27 0.28	9,450 9,385 9,695	L ₂	adb arb db
Gates 'A'	3.1	4727 SKR 613	1.1	1.7 2.8	27.2 26.9 27.7	20.8 20.6 21.2	50.3 49.7 51.1	0.26 0.26 0.26	10,590 10.475 10,775	1	adb arb db
Gates 'B'	4.6	4728 SKR 614	0.6	3.2 3.8	7.9 7.9 8.2	24.4 24.3 25.2	64.5 64.0 66.6	0.38 0.38 0.39	13,135 13,055 13,570	2	adb arb db

* adb = air dried basis arb = as received basis db = dried basis

GATES MEMBER		BORE NUMBER G-6
	1	
Grid Reference	45,744.9 N	92,084.0 E
Exploration Grid	1 Reference	
Date Commenced	Nov. 19, 1975	Completed Nov. 20, 1975
Collar R.L.	5,397.0 ft	Standard Datum
Total Depth	123.0 ft	Electrically Logged Yes/%
Drilled by	Tonto Drilling Ltd	•
ror	COALITION MINING L	μπτεα

## COAL SEAM INTERSECTIONS

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Logged by P. Antonenko

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	5,327.4'	28.1'	878	Max. thickness of coal 3.9 ft
"B"	5,284.4'	9.2'	92.4%	Max. thickness of coal 6.3 ft





 Prepared by:
 PET-KO GEOLOGICAL SERVICES LTD.
 STRATIGRAPHIC LOGS

 for
 DDH G-6

 COALITION MINING LIMITED
 DDH G-6

 DRW BY P. ANTONENKO
 DATE : FEB. 20, 1976
 SCALE :1" = 50'





SUKUNKA	D.	. D .	.н.	G-6
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No Core	10.0	10.0		
MUDSTONE, dark grey, soft	1.4	· 11.4	1.4	s
SILTSTONE, dark grey to grey-brown, argillaceous, slightly carbona- ceous	13.6	25.0	13.6	
SANDSTONE, grey, fine grained, salt & pepper, interlaminated with siltstone and shale, grey to dark grey	7.6	32.6	7.6	
SANDSTONE, grey, fine grained, quartzose, argillaceous	2.2	34.8	2.2	
SILTSTONE, brown to dark grey, argillaceous, with shaly interbeds	4.7	39.5	4.7	
SANDSTONE, grey-brown, quartzose, fine to medium grained, carbona- ceous, argillaceous	2.0	41.5	2.0	Gates "A" Seam
SHALE, carbonaceous, dark grey, parts silty	0.6	42.1	0.6	
COAL, bright and dull	3.9	46.0 ·	3.4	SKR 633
MUDSIONE, dark grey, carbonaceous, coaly	3.0	49.0	0.8	
I	6	1	4	1

SUKUNKA D.D.H. G-6

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
COAL, parts stony	0.4	49.4	0.4	
MUDSTONE, coaly	· 2.2	51.6	2.2	
COAL	0.2	51.8	Õ.2	
MUDSTONE, coaly	0.2 .	52.0	0.2	
MUDSTONE, dark grey, carbonaceous	6.0	58.0	6.0	
COAL	0.1	58.1	0.1 .	
MUDSTONE, carbonaceous, dark grey	0.7	58.8	0.7	
COAL	0.2	59.0	0.2	· · .
MUDSTONE, dark grey, carbonaceous	2.0	61.0	1.2	
COAL, slightly stony	0.3	61.3	0.3	
MUDSTONE, dark grey, carbonaceous	. 4.2	65.6	3.8	
COAL, part stony	0.4	66.0	0.4	м,

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey, coaly	1.2	67.2	1.2	
COAL	. 0.8	68.0	0.8	
MUDSTONE, dark grey, coaly	0.6	68.6	0.6	
SHALE, dark grey, with carbonaceous plant remains	1.0	69.6	1.0	Base Gates "B" Seam
SANDSTONE, grey, fine grained, quartzose, argillaceous, interlami- nated with argillaceous siltstone	.6.9	76.5	6.9	
SANDSTONE, grey, fine to medium grained, quartzose, salt & pepper, sub-angular	7.0	83.5	7.0	
SILTSTONE, dark brown, slightly carbonaceous with some carbonaceous plant fossils	2.5	86.0	2.5	5° from horizon- tal
SANDSTONE, grey-brown, fine to medium grained, quartzose, salt & pepper, sub-angular, slightly carbonaceous, with occasional silty bands, minor cross bedding, minor brecciated zone with slickenside				
at 95 ft	. 14.5	100.5	. 14.5	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE, dark grey, silty	2.9	103.4	2.9	Gates "B" Seam
MUDSTONE, carbonaceous with coaly bands	0.7	104.1	0.7	
COAL, crushed	3.6	107.7	2.9	SKR 634
MUDSTONE, dark grey, coaly, crushed	2.0	107.7	2.0	
COAL, bright and dull	1.7	111.4	1.7	
MUDSTONE with coaly streaks	0.2	111.6	0.2	SKR 635
COAL	1.0	112.6	1.0	Base Gates "B" Seam
CONGLOMERATE, grey, green, and black quartz and chert pebbles, $1/8$ " to $1/2$ ", in sandstone matrix	10.4	123.0 ⁻	10.4	· .
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BORE HOLE No. D.D.H. G-6

SEAM	THICK. ANAL. (ft)	LAB. NO.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S % ·	B.T.U.	F.S.I.	CALC. FACTORS
Gates 'A'	3.9	5991 SKR 633	2.7	1.8 4.5	13.2 12.8 13.4	24.0 23.3 24.4	61.0 59.4 62.2	0.43 0.42 0.44	13,100 12,745 13,340	б	adb* arb* db *
Gates 'B'	3.6	5992 SKR 634	5.9	0.6 6.5	7.0 6.6 7.0	27.9 26.3 28.1	64.5 60.6 64.9	0.54 0.51 0.54	14,320 13,475 14,405	8	adb arb db
Gates 'B'	2.9	5993 SKR 635	0.9	0.8	16.6 16.5 16.7	25.5 25.3 25.7	57.1 56.5 57.6	0.35 0.35 0.35	12,650 12,535 12,750	б	adb db

* adb = air dry basis

arb = as received basis

db = dried basis

GATES MEMBER <u>BORE NUMBER G-7</u> ( Grid Reference 43,854.1 N 87,836.7 E Exploration Grid Reference F/4 Date Commenced Nov. 9, 1975 Completed Nov. 13, 1975 Collar R.L. 5,172.5 ft Standard Datum Total Depth 221.0 ft Electrically Logged Yes / XXX Drilled by Tonto Drilling Ltd. For Coalition MIning Limited

Logged by P. Antonenko

## COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	5,024'	30.9'	100%	Max. coal thick- ness 0.5 ft
"B"	4,961.9'	10.6'	100%	Max. thickness of coal 1.2 ft; Seam is 80% rock.

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SUKUNKA	D.D.	н.	G-7
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No Core	11.0	11.0		
SANDSTONE, brown to grey, fine to medium grained, guartzose, sub-				
angular, salt & pepper, calcareous, occasional minor shale partings	30.0	41.0	30.0	5 ⁰
STITETONE grow argillageous laminated with your fine grained				
sandstone and dark grey to grey shale	15.0	56.0	15.0	
SHALE, dark grey, blocky, silty	10.0	66.0	10.0	
SILTSTONE, grey to dark grey, argillaceous	5.0	71.0	5.0	
SHALE, grey to dark grey, silty	7.6	78.6	7.6	
SILTSTONE, grey to dark grey, argillaceous, with laminae of dark				· .
grey shale	11.4	90.0	11.4	
SILTSTONE, dark grey, argillaceous	16.0	106.0	16.0	
SANDSTONE, grey, fine grained, quartzose, argillaceous, silty, 2"				
calcitic shale at 108 ft	· 11.2	117.2	11.2	
	· ·	,	•	1

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE, dark grey, silty	0.4	117.6	0.4	
CONGLOMERATE, brown, quartz and chert pebbles up to $\frac{1}{4}$ ", sandstone and siltstone matrix	0.8	118.4	0.8	*
SILTSTONE, dark grey, laminated with shale	0.3	118.7	0.3	Gates "A" Seam
COAL	0.4	119.1	0.4	
SANDSTONE and siltstone, grey, interbedded, very carbonaceous and coaly	1.4	120.5	1.4	
SANDSTONE, grey, fine grained, salt & pepper, quartzose	3.9	124.4	3.9	
SHALE, carbonaceous, silty, with thin coal interbeds	0.8	125.2	•	• .
MUD and MUDSTONE, brown	2.8	128.0	1.6	.   .
COAL, stony	0.2	128.2	0.2	
SHALE and mudstone, dark grey, carbonaceous, with coaly plant remains	. 2.8	131.0	. 2.8	. ,
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum <u>Floor</u> (ft)	Footage Recovered (ft)	Remarks
SILTSTONE, dark grey, argillaceous, carbonaceous	2.6	133.6	2.6	•
MUDSTONE, carbonaceous and coaly	2.4	_136	2.6	
SANDSTONE, grey, fine grained, quartzose, salt & pepper, argillaceous			`	
silty, laminated with siltstone and shale	1.8	137.8		· .
MUDSTONE, carbonaceous, with thin coal interbeds bottom 1"	3.2	141.0	3.2	
MUDSTONE, carbonaceous with coaly plant remains	2.7	143.7		
COAL	0.5	144.2	0.5 .	
MUDSTONE, brown to dark grey, with carbonaceous plant remains	2.5	146.7	2.5	
COAL	0.5	147.2	0.5	
MUDSTONE, brown, carbonaceous, coaly at base	2.1	149.3	2.1	Base Gates "A" Seam
SANDSTONE, brown, fine grained, salt & pepper, quartzose, silty, interlaminated with siltstone and shale	5.7	155.0	5.7	
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SUKUNKA D.D.H. G-7

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SILTSTONE, brown, interlaminated with sandstone and shale, parts				
carbonaceous	5.0	160.0	5.0	×
MUD and MUDSTONE, slightly carbonaceous	0.5	160.5	0.5	0 ⁰ dip from horizontal
SILTSTONE, grey, argillaceous, parts carbonaceous, interlaminated with dark grey shale	5.4	165.9	5.4	
SANDSTONE, grey, fine to medium grained, quartzose, argillaceous,				
calcareous, trace of cross-bedding	8.5	174.4	8.5	
SILTSTONE, brown, carbonaceous, with interbedded dark grey silty shale	2.0	176.4	2.0	
SILTSTONE, dark brown, very argillaceous, calcareous with some laminated dark grey shale	18.6	195.0	18.6	
SHALE, dark brown, silty - non-silty at base	5.0	200.0	5.0	Top Gates "B" Seam
COAL	· ·1.2	201.2	• 1.2	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE and shale, parts carbonaceous, dark grey	5.6	206.8	5.6	
COAL	0.2	207.0	0.2	
MUDSTONE, dark grey, carbonaceous	0.2	207.2	0.2	
COAL	0.3	207.5	0.3	
MUDSTONE, dark grey, carbonaceous, coaly	1.2	208.7	1.2	
COAL	0.4	209.1	0.4	
MUDSTONE and shale, dark grey	0.5	209.6	0.5	
COAL	1.0	210.6	1.0	Base Gates "B" Seam
1/8" to $1/2$ ", at base, in sandstone matrix; $1/2$ " coal at 119.8 ft	10.4.	221.0	10.4	
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GATES MEMBER		BORE NUMBER	G-8
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Grid Reference	e 44,953.8 N	88,114.5 E	
Exploration G	rid Reference E/S	5	
Date Commenced	d Nov. 26, 1975	Completed No	v. 27, 1975
Collar R.L.	5,056.5'	Standard Datu	ım
Total Depth	81.0'	Electrically	Logged Yes/XX
Drilled by	Tonto Drilling Ltd.		
For	Coalition MIning LImi	ted	

Logged by P. Antonenko

## COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	5,040.5'	-	<b>_</b>	Collared in "A" Seam, no coal.
"B"	4,985.0'	12.3	100%	Max. thickness of coal 1.1 ft Seam is 87% rock.





Prepared by:		
PET-KO GEOLOGICAL SERVICES LTD.		STRATIGRAPHIC LOGS
for		DDH G-8
COALITION MINING LIMITED		
DRW BY P. ANTONENKO DATE : FEB. 20, 1976	SCALE :1" = 50 '	PAGE 1 of 1

SUKUNKA D.D.H. G-8

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
No core	12.5	12.5		
MUDSTONE, dark grey with coaly bands, crushed at top	1.6	14.1	l.6	
SILTSTONE, dark brown, argillaceous, with carbonaceous plant remains	1.2	15.3	172	
MUDSTONE, dark grey, carbonaceous with ½" coal band on slickensided 45 ⁰ surface	0.7	16.0	0.7	
SANDSTONE, grey, fine-grained, argillaceous, quartzose, some silty bands	2.7	18.7	2.7	
SILTSTONE, dark grey-brown, argillaceous, with carbona- ceous plant fossils and some coaly wisps	2.3	21.0	2.3	
SANDSTONE, grey to dark grey, argillaceous, fine-grained, quartzose, silty	1.7	22.7	1.7	•.
MUDSTONE, dark brown, with occasional carbonaceous plant fossil	1.6	24.3	1.6	
SILTSTONE, dark brown, argillaceous	1.7	26.0	1.7	

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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
•			•	
SANDSTONE, grey, fine to medium grained, quartzose, argillaceous,				
salt & pepper, sub-angular, some cross-bedding	5.2	31.2	5.2	x
,				
SILTSTONE, dark brown, argillaceous, with interlaminated sandstone				•
as above	1.6	32.8	1.6	
SANDSTONE, area fine - medium - coarse-grained quartzose salt $\varepsilon$				
pepper, sub-angular, medium sorting, with some carbonaceous streaks.			•	
minor cross bedding	5.2	38.0		
SILISTONE, dark brown, argillaceous, slightly calcareous	12.0	50.0	12.0	
		,		
SILTSTONE, dark brown, interlaminated with dark grey shale	3.3	53.3	3.3	
	•			
SHALE, dark grey, occasional carbonaceous plant remains, fissile	5.9	59.2	5.9	- ,
			0.0	•
	0.2	59.4	••• 0•2	
MUDSTONE, dark grev, carbonaceous, coalý	0.6	60.0	0.6	
, , , , , , , , , , , , , , , , , , ,			0.0	
MUDSIONE, dark brown, with some carbonaceous plant remains	. 5.5	65.5	5.5	
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Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
MUDSTONE, dark grey, with thin coal bands	0.4	65.9	0.4	
MUDSTONE, dark brown with some carbonaceous plant remains	2.1 .	68.0	2.1	
SHALE, dark grey, carbonaceous, with thin coal bands	1.9	69.9	1.9	
COAL, bony	1.1	71.0	1.1	
SHALE, dark grey, carbonaceous, coaly	0.15	71.15	0.15	
COAL	0.35	71.5	0.35	Base Gates
CONGLOMERATE, grey, with grey, green, black quartz and chert pebbles from $\frac{1}{4}$ " to $\frac{1}{2}$ ", in sandstone and mudstone matrix; 0.5 ft siltstone and sandstone band at 78 ft, dipping 30 [°]	9.5	81.0	9.5	D Dealt
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GATES MEMBE	R	BORE NUMBER	G-9	
			•	
	1			
Grid Reference	e 41,937.1 N	95,442.6 E		
Exploration G	rid Reference H/S	5		
			,	
Date Commenced	A Nov. 24, 1975	Completed	Nov. 25,	1975
Collar P L	5.202.2 ft	Standard Dat	- 1170	
COLLAL IN. D.	-,	Scandard Da	- un	
Total Depth	65.0 ft	Electrically	y Logged	Yes/XXXXX
Drilled by	Tonto Drilling Ltd.			
For	Coalition MIning Limi	ted		
Logged by	P. Antonenko			

## COAL SEAM INTERSECTIONS

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Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
"A"	-	_	-	-
"В"	5,147.6'	7.1'	100%	Max. coal thick- ness 1.0 ft 80.2% of seam is rock.

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SUKUNKA	D.D.H.	G-9
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SUKUNKA D.D.H. G-9		χ.	·	
Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered . (ft)	Remarks
No Core	8.0	8.0		
SANDSTONE, grey, fine - medium - coarse grained, quartzose, sub- angular, salt & pepper, medium to poor sorting, some cross-bedding	5.0	13.0	5. ₋ 0	
SHALE, dark grey, with some carbonaceous plant fossils	4.0	17.0	4.0	Shattered: possible
SANDSTONE, grey, fine to medium grained, quartzose, sub-angular, salt & pepper, with interlaminated argillaceous siltstone	2.0	19.0	2.0	Tault
SHALE, dark grey, with carbonaceous plant fossils	7.3	26.3	7.3	
SANDSTONE, grey, fine to medium grained, quartzose, salt & pepper, slightly calcareous with silty bands, argillaceous, carbonaceous streaks	2.7 ·	29.0	2.7	
SHALE, dark grey, carbonaceous	0.2	29.2	0.2	
COAL and mudstone, bony	1.0	30.2	1.0	
MUDSTONE, dark grey, carbonaceous, with thin coal bands	1.0	31.2	1.0	

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor (ft)	Footage Recovered (ft)	Remarks
SHALE, dark grey, with mudstone, some carbonaceous plant remains	5.8	37.0	5.8	
SHALE, dark grey, with some fossil carbonaceous plant remains	10.5	47.5	10.5	Gates "B" Seam
MUDSTONE, dark brown, carbonaceous, with thin coal bands	2.3	49.8	2.3	
COAL, bony	0.2	50.0	0.2	
MUDSTONE, dark brown, with some carbonaceous plant remains	1.2	51.2	[`] 1.2	
MUDSTONE, dark grey, carbonaceous, with abundant carbonaceous plant remains	1.8	53.0	1.8	
COAL	. 0.2	⁻ 53.2	0.2	
MUDSTONE, dark grey, coaly	0.4	53.6	0.4	
COAL, bright and dull, slightly bony	1.0	54.6	1.0	Base Gates "B" Seam
CONGLOMERATE, grey, with quartz and chert pebbles, grey, green, and black, from $1/8$ " to $1/2$ ", tightly packed in sandstone matrix	. 10.4	65.0	10.4	. ·

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Recorded By	Truck No.	Operating Time		Rm @ °F		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measured	Log Measured from	Permanent Datum				W M	TWP	LSD	FILE NO.						
HEDIN Witnessed By	104	2 HOURS				HO	² 4 FT	CACL, - QUICK GEL	17 FT	17 FT	115	116	115	000	115	25 OCTOBER 1975	ONE		from GROUND LEVEL	GROUND LEVEL.	GROUND LEVEL	PROVINCE BRITISH COL		FIELD SUKUNKA	LOCATION BULIMOOSE M	WELL DDH G-5		COMPANY COALITION M	OIL ENTERPRISES					
y ANTONENKO	5																			Ft. Above Perm. Datum	Elev. 6357.0	JUMBIA			ITN La. 44. 606.7 De			INING LIMITED	LTD. CALGARY,	GAMMA RAY NEUTRC DENSILOG				
																			G.L.	SS	K.B.	NEL	Other Services:		e. 98.207.3				ALBERTA	NU LOG				
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<u> </u>	NGT	'H						$\downarrow$												YP	E						P	RO	PORTIO	NAL				
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HOIS	<u>t te</u>	UCK	NQ.	<b>.</b>					104										SPACING										17 II	NCH				
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<u>NO.</u> 1		FRC	M 000	<b> </b>	то 115		FT	7 <mark>М</mark> Б 2	N	SEC		SE		NGS			0R	R	<u>Р</u>	1 <u>8</u>	LOC A T		. <u>ş</u> i		SETT	NGS		V.LORR	PER LOG DIV					
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NT FALLER	i si di nang			_					_				_												]	DENSI	ΓY	T00]	L SERIA	L <u>NO</u> 553				
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Recorded By H	Truck No.	Operating Time		Rm @ °F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading.	Date	Run. No.		Well Depths Measured	Loo Measured from	Permanent Datum				WM	RGE	SEC	LSD	FILE NO.						1
EDIN Witnessed By ANTON	104	I HR.			β	23 FT.	AIR / WATER	IOFT.	9 FT.	123	121	120	000	120	NOV. 20.1975.	ONE		a from RIG FLOOR	GROUND I EVEL	GROUND LEVEL Elev.	PROVINCE BRITISH COLUMBIA		FIELD SUKUNKA	LOCATION BULLMOOSE MTN.		WELL DDH G-6	COMPANY COALITION MINING	COMPANY COAL TION MINING	OIL ENTERPRISES LTD, C					
																		G.L.	Perm Datum CSG	53970 KB	TEMP.	Other Services:		La.45,744.9 De.92,084.0					ALGARY, ALBERTA		ENSILOG	AY NEUTRON LOG		
	NQ. MOI	DEL ER	NO.			_GA	MM	<u>A</u> F	RAY	0N 34 11	E 0 1 6			· · · · · · · · · · · · · · · · · · ·			NET RUN.NO. LOG TYPE TOOL MODEL NO. DIAMETER									ONE ONE NEUTRON/NEUTRON 340 1 ¹¹ / ₁₆								
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HOIST INSTR TOOL	GENER HOIST TRUCK NO. INSTRUMENT TRUCK NO. TOOL SERIAL NO.										IO4 IO4 340										SERIAL NO. SPACING TYPE STRENGTH								171 17IN. Be 3 CURIES					
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RUN NO. ONE	GENERAL DEPTHS SPI FROM TO FT 000 120							ED T.C. SE MIN SEC. SETT 2 5 IC				SEN TTI	ENS TINGS DIV				RO OR R		API PE	G. R i I 8	R. L LOG	DIV.	т s	. C. SEN EC. SETT 3 500		ENS ETTIN	GS	NE ZI DIV	EUTRON ZERO Z. L OR R OL.		API N. UNIT PER LOG DI 250		ITS DIV.	
ONE	ONE 001 118 12										i	00	0		ι,	8 R	T.	5	3,	08	3 C	PS/	<u>י ס</u> וע	/	DE	NSI	Г <u>Ү.</u> 							
REMA	REMARKS																																	
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	Truck No.	Operating Time		Rm @ 0F	Min. Diam.	Liquid Level	Fiuld Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No.		Log Measured from	Permanent Datum		1		<u>W</u>	RGE	SEC	FILE NO.					
		2 HRS.			HQ		AIR / WATER.		12 FT.	221,5	222	219	002	22	NOV. 13. 1975.	ONE		RIG FLOOR. 1,5 Ft. Above Perm. Datum	GROUND LEVEL. Elev. 5172.5	PROVINCE BRITISH COLUMBIA		FIELD SUKUNKA	LOCATION BULLMOOSE MTN. 10.43,85		WELL DDH-G-7.	COMPANYCOALITION MINING LIMITED.	OIL ENTERPRISES LTD. CALGARY,	GAMMA RAY NEUTI			
	ノナ								-				-						K.B.		Other Services:		4.1 De. 83,836./	2			ALBERTA	RON LOG			
													E	a	JIP	ME	NT	DA	TA	-											
	<b>0</b> .						AM		MAI	10	١Ē			<u> </u>		_	RUN NO.								NEUTI	TUN	ONE				
00L	ио	DEL N	<u>IO.</u>							34	10			<u>.</u>			مد	GIY	PE.						-+	NEU	JTRON/	NEUTRON			
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<u></u>	E									SC	INT		.A.)		N		DETECTOR MODEL NO.														
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GAMMA RAY																	NE	UTF	RON			<i>م</i>									



Recorded By H	Truck No.	Operating Time		Rm © °₽				Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	Eirst Reading	Date	Run. No.		Well Depths Measured	Log Measured from	Permanent Datum					RG€ M	TWP	SEC					
EDIN Witnessed By ANTONENKO	104	I HR.						12,5 FT.	12,5 FT.	180	081	080	000	080	NOV.27.1975	ONE		from RIG FLOOR	RIG FLOOR 1,4 Ft. Above Perm. Datum	GROUND LEVEL EIN. 5,056.5	PROVINCE BRITISH COLUMBIA		FIELD SUKUNKA		LOCATION BULLMODSE MTN. La. 44,9	WELL DDH G-0		COMPANY COALITION MINING LIMITED		OII ENTERPRISES ITD CALGARY		GAMMA RAY NEUTRO
G											-							G.L.	CSG	K,B.	!	Other Services:			53.8 De. 88, 114, 5					ALBERTA		NN LOG
	EQUIPMENT DATA																															
		<u>.</u>				G	ЭАМ	MA	RAY																	NE	UTR	RON				
RUN	I NQ.							-		ON	E							<u>UŅ</u>	NŌ	,						<b>.</b>	+					DON
TOC	<u>L M</u>	DDEI	L NO.					+		<u>34</u>	10 1						11	<u> </u>	TY	PE								340				RUN .
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DIST	FANC	εтα	) N. S	DURC	E					5,5 FT.								LENGTH										6 INCH				
																	SOURCE MODEL NO.										+	MF	RC-N-S	S-W		
<b></b>	-						GEN		L								SERIAL NO.										+-	<u> </u>	<u> </u>	 		·····
HOI	<u>ST TI</u>		<u> </u>		<u> </u>			+		<u> </u>	<u>)4</u> 74					<u> </u>	┢	5			Ģ							Ar	<u>17</u> nBe	١Ŋ,		
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														L	OG	GI	١G	D	AT	ΓA												
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RUN	DEPTHS SPEEL						ED	<b>Т</b> .	C.		SE	NS			ZË	RO		AP	יו G	. <b>R</b> .	UNI	TS	Т.	c.	SE	NS		ZER	C	API	N. UNITS	
NO	<u> </u>	FR	ОМ	<b> </b>	то		FT	/MIN	SE	С.	SETTI			s	DI	V. L	OR	R	P	PER		G DI	<b>v</b> .	SE	ic.	SET		GS	DIV. L	OR F	PER	LOG DIV.
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	GAMMA RAY										DEPTHS						NEUTRON															



Recorded By	Truck No.	Operating Time	Rm @ ^O F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Poort Bracked	Enntane I mmeri	Last Reading	First Reading	Date	Run, No,	Well Depths Measured	Log Measured from	Permanent Detum			M M	TWP	LSD	FILE NO.			
HEDIN Witnessed By ANTONENKO	104	1-3/4 HOURS		HQ	2 FT	AIR/WATER	9 FT	10 FT	065	990	065	000	0.65	25 NOVEMBER 1975	ONE	from RIG FLOOR	RIC FLOOR 1.0 Ft. Above Perm. Datum	GROUND LEVEL COLUMBIA ENW. 5202.2 K	0	FIELD SUKUNKA	LOCATION BULLMOOSE MTN La.41,937.1 De.	WELL DDH G-9	COMPANY COALTIION MINING LIMITED		OIL ENTERPRISES LTD. CALGARY,		
	1											Ē	Q		ME		DAT	^B	ther Services:		92,170.6				ALBERTA	CG	
					G		IA F	RAY				-										NEU	TRON			·	
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TÝ	PE		. 190.					S	GI	TI	LL	AT	10	N		DET	ECTO	DR M	ODEL N	<b>I</b> Û.		_		<u></u>			
LEN	VGT	н							4	INC	ĊH						ТҮР	E					P	ROPC	PORTIONAL		
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an stranger and a																		MOD	EL NQ.		_		M	HC-N	1-55-W	<u> </u>	
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	<u>, I R</u> UM ⁶	NT TRU							104								TYP	E					A	mBe			
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<u>NO.</u> 1	-	ном 000	+	10 265	+	⊢ Γ/Ν 1 '	ит <b>N</b> 2	SE	U.	SE	$\frac{10}{10}$				<u>ע. ו</u> ה	. <b>ОК В</b> Е		<b>сп</b> ∟ 16 4	VU UIV	<del>:   </del>	SEC. SE		)	<b>GS DIV. L</b> ΟΤ		200 AT	PI
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REMARKS LOGGED THROUGH DRILL ROD. CONSIDERATION 1													MUST	ГB	E GIVI	IN .	го т	HE PO	STTI	ON C	F TH	E					
Karan dara	DRILL ROD WHEN USING THE BULK DENSITY VAL													UES.	•			D	ENSIT	Y TC	OL S	SERIA	L NO 553	3			
	GAMMA RAY								DEPTHS								NEUTRON										

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