

PR-SUKUNKA ~~75(3)A~~

SUKUNKA 75(3)A

~~PLATE 2B~~

BOREHO
DATA

VOLUME 2

NOV-DEC 1975

OPEN FILE

00657

MINING RECORDER
RECEIVED and RECORDED
MAY 11 1976
M.R. #
VICTORIA, B. C.

BORE HOLE P2-1

Grid Reference 50333.5 N 81467.1 E
Exploration Grid Reference

Dat Commenced Nov. 7, 1975 Completed Nov. 8, 1975

Collar R.L. 3990.7 ft Standard Datum
Ttotal Depth 111.0 ft Electrically Logged Yes/~~No~~
Drilled by Tonto Drilling Ltd.
For Coalition Mining Limited
Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	3910.4	7.6	100%	
Chamberlain	3892.0	5.2	100%	

MINING RECORDER
RECEIVED and RECORDED

MAY 11 1976

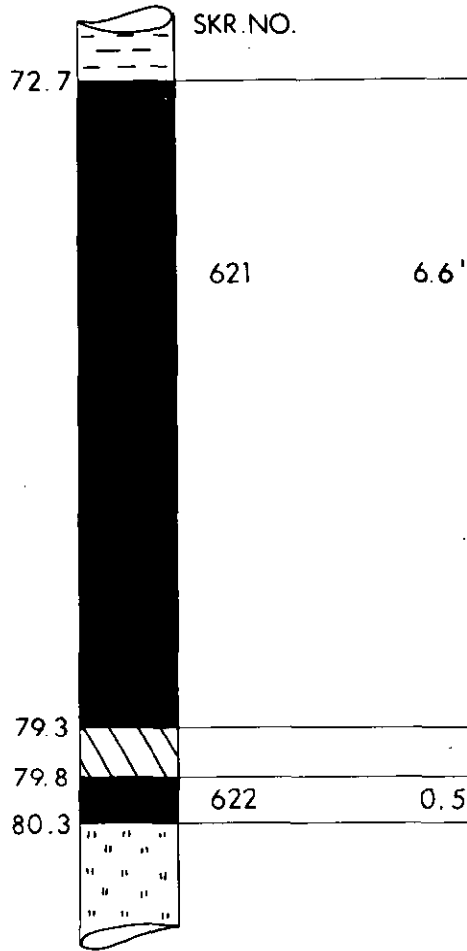
M.R. #.....
VICTORIA, B. C.

SKEETER SEAM				ASH %				
				WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO.								
32.6	624	5.4'		5.6	8			
				5.5				
				5.6		9.06		
38.0		2.0'		NOT ANALYSED				
40.0	625	2.0'		18.7	8			
				18.5		18.7		
				18.9				
42.0								

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 for
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SEAM SECTIONS
 P2-2

SKEETER SEAM



			ASH % CUMULATIVE FROM FLOOR	
WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
	6.6	7.5		
	6.5			
	6.7			
	NOT	ANALYSED		
	13.5	8		

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SEAM SECTIONS
 P2-1

RAW COAL ANALYSIS

SEAM	ANAL. THICK (ft)	LAB. NO.	A.D.M.	MOIST.	ASH %	VOL. %	F.C. %	S %	B.T.U.	F.S.I.	CALC. FACTORS
Sk*	6.6	4771	1.2	0.8	6.6	22.4	70.2	0.41	14,515	7½	adb*
		SKR 621		2.0	6.5	22.1	69.4	0.41	14,340		arb*
				6.7	22.6	70.7	0.41	14,630	db *		
Sk	0.5	4772	1.1	0.9	13.5	20.6	65.0	0.43	13,350	8	adb
		SKR 622		2.0	13.4	20.4	64.2	0.43	13,205		arb
				13.6	20.8	65.6	0.43	13,470	db		
Ch*	5.2	4773	1.1	0.8	4.6	22.6	72.0	0.39	14,910	8½	adb
		SKR 623		1.9	4.5	22.4	71.2	0.39	14,745		arb
				4.6	22.8	72.6	0.39	15,030	db		

December 1, 1975.

NOTES: Ch = Chamberlain Seam
 Sk = Skeeter Seam

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

BORE HOLE P2-1

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
No core.		7.0		
SANDSTONE, grey, fine to medium grained, quartzose, calcareous, argillaceous salt-&-pepper, slightly fossiliferous (Pelecypoda), silty.	9.0	16	9.0	
SHALE OR CLAYSTONE, dark grey, partly silty, with some laminae of siltstone.	15.6	31.6	15.6	
SANDSTONE, grey, fine to medium grained, quartzose, calcareous, argillaceous, with shaly and silty interbeds.	3.4	35.0	3.4	
SHALE OR CLAYSTONE, dark grey.	5.0	40.0	5.0	No dip.
SANDSTONE, grey, medium grained, quartzose, slightly calcareous, micaceous, argillaceous, sub-angular, medium sorting, with some shaly streaks.	26.0	66.0	26.0	
SILTSTONE, grey, interlaminated with dark grey shale.	0.8	66.8	0.8	
SANDSTONE, grey, fine to medium grained, quartzose, slightly calcareous, argillaceous	4.2	71.0	4.2	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, interlaminated with mudstone, carbonaceous.	1.7	72.7	1.7	1° dip
<u>SKEETER COAL</u>	6.6	79.3	6.6	SKR 621
MUDSTONE, carbonaceous	0.5	79.8	0.5	
<u>COAL</u>	0.5	80.3	0.5	SKR 622
SILTSTONE, laminated with dark grey shale.	12.7	93.0		
MUDSTONE, dark grey, carbonaceous.	0.5	93.5		
<u>CHAMBERLAIN COAL</u>	5.2	98.7	5.2	SKR 623
SANDSTONE, grey, carbonaceous, medium-grained, quartzose, very carbonaceous at top.	12.3	111.0		

BORE HOLE P2-2

Grid Reference 50537.3 N 81632.2 E

Exploration Grid Reference

Date Commenced November 5, 1975 Completed Nov. 6, 1975

Collar R.L. 3926.6 ft Standard Datum

Total Depth 86.0 ft Electrically Logged Yes/No

Drilled by Tonto Drilling Ltd.

For Coalition Mining Limited

Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	3884.6	9.4	76.6%	
Chamberlain	3853.6	7.2	100 %	

				ASH % CUMULATIVE FROM FLOOR				
SKEETER SEAM				WT %	ASH %	C.S. N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO.								
32.6					5.6			
	624	5.4'			5.5	8		
					5.6			9.06
38.0								
		2.0'			NOT	ANALYSED		
40.0								
	625	2.0'			18.7	8		
					18.5		18.7	
42.0					18.9			

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 for
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SEAM SECTIONS
 P2-2

ASH %
CUMULATIVE
FROM FLOOR

CHAMBERLAIN SEAM

			WT %	ASH %	C S N ^o	INCL BANDS	EXCL BANDS
65.8	SKR. NO.						
				5.0	8 1/2	4.9	
				4.9			
	626	72'		5.0			
73.0							



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SEAM SECTIONS
P2-2

RAW COAL ANALYSIS

SEAM	ANAL. THICK (ft)	LAB. NO.	A.D.M.	MOIST.	ASH %	VOL. %	F.C. %	S %	B.T.U.	F.S.I.	CALC. FACTORS
Sk*	5.4	4774 SKR 624	1.3	0.8	5.6	22.9	70.7	0.63	14,790	8	adb*
				2.1	5.5	22.6	69.8	0.62	14,600		arb*
					5.6	23.1	71.3	0.64	14,910		db *
Sk	2.0	4775 SKR 625	0.9	0.8	18.7	19.7	60.8	0.59	12,610	8	adb
				1.7	18.5	19.5	60.3	0.58	12,495		arb
					18.9	19.9	61.2	0.59	12,710		db
Ch*	7.2	4776 SKR 626	1.1	0.7	5.0	22.3	72.0	0.59	14,820	8½	adb
					4.9	22.1	71.2	0.58	14,655		arb
					5.0	22.5	72.5	0.59	14,925		db

December 1, 1975.

NOTES: Ch = Chamberlain Seam
Sk = Skeeter Seam

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

BORE HOLE P2-2

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
No core	10.0	10.0		
SANDSTONE, grey, fine to medium-grained, quartzose, sub-angular, salt-&-pepper argillaceous, slightly calcareous.	15.0	25	15.0	
MUDSTONE, dark grey, crushed, soft.	2.0	27	2.0	
SANDSTONE, grey, fine-grained, quartzose, argillaceous, with shaly streaks, slightly carbonaceous.	3.0	30	3.0	
SHALE OF CLAYSTONE, dark grey to dark brown, carbonaceous, some carbonaceous plant remains.	2.6	32.6	2.6	
<u>COAL</u>	5.4	38	4.8	SKR 624
SHALE OR CLAYSTONE, dark grey, carbonaceous.	2.0	40	1.6	
<u>COAL</u>	2.0	42	0.8	SKR 625
MUDSTONE, dark brown, carbonaceous.	1.0	43	1.0	
SHALE, dark grey, interlaminated with siltstone and minor sandstone.	12.0	55	12.0	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SHALE, dark grey, laminite with minor siltstone, mudstone bottom 2 ft.	10.0	65.0	10.0	
CARBONACEOUS MUDSTONE AND <u>COAL</u> .	0.8	65.8	0.8	
<u>COAL</u>	7.2	73.0	7.2	SKR 626
SANDSTONE, grey, medium-grained, quartzose, salt-&-pepper carbonaceous, sub-angular, very carbonaceous at top. 45° slickensided fractures at 80 ft.	13.0	86.0	13.0	Clinometer test 0°.

BORE HOLE P2-3

Grid Reference 49551.8 N 82287.8 E

Exploration Grid Reference

Dat Commenced Nov. 4th, 1975 Completed Nov. 5th, 1975

Collar R.L. 3847.4 ft Standard Datum

Ttoal Depth 126 ft Electrically Logged Yes/~~No~~

Drilled by Tonto Drilling Ltd.

For Coalition Mining Limited

Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	3758.4	8.0	95 %	
Chamberlain	3737.4	6.5	43.1%	

SKEETER SEAM

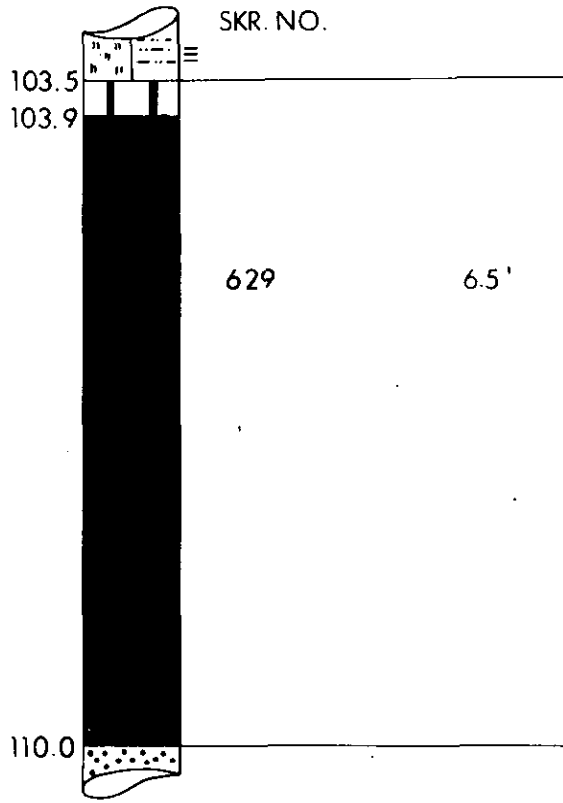
ASH %
CUMULATIVE
FROM FLOOR

		WT %	ASH %	C.S. N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO. 80.5 81.0 87.0 88.0 89.0	627		5.1 5.1 5.1	8		7.53
		1.0'		NOT ANALYSED		
	628	1.0'		22.1 21.9 22.3		

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SEAM SECTIONS
 P2-3

CHAMBERLAIN SEAM



			ASH % CUMULATIVE FROM FLOOR	
WT %	ASH %	C.S. N ^o	INCL. BANDS	EXCL. BANDS
	3.2		3.2	
	3.2	7 1/2		
	3.2			

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SEAM SECTIONS
 P2-3

RAW COAL ANALYSIS

SEAM	ANAL. THICK (ft)	LAB. NO.	A.D.M.	MOIST.	ASH %	VOL. %	F.C. %	S %	B.T.U.	F.S.I.	CALC. FACTORS
Sk*	6.0	4777	0.9	0.8	5.1	22.1	72.0	0.41	14,810	8	adb*
		SKR 627		1.7	5.1	21.9	71.3	0.41	14,675		arb*
				5.1	22.3	72.6	0.41	14,930	db *		
Sk	1.0	4778	0.8	0.8	22.1	18.6	58.5	0.41	12,380	6½	adb
		SKR 628		1.6	21.9	18.5	58.0	0.41	12,280		arb
				22.3	18.8	58.9	0.41	12,480	db		
Ch*	6.5	4779	0.7	0.7	3.2	22.6	73.5	0.33	15,080	7¼	adb
		SKR 629		1.4	3.2	22.4	73.0	0.33	14,975		arb
				3.2	22.8	74.0	0.33	15,185	db		

December 1, 1975.

NOTES: Ch = Chamberlain Seam
 Sk = Skeeter Seam

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

BORE HOLE P2-3

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
No core.		10.0		
SANDSTONE, brown-grey, fine-grained, quartzose salt-&-pepper, weathered.	4.0	14.0	4.0	
SHALE OR CLAYSTONE, dark grey, with some silty phases.	18.0	32.0	18.0	10°
SANDSTONE, fine to medium-grained, quartzose, salt-&-pepper, argillaceous, calcareous, slightly carbonaceous.	2.8	34.8		
SILTSTONE, interlaminated with sandstone and shale.	3.2	38.0		
SHALE OR CLAYSTONE, dark grey.	5.0	43.0		
SANDSTONE, grey, fine to medium-grained, quartzose, salt-&-pepper argillaceous, slightly calcareous, occasional calcite-infilled fracture. Shear zone with slickensided and calcite-filled fractures at 59 ft, and coaly partings at 62 ft. Some cross bedding.	37.5	80.5	37.5	
MUDSTONE, carbonaceous, coaly.	0.5	81.0	0.5	} SKR 627
<u>COAL</u>	6.0	87.0	5.9	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SHALE OR CLAYSTONE, carbonaceous, coaly.	1.0	88.0	1.0	SKR 628
<u>COAL</u>	1.0	89.0	0.7	
LAMINITE, shale, dark grey, interlaminated with siltstone, becoming increasingly argillaceous toward base.	14.5	103.5	14.5	
<u>COAL</u> , with 0.4 ft bony at top.	6.5	110	2.8	SKR 629
SANDSTONE, grey, medium-grained, quartzose, carbonaceous.	1.0	111	1.0	Clinometer test 2 ^o
SANDSTONE, grey, quartzose, medium-grained, with carbonaceous streaks and some fractures.	15.0	126		

Grid Reference 48649.2 N 82467.8 E
Exploration Grid Reference

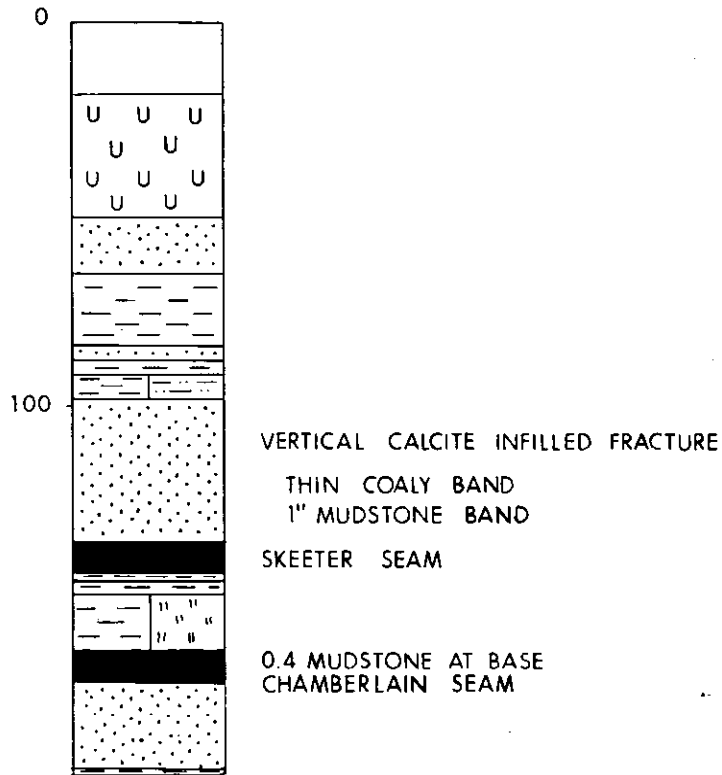
Dat Commenced Oct. 28, 1975 Completed Oct. 29, 1975

Collar R.L. 3,922.4 ft Standard Datum
Ttoal Depth 186 ft Electrically Logged Yes/No
Drilled by Tonto Drilling Ltd.
For Coalition Mining Limited
Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	3776.8	10.1	100%	
Chamberlain	3751.5	8.0	100%	

DETAIL OF GETHING FORMATION



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 for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH P2-4

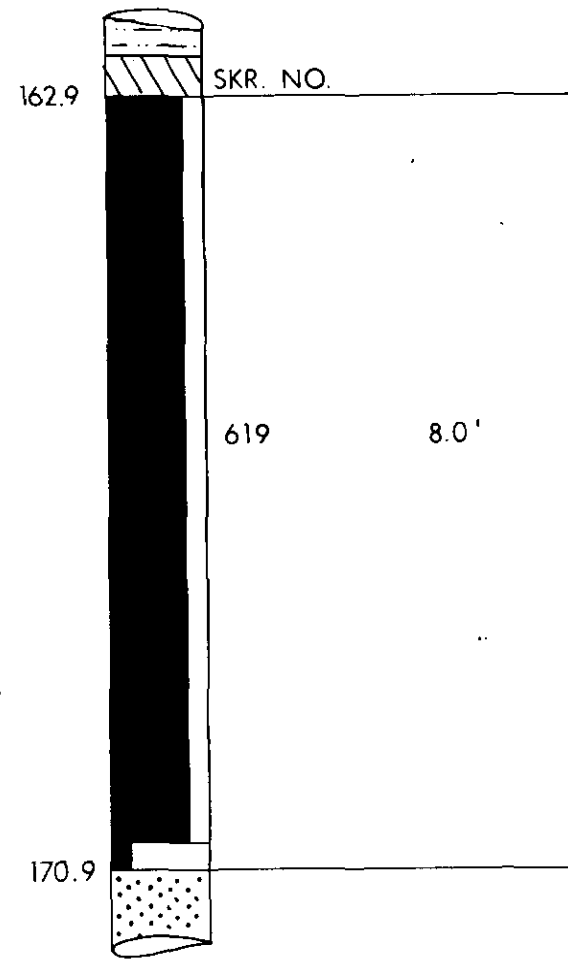
SKEETER SEAM				ASH % CUMULATIVE FROM FLOOR	
	WT %	ASH %	C.S. N ^o	INCL. BANDS	EXCL. BANDS
135.5					
136.0	616	0.5'	21.4	7½	21.4
		0.5'			
	617	6.2'	5.2	8½	11.04
			5.0		5.1
			5.2		
142.7		1.9'			
	618	1.0'	43.7	5½	
145.6			42.9		
			44.4		



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 for
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SEAM SECTIONS
 P2-4

CHAMBERLAIN SEAM



WT %	ASH %	C.S.N ^o	ASH %	
			CUMULATIVE FROM FLOOR	
			INCL. BANDS	EXCL. BANDS
	5.9	2		
	5.6		5.8	
	6.0			

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 for
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SEAM SECTIONS
 P2 - 4

RAW COAL ANALYSIS

SEAM	ANAL. THICK (ft)	LAB. NO.	A.D.M.	MOIST.	ASH %	VOL. %	F.C. %	S %	B.T.U.	F.S.I.	CALC. FACTORS
Sk*	0.5	4730	0.9	0.9	21.4	18.7	59.0	1.78	12,330	7½	adb*
		SKR 616		1.8	21.2	18.5	58.5	1.76	12,220		arb*
					21.6	18.9	59.5	1.80	12,440		db *
Sk	6.2	4731	4.0	0.7	5.2	21.5	72.6	0.46	14,775	8½	adb
		SKR 617		4.7	5.0	20.6	69.7	0.44	14,185		arb
					5.2	21.7	73.1	0.46	14,880		db
Sk	1.0	4732	1.8	1.6	43.7	14.3	40.4	0.35	8,305	5½	adb
		SKR 618		3.4	42.9	14.0	39.7	0.34	8,155		arb
					44.4	14.5	41.1	0.36	8,440		db
Ch*	8.0	4733	5.4	0.9	5.9	20.6	72.6	0.43	14,610	2	adb
		SKR 619		6.3	5.6	19.5	68.6	0.41	13,820		arb
					6.0	20.8	73.2	0.43	14,745		db

November 14, 1975.

NOTES: Ch = Chamberlain Seam
 Sk = Skeeter Seam

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

BORE HOLE P2-4

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
No core		19.0		
GLACIAL TILL - gravels and sandstone.	35.0	51.0	35.0	
SANDSTONE, grey-brown, fine-grained, quartzose, salt & pepper argillaceous, slightly calcareous, slightly ferruginous color, weathered, increasingly argillaceous at base.	15.0	66.0	15.0	
SHALE OR CLAYSTONE, dark grey, slightly calcareous, slightly carbonaceous.	18.0	84.0	18.0	
SANDSTONE, grey, fine to medium-grained, quartzose, argillaceous, with fossil Pelecypod, slightly calcareous, silty.	4.0	88.0		
SHALE OR CLAYSTONE, dark grey, slightly pyritic, slightly carbonaceous, silty at base.	3.0	91.0	3.0	
SANDSTONE, grey, fine to medium-grained, quartzose, salt-&pepper argillaceous, some cross-bedding.	1.5	92.5	1.5	
SHALE, dark grey, pyritic.	1.0	93.5		
SHALE OR CLAYSTONE, dark grey, grading to mudstone at base.	4.8	98.3		<p><u>NOTE:</u> Drillers Depth error 5 ft at 31'. Corrected entire core from 31' to TD 5' deeper</p>

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, fine to medium-grained, quartzose, sub-angular, argillaceous, slightly calcareous, with thin coaly band at 121 ft and a 1 inch mudstone band at 129 ft, 2 ft vertical calcite infilled fracture at 111 to 113 ft.	36.7	135.0	36.7	
MUDSTONE, dark brown	0.5	135.5		
<u>SKEETER COAL</u>	0.5	136	0.5	SKR 616
MUDSTONE, dark brown, carbonaceous.	0.5	136.5	0.5	
<u>COAL</u> , clean, bright and dull.	6.2	142.7	6.2	SKR 617
SHALE OR CLAYSTONE, dark grey.	1.9	144.6	1.9	
<u>COAL</u>	1.0	145.6	1.0	SKR 618
SHALE OR CLAYSTONE, dark grey.	2.5	148.1		
SANDSTONE, siltstone and shale interlaminated.	3.4	151.5		
LAMINITE, shale, mudstone, and siltstone.	9.5	161.0		

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SHALE OR CLAYSTONE, grey, carbonaceous, slightly silty.	1.5	162.5	1.5	
MUDSTONE, carbonaceous, black.	0.4	162.9		
<u>CHAMBERLAIN COAL</u>	7.7	170.6	7.7	} SKR 619
<u>COAL</u> , stony.	0.3	170.9		
SANDSTONE, grey, quartzose, medium-grained argillaceous, carbonaceous at top.	13.5	184.4	13.5	
SHALE, interbedded with sandstone and siltstone with mudstone, black.	1.6	186		

BORE HOLE P2-5

Grid Reference 48736.5 N 82699.4 E
Exploration Grid Reference

Dat Commenced Oct. 30, 1975 Completed Oct. 31, 1975

Collar R.L. 3798.9 Standard Datum
Ttoal Depth 91 Electrically Logged ~~Yes~~/No
Drilled by Tonto Drilling Ltd.
For Coalition Mining Limited
Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	-	-	-	
Chamberlain	-	-	-	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
GLACIAL DRIFT and unconsolidated material.	91			

BORE HOLE P2-5A

Grid Reference 48599.9 N 82762.3 E

Exploration Grid Reference

Dat Commenced Nov. 2, 1975 Completed Nov. 3, 1975

Collar R.L. 3805.6 Standard Datum

Ttoal Depth 65.0 Electrically Logged Yes/~~No~~

Drilled by Tonto Drilling Ltd.

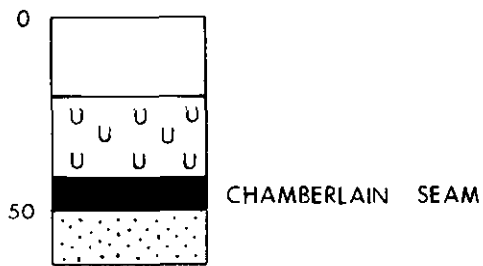
For Coalition Mining Limited

Logged by P. Antonenko

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft)	Recovery	Comment
Skeeter	-	-	-	
Chamberlain	3763	6.9	100%	No Roof

DETAIL OF GETHING FORMATION



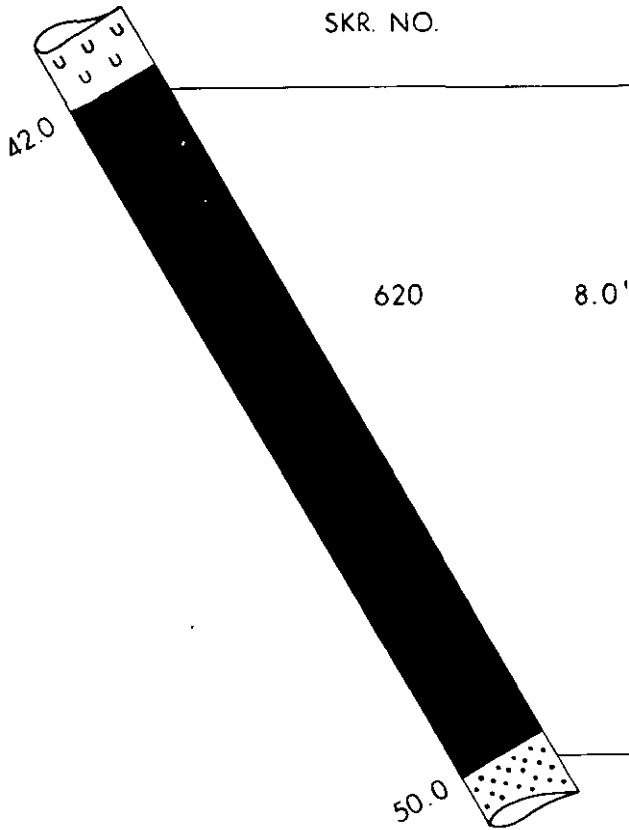
ANGLE HOLE DRILLED 30° FROM VERTICAL

Prepared by:
PET-KO GEOLOGICAL SERVICES LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH P2- 5A

CHAMBERLAIN SEAM

ASH %
CUMULATIVE
FROM FLOOR



WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
	2.6	1 1/2		
	2.2			
	2.6			

DRILLED 30° FROM VERTICAL

Prepared by:
 PET-KO GEOLOGICAL SERVICES LTD.
 for
 COALITION MINING LIMITED

SEAM SECTIONS
 P2-5A

RAW COAL ANALYSIS

SEAM	ANAL. THICK (ft)	LAB. NO.	A.D.M.	MOIST.	ASH %	VOL. %	F.C. %	S %	B.T.U.	F.S.I.	CALC. FACTORS
Ch*	8	4734	13.5	1.8	2.6	21.8	73.8	0.51	14,490	1½	adb*
		SKR 620		15.1	2.2	18.9	63.8	0.44	12,535		arb*
					2.6	22.2	75.2	0.52	14,755		db *

November 14, 1975.

NOTES: Ch = Chamberlain Seam
Sk = Skeeter Seam

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

BORE HOLE P2-5A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
GLACIAL DRIFT and unconsolidated material.	21.0	42.0	21.0	
<u>COAL</u>	8.0	50.0	6.0	SKR 620
SANDSTONE, grey, quartzose, medium-grained, sub-angular, carbonaceous, with cement.	15.0	65.0		< 30°

ROKE

GAMMA RAY NEUTRON LOG
DENSITLOG
OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.	COMPANY	COALITION MINING LIMITED
LSD SEC	WELL	DDH-P2-1
TWP	LOCATION	BULLMOOSE MTN. Co. 50.333.5 De. 81.467.1
RGE	FIELD	SUKUNKA
W	PROVINCE	BRITISH COLUMBIA
	GROUND LEVEL	Elev. 3,990.7
	Log Measured from	RIG FLOOR
	Well Depths Measured from	RIG FLOOR
	Other Services:	TEMP.
Run No.	ONE	
Date	NOV. 7, 1975	
First Reading	110	
Last Reading	000	
Footage Logged	110	
Depth Reached	111	
Depth Driller	111	
Casing Roke	7 FT.	
Casing Driller	7 FT.	
Fluid Type	AIR/WATER	
Liquid Level	57 FT.	
Min. Diam.	HQ	
Rm @ 9F		
Operating Time	2 HRS.	
Truck No.	104	

657

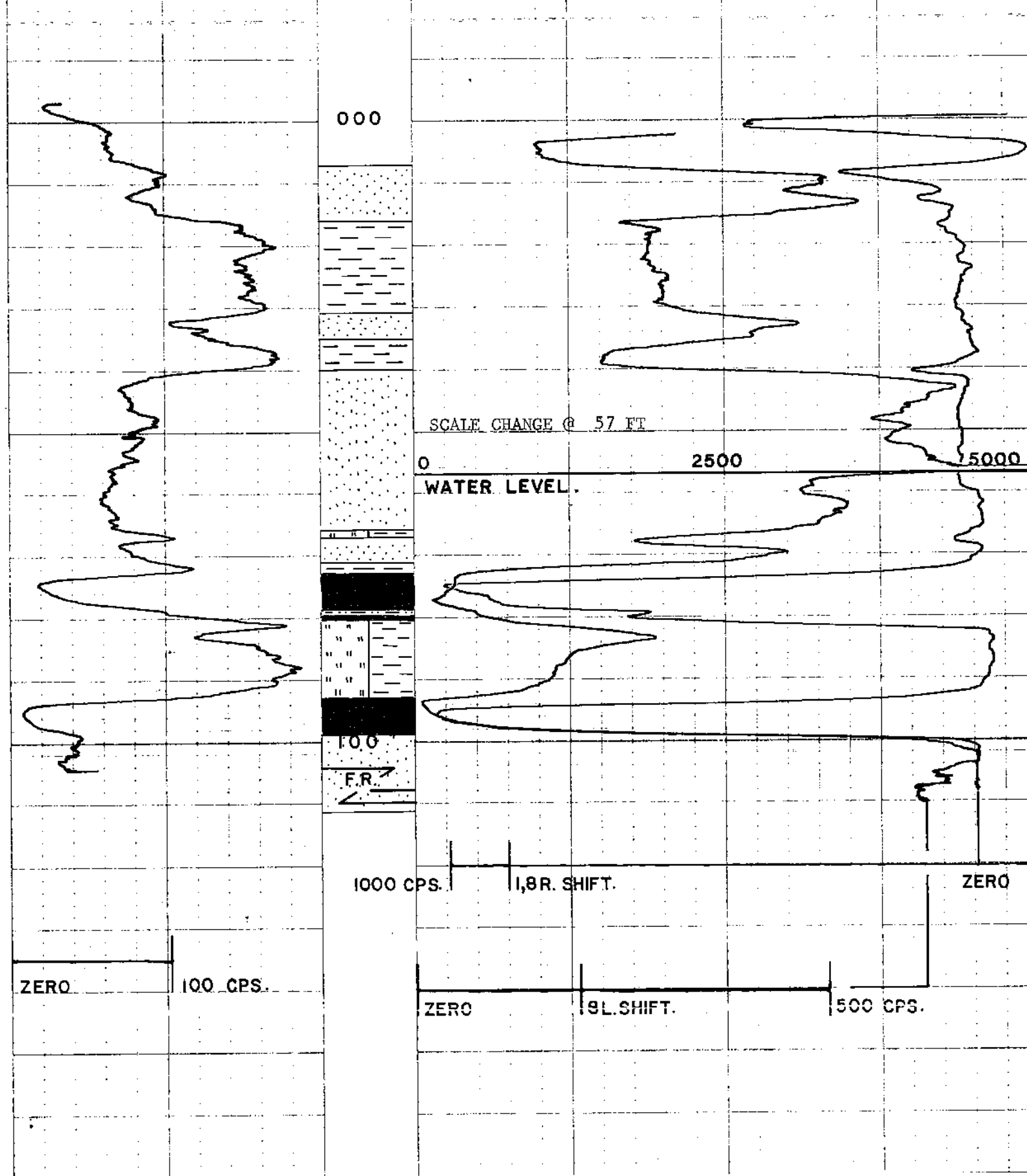
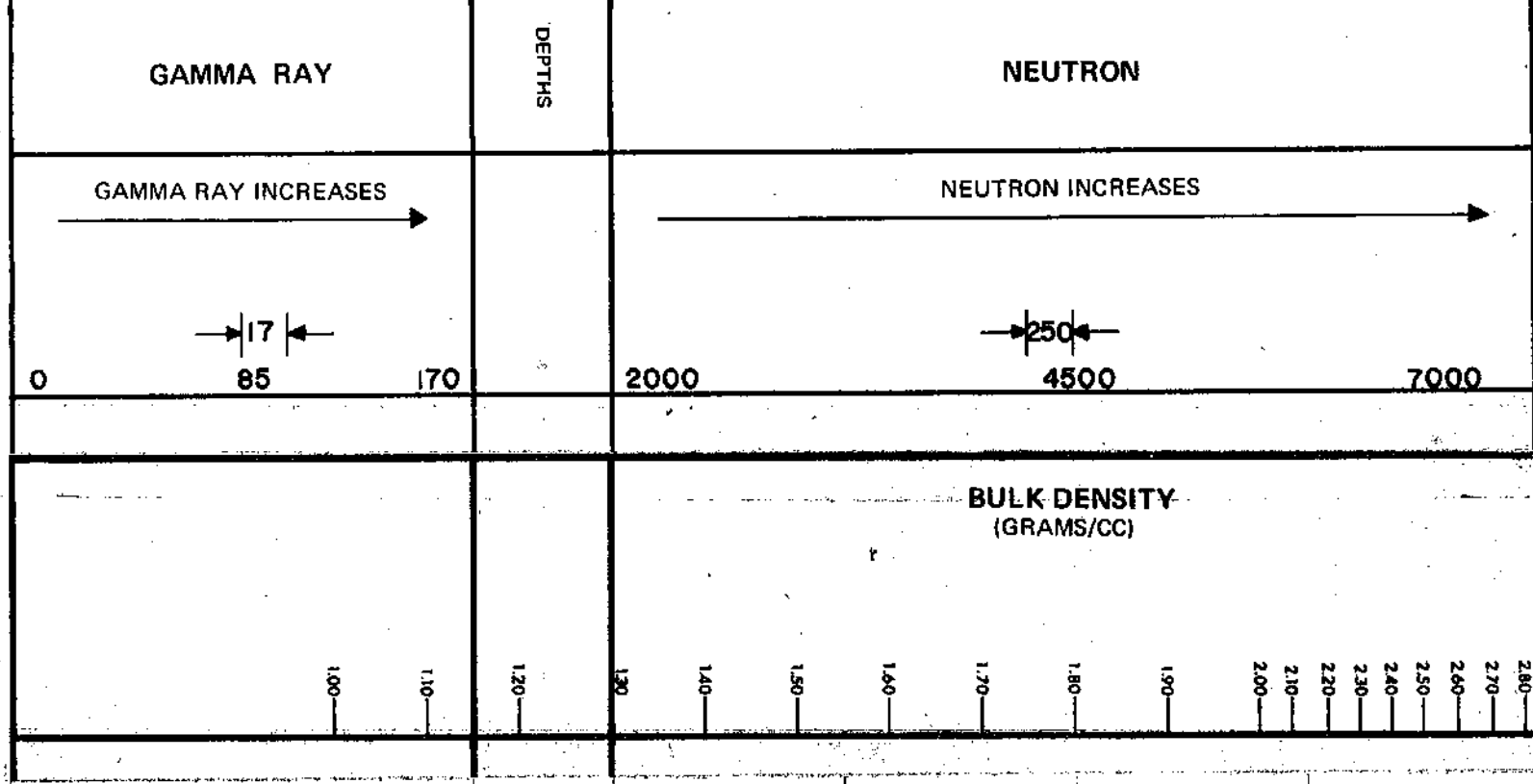
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	340	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	340
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.5 FT.	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	171
		SPACING	17 IN.
		TYPE	AmBe
		STRENGTH	3 CURIES.

LOGGING DATA

RUN NO.	GENERAL		GAMMA RAY				NEUTRON				
	FROM	TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
ONE	000	057	12	5	100	OL.	17	3	500	8L.	250
ONE	057	110	12	5	100	OL.	17	3	500	OL.	250
ONE	000	108	12	3	1000	1,8RT.	53.08 CPS/DIV.-DENSITY.				

REMARKS: DENSITY TOOL SER. 553.



ROKE

GAMMA RAY NEUTRON LOG
DENSISLOG
OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.	COMPANY	COALITION MINING LIMITED
LSD	WELL	DDH-P2-2
SEC	LOCATION	BULLMOOSE MINE Loc. 50.5373 De 81.6322
TWP	FIELD	SUKUNKA
RGE	PROVINCE	BRITISH COLUMBIA
W	PERMANENT DATUM	GROUND LEVEL Elev. 3,926.6
	LOG MEASURED FROM	RIG FLOOR 1 Ft. Above Perm. Datum
	WELL DEPTHS MEASURED FROM	RIG FLOOR
	Other Services:	NIL
Run No.	ONE	
Date	6 NOVEMBER 1975	
First Reading	086	
Last Reading	000	
Footage Logged	086	
Depth Reached	087	
Depth Driller	086	
Casing Roke	10 FT	
Casing Driller	10 FT	
Fluid Type	ATR/WATER	
Liquid Level	19 FT	
Min. Diam.	HQ	
Rm @ 9F		
Operating Time	1-1/2 HOURS	
Truck No.	104	

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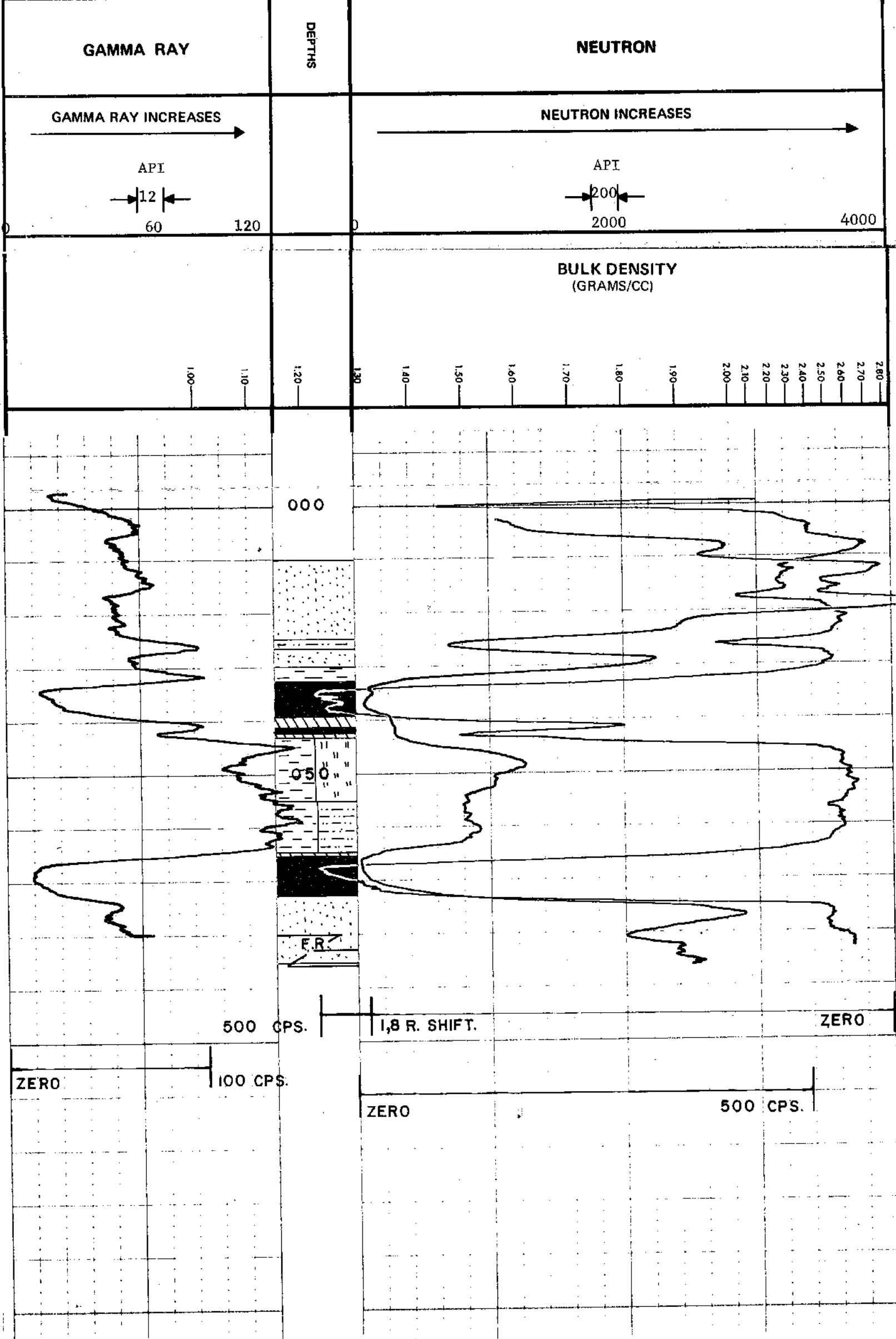
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	340	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	340
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.5 FT.	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	171
		SPACING	17 INCH
		TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTHS		SPEED FT/MIN	GAMMA RAY				NEUTRON			
	FROM	TO		T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	000	086	12	5	100	0L	12 API	3	500	0L	200 API
1	000	083	12	3	1000	1.8R	23.35 CPS/DIV		DENSITY		

REMARKS LOGGED THROUGH DRILL ROD. CONSIDERATION MUST BE GIVEN TO THE POSITION OF THE DRILL ROD WHEN USING THE BULK DENSITY VALUES DENSITY TOOL SERIAL NO 553



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DENSILOG

FILE NO.	COMPANY	COALITION MINING LIMITED
LSD	WELL	DDH - P2 - 3
SEC	TWP	
RGE	LOCATION	BULLMOOSE MEN La. 49.5518 De. 82.2878
W	FIELD	SUKUNKA
	PROVINCE	BRITISH COLUMBIA
	GROUND LEVEL	Elev. 3847.4
	Log Measured from	RIG FLOOR .8 Ft. Above Perm. Datum
	Well Depth Measured from	RIG FLOOR
	Other Services:	NIL
Run No.	ONE	
Date	5 NOVEMBER 1975	
First Reading	125	
Last Reading	000	
Footage Logged	125	
Depth Reached	126	
Depth Driller	10 FT	
Casing Roke	10 FT	
Casing Driller	10 FT	
Fluid Type	AIR/WATER	
Liquid Level	35 FT	
Min. Diam.	HQ	
Rm @ 9f		
Operating Time	1.5 HOURS	
Truck No.	104	

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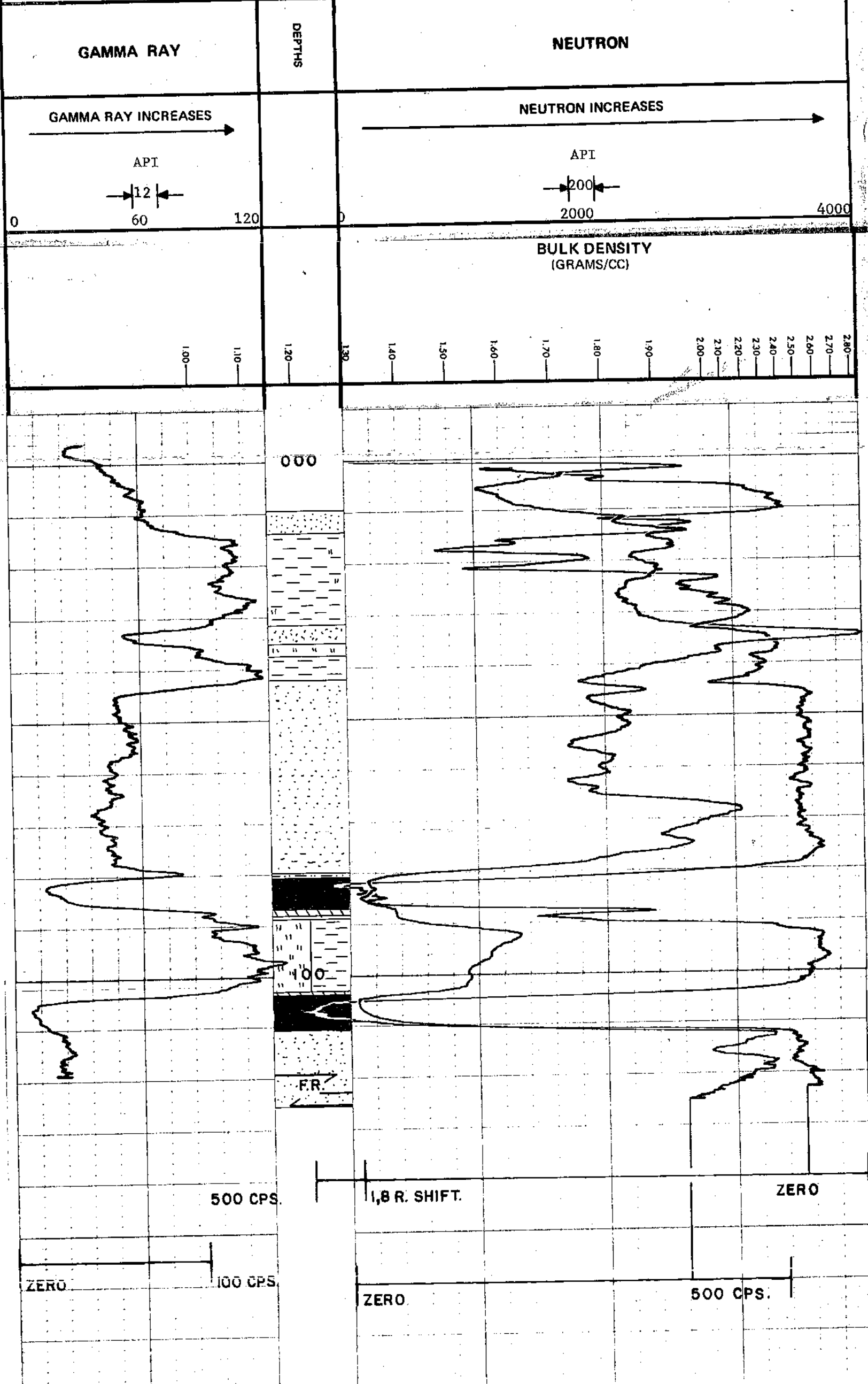
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	340	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	340
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.5 FT.	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	171
		SPACING	17 INCH
		TYPE	AmBe
		STRENGTH	3 CURIES
GENERAL			
HOIST TRUCK NO.	104		
INSTRUMENT TRUCK NO.	104		
TOOL SERIAL NO.	340		

LOGGING DATA

RUN NO.	GENERAL		GAMMA RAY				NEUTRON				
	FROM	TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	00	125	12	5	100	OL	12 API	3	500	OL	200 API
1	00	123	12	3	1000	1.8R	23.35 CPS/DIV		DENSITY		

REMARKS LOGGED THROUGH DRILL ROD, CONSIDERATION MUST BE GIVEN TO THE POSITION OF THE DRILL ROD WHEN USING THE BULK DENSITY VALUES. DENSITY TOOL SERIAL NO 553



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DENSLOG

FILE NO.	COMPANY	COALITION MINING LIMITED
LSD	WELL	DDH-P2-4
SEC	LOCATION	BILLMOOSE Mtn. Co. 48,6492 Co. 82,4678
TWP	FIELD	SUKUNKA
RGE	PROVINCE	BRITISH COLUMBIA
W	Other Services:	NTL
Permanent Datum	GROUND LEVEL	Elev. 3922.4
Log Measured from	RIG FLOOR	1.2 Ft. Above Perm. Datum
Well Depth Measured from	RIG FLOOR	
Run No.	ONE	
Date	29 OCTOBER 1975	
First Reading	185	
Last Reading	000	
Footage Logged	185	
Depth Reached	186	
Depth Driller	181	
Casing Roke	27 FT	
Casing Driller	27 FT	
Fluid Type	QUICK TROL	
Liquid Level	54.5 FT	
Min. Diam.	HQ	
Rm @ 9F		
Operating Time	2 HOURS	
Truck No.	104	
Recorded By	HEDJIN	Witnessed By
		ANTONENKO

657

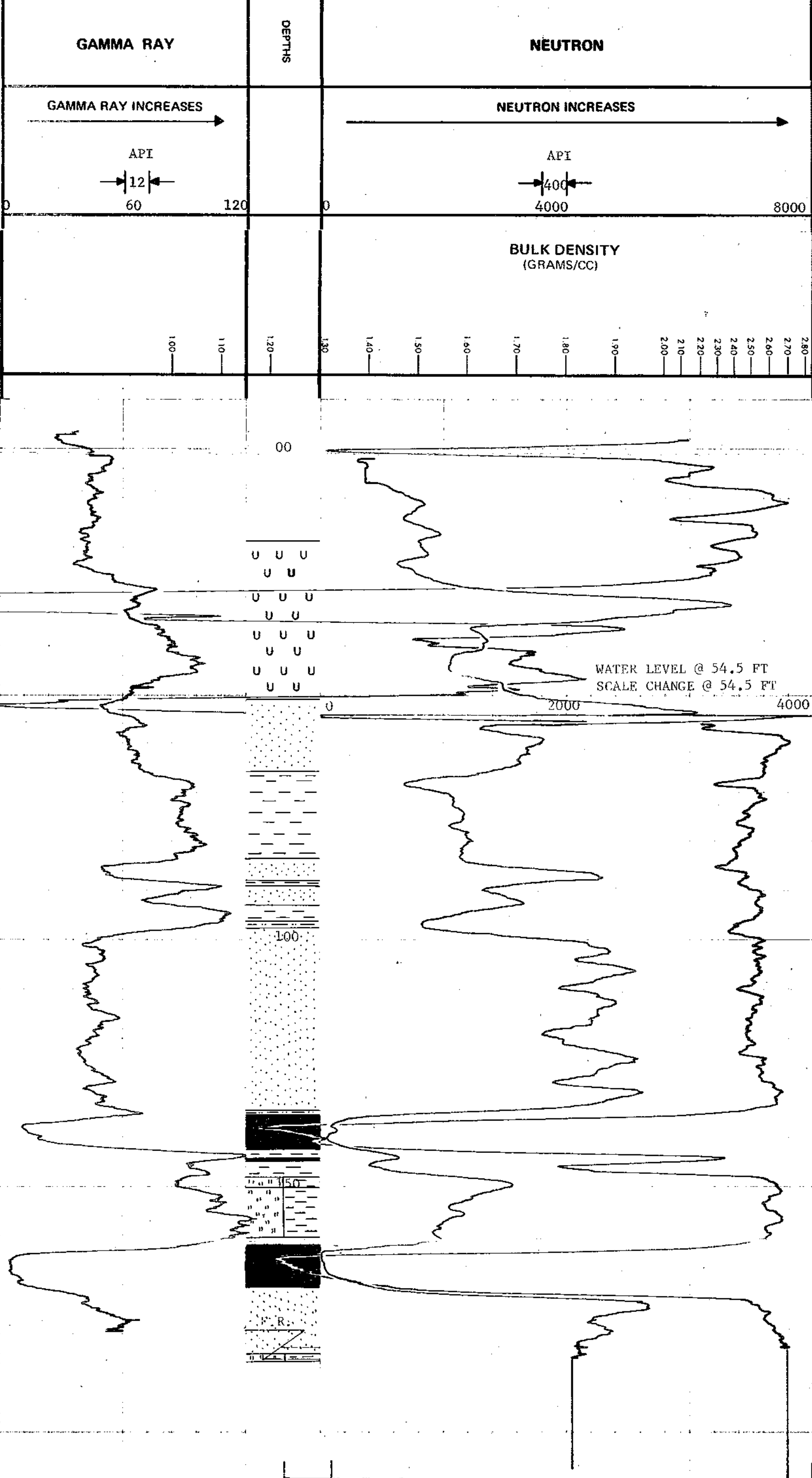
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	340	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	340
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.5 FT.	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	171
HOIST TRUCK NO.	104	SPACING	17 INCH
INSTRUMENT TRUCK NO.	104	TYPE	AmBe
TOOL SERIAL NO.	340	STRENGTH	3 CURIES

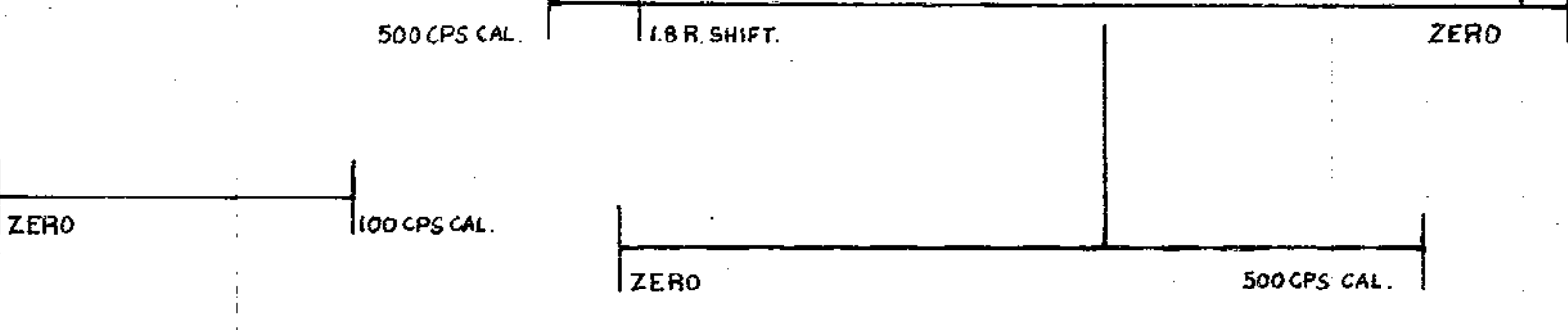
LOGGING DATA

RUN NO.	GENERAL DEPTHS		SPEED FT/MIN	T.C. SEC.	GAMMA RAY			T.C. SEC.	NEUTRON		
	FROM	TO			SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.		SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	00	54.5	12	5	100	-	12 API	3	1000	-	400 APT
1	54.5	185	12	5	100	-	12 API	3	500	-	200 APT
1	000	183	12	3	1000	1.8R	23.35 CPS/DIV	-	DENSITY		

REMARKS LOGGED THROUGH DRILL ROD (HQ). CONSIDERATION MUST BE GIVEN TO THE POSITION OF THE DRILL ROD WHEN USING THE BULK DENSITY VALUES. DENSITY TOOL SERIAL NO 553



WATER LEVEL @ 54.5 FT
SCALE CHANGE @ 54.5 FT



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DENSILOG

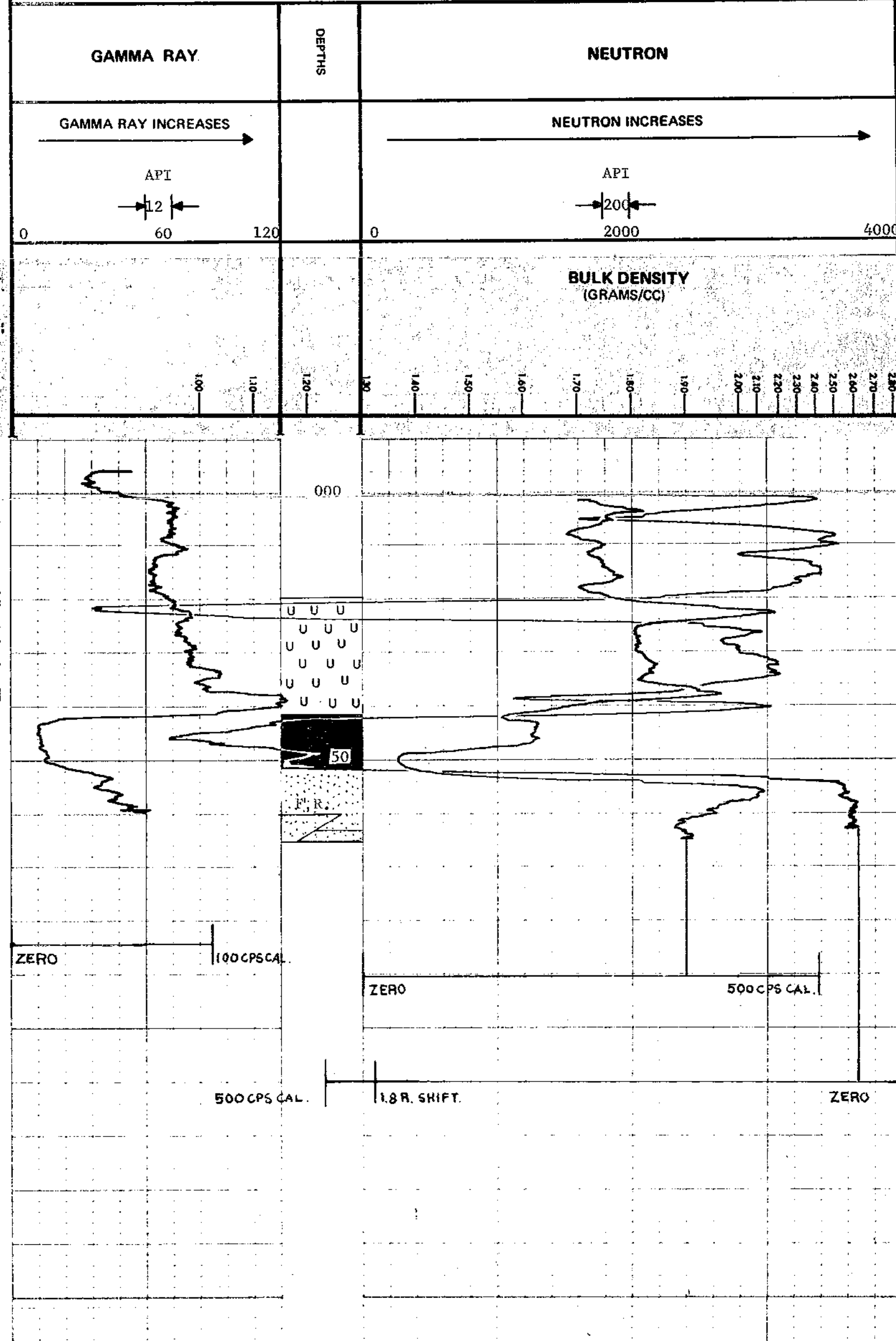
FILE NO.	COMPANY	COALITION MINING LIMITED
LSD	WELL	DDR-P2-5A
SEC	LOCATION	BILLMOOSE MTN 10.48.736.5 De 82.6994
TWP	FIELD	SUKUNKA
RGE	PROVINCE	BRITISH COLUMBIA
W	GROUND LEVEL	Elev. 3798.9
	Log Measured from	RIG FLOOR 1 Ft. Above Perm. Datum
	Well Depths Measured from	RIG FLOOR
	Other Services:	NTI
Run No.	ONE	
Date	3 NOVEMBER 1975	
First Reading	065	
Last Reading	000	
Footage Logged	065	
Depth Reached	066	
Depth Driller	065	
Casing Roke	16.8	
Casing Driller	21 FT	
Fluid Type	QUICK GEL	
Liquid Level	002	
Min. Diam.	11Q	
Rm @ 9F		
Operating Time	3 HOURS	
Truck No.	104	

657

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	340	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	340
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.5 FT.	LENGTH	8 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	171
		SPACING	17 INCH
		TYPE	AmBe
		STRENGTH	3 CURIES

GENERAL		GAMMA RAY				NEUTRON			
HOIST TRUCK NO.	104	T.C.	SENS	ZERO	API G. R. UNITS	T. C.	SENS	ZERO	API N. UNITS
INSTRUMENT TRUCK NO.	104	SEC.	SETTINGS	DIV. L OR R	PER LOG DIV.	SEC.	SETTINGS	DIV. L OR R	PER LOG DIV.
TOOL SERIAL NO.	340								

REMARKS LOGGED THROUGH DRILL ROD (30° ANGLE) CONSIDERATION MUST BE GIVEN TO THE POSITION OF THE DRILL ROD WHEN USING THE BULK DENSITY VALUES DENSITY TOOL SERIAL NO 553



PR-SUKUNKA 75 (3)
A-3.
PR - COAL SEAM INTER- (3)A
SECTION
- STRATIGRAPHIC LOG

657

PR-SUKUNKA 75(3)A-3.

OPEN FILE
BORE NUMBER

Grid Reference 50281.5 N 80926.4 E
Exploration Grid Reference A/3

Date Commenced 11 Aug 71

Completed 16 Aug 71

Collar R.L. 4059.5 ft.

Standard Datum

Total Depth 876 ft.

Electrically Logged ~~XXX~~/No

Drilled by Connors Drilling Ltd.

Angled Hole

For Coalition Mining Limited

Tropari Angle 53°

Bearing 067°

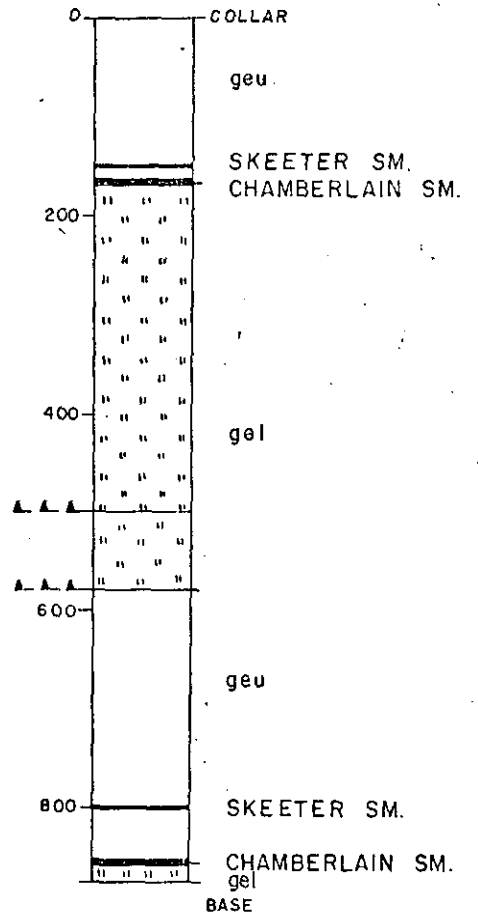
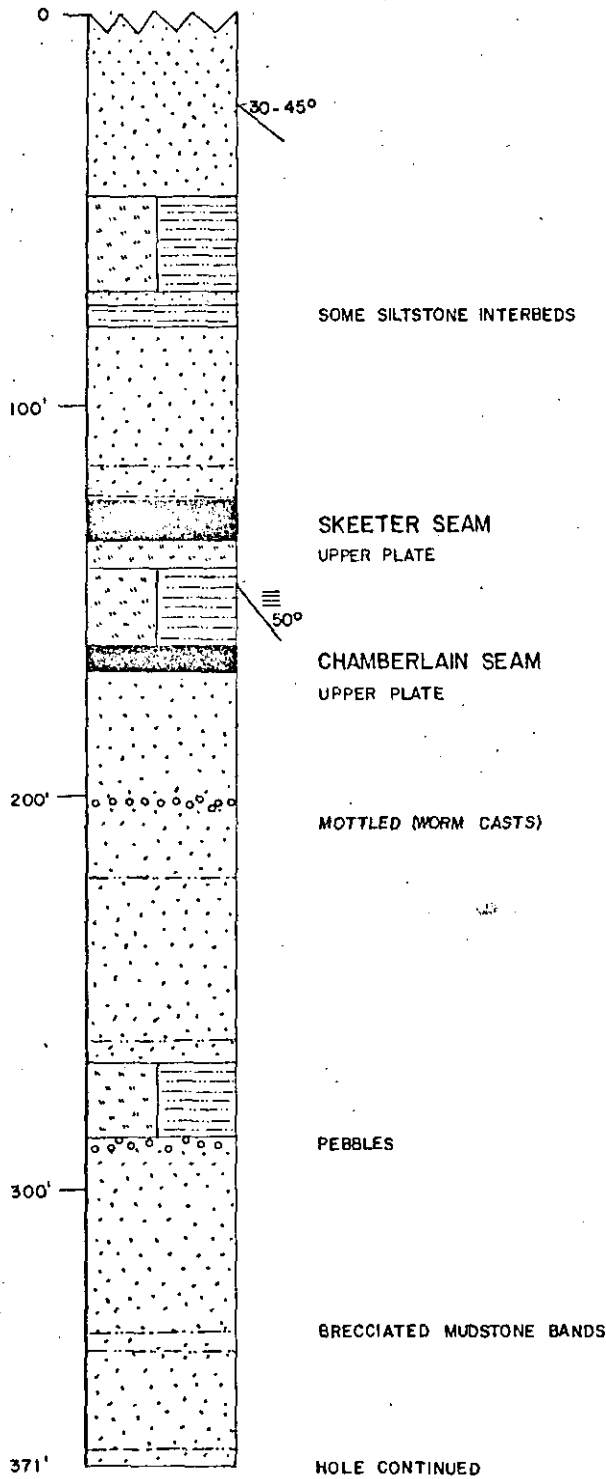
Logged by F.H.S.Tebbutt

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter Upper Plate	3937.8	12.08	37%	
Chamberlain Upper Plate	3925.89	5.56	82%	
Skeeter Fault FA/ Upper Plate	3433.5	8.12	27%	) Faulted) (see Stratigraphic) Section)
Skeeter Fault FA/ Lower Plate	3424.5	15.53	19%	
Chamberlain Fault FA/ Lower Plate	3373.87	10.46	75%	

DEPT. OF MINES
AND PETROLEUM RESOURCES

Rec'd JUL 25 1975

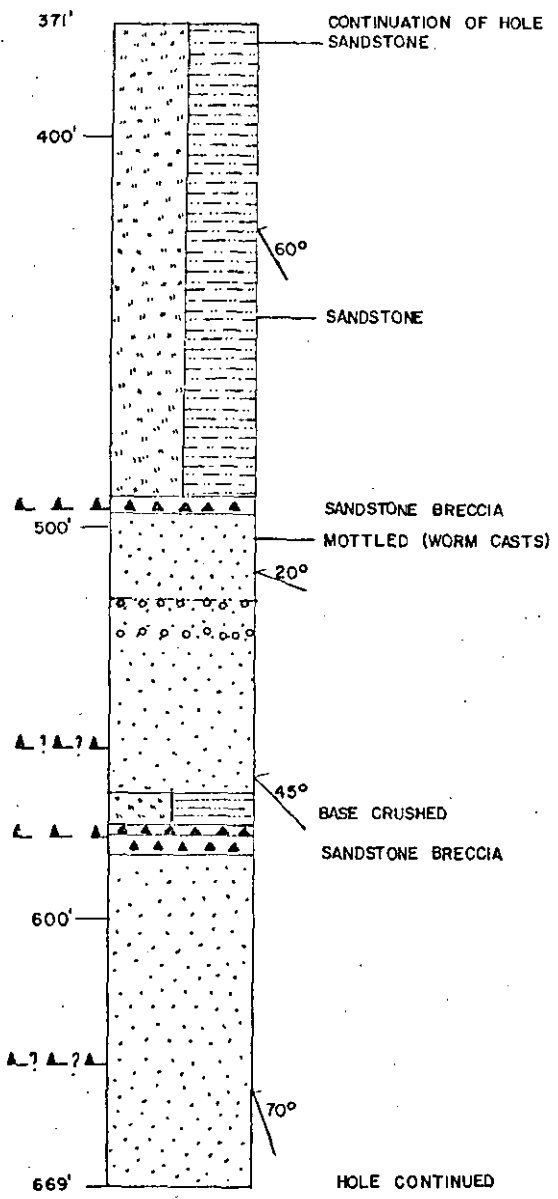


DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-6

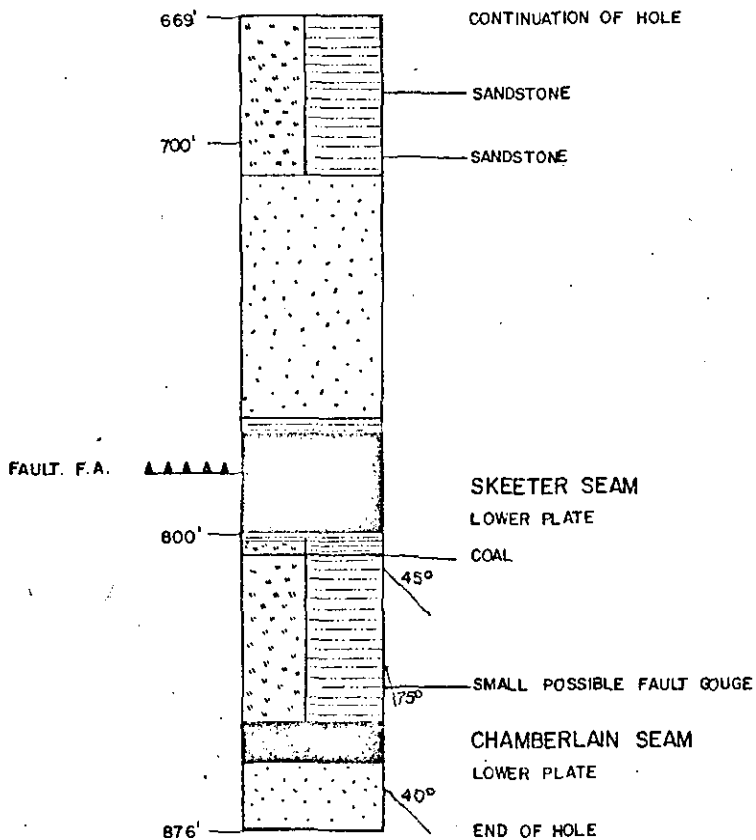


DETAIL OF GETHING FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-6



DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by :
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-6

DRAWN BY S.A.

DATE: January '72

PAGE 3 of 3

SKEETER SEAM
UPPER PLATE

ASH %
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C.S. No.	INCL. BANDS	EXCL. BANDS
122.44						
	0.76					
123.20		-	78.0	0		
123.67	0.47					
	4.98					8.5
	0.38					
	0.85					
130.13	0.25	-	94.6	0		
	0.42					
	2.61					
	1.36					
134.52						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

SEAM SECTIONS
DDH C-6

DRW BY TR

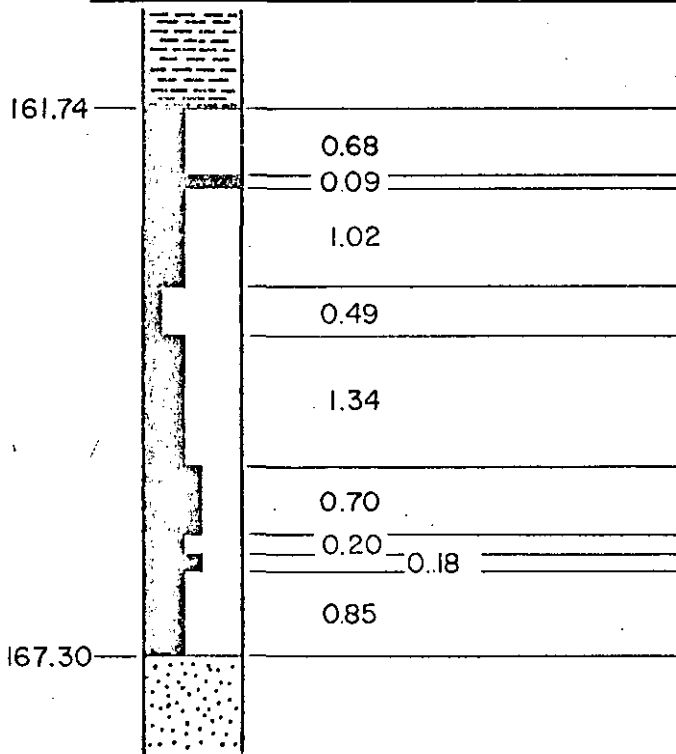
DATE 25/11/71

SCALE: 1"=2'

PAGE 1 of 1

ASH %
CUMULATIVE
FROM FLOOR

CHAMBERLAIN SEAM
UPPER PLATE



WT%	ASH%	C.S. No.	INCL. BANDS	EXCL. BANDS
			2.5	
-	2.5	6		

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

for
COALITION MINING LIMITED

DRW BY TR

DATE 25/11/71

SCALE: 1"=2'

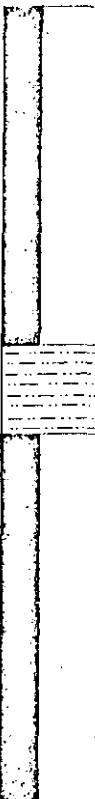
SEAM SECTIONS
DDH C-6

PAGE 1 of 1

SKEETER SEAM
UPPER PLATE/FAULT FA

ASH %
CUMULATIVE
FROM FLOOR

775.00



3.43

WT%

ASH%

C. S. N^o

INCL.
BANDS

EXCL.
BANDS

-

9.3

8

0.90

-

86.4

0

3.79

-

6.1

7

783.12

Continued

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-6

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

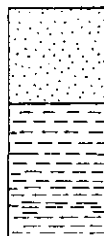
PAGE 1 of 3

SKEETER SEAM
LOWER PLATE/FAULT FA

ASH %
CUMULATIVE
FROM FLOOR

Continuation

783.12



2.36

WT %

ASH %

C. S. N^o

INCL.
BANDS

EXCL.
BANDS

-

90.7

0

785.48

15.53

-

3.8

8

796.00

Continued

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for

COALITION MINING LIMITED

SEAM SECTIONS

DDH C-6

DRAWN BY pm

DATE Jan '72

SCALE: 1' to 2'

PAGE 2 of 3

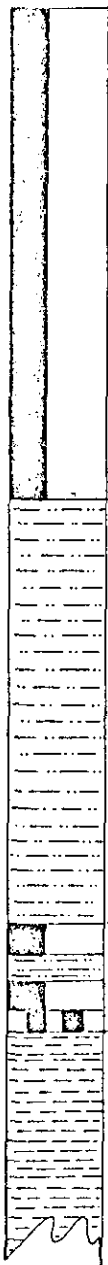
SKEETER SEAM
LOWER PLATE/FAULT FA

ASH %
CUMULATIVE
FROM FLOOR

Continuation
796.00

801.01

806.46



4.36

NOT

ANALYSED

1.09

NOT

ANALYSED

WT%

ASH%

C. S. N^o

INCL.
BANDS

EXCL.
BANDS

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for
COALITION MINING LIMITED

DDH C-6

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

PAGE 3 of 3

CHAMBERLAIN SEAM
LOWER PLATE/FAULT FA

ASH %
CUMULATIVE
FROM FLOOR

	WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
849.09				10.5	
9.45	-	10.5	6		
858.54					



Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for
COALITION MINING LIMITED

DDH C-6

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

PAGE 1 of 1

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

**SUBJECT: SUKUNKA SAMPLES NO. 30, 31, 32 and 33
CORE NO. C6
SKEETER SEAM (UPPER PLATE)**

REPORT NO. K71-1626

DATE RECEIVED: 12. 10. 1971

DATE REPORTED: 11. 11. 1971



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.

M. Bralley
A.R.A.C.I. Chief/Chemist.

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

K. Woodcock

INTRODUCTION:

Four (4) coal ply samples designated CORE NO. C6 SKREETER SRAM (UPPER) were received on 12. 10. 1971 from Clifford McElroy & Associates

METHOD:

Sample No. 32 was a non coal ply which was weighed, prepared and analysed for Ash and True Specific Gravity.

Sample No. 30 was a coal/shale band which was weighed, hand crushed to $-\frac{3}{4}$ ", sized at 30 mesh ESS and the +30 mesh BSS fraction washed in organic liquids at 1.60 specific gravity. The float and sink fractions and raw -30 mesh material were weighed, prepared and analysed as detailed in this report. A composite raw ply sample was prepared and the true specific gravity determined.

The good quality coal plies i.e. No. 31 and 33 were combined in this case as the stone band separating them was so small (0.25") and easily removed by washing. The combined sample was hand crushed, through $\frac{3}{4}$ ", sized at 30 mesh BSS and the +30 mesh fraction washed in organic liquids from 1.30 S.G. to 1.60 S.G. in 0.05 steps. The float and sink fractions and the raw -30 mesh coal fractions were weighed, prepared and analysed as detailed in this report.

A composite floats 1.60 S.G. fraction of samples No. 31 and 33 was prepared for the combined sample and analysed as detailed in this report. A reconstituted raw coal sample was prepared and the true specific gravity of the samples determined.

COMMENTS:

Due to the high core losses experienced on drilling no allowance has been made for these losses i.e. sample weights have not been adjusted. These losses also preclude further calculations and construction of washability tables and graphs.

RESULTS:

FIGURE 1 : is the graphic log of the core

TABLES 1 & 2 : give the sizing, washability and analytical data for each coal ply after hand crushing to $-\frac{3}{4}$ ".

TABLE 1WASHABILITY DATA FOR SAMPLE NO. 30 (after hand crushing to $-\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.60 SG	41	7.6	25.1	8	7.6	25.1	8
S1.60 SG	501	92.4	82.3	0	100.0	78.0	0
-30 Mesh RC	24	4.2	55.6	2			

Total Weight of Sample = 566 grams
True Specific Gravity = 2.127

TABLE 2

WASHABILITY DATA FOR SAMPLE (31 and 33) (after hand crushing
to - $\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	1001	44.5	2.3	9	44.5	2.3	9
S1.30 - F1.35 SG	882	39.2	4.9	6 $\frac{1}{2}$	83.7	3.5	8
S1.35 - F1.40 SG	105	4.7	9.8	5 $\frac{1}{2}$	88.4	3.9	8
S1.40 - F1.45 SG	65	2.9	14.4	3	91.3	4.2	7 $\frac{1}{2}$
S1.45 - F1.50 SG	41	1.8	18.8	1 $\frac{1}{2}$	93.1	4.5	7 $\frac{1}{2}$
S1.50 - F1.55 SG	24	1.1	23.3	1	94.2	4.7	7 $\frac{1}{2}$
S1.55 - F1.60 SG	12	0.5	28.7	1	94.7	4.8	7 $\frac{1}{2}$
S1.60 SG	121	5.3	74.3	0	100.0	8.5	7
-30 Mesh RC	184	2.6	8.8	9			

Total Weight of Sample = 2435 grams
True Specific Gravity = 1.334

SAMPLE NO. 32

RAW COAL TOTAL WEIGHT OF SAMPLE = 274 grams
ASH % = 94.6
TRUE SPECIFIC GRAVITY = 2.667

ANALYSIS OF CUMULATIVE FLOATS 1.60 S.G. FRACTION
OF SAMPLE NO. 31 and 33

Yield %	94.7
Air Dried Moisture %	1.0
Ash %	4.8
Volatile Matter %	23.8
Fixed Carbon %	70.4
Total Sulphur %	0.59
C.S.NO.	7 $\frac{1}{2}$
Calorific Value	14360 BTU/LB

SYDNEY
18th November 1971

K71-1626
 COALITION MINING
 SUKUNKA Gb
 (BREKTER UPPER SEAM)

	SPLIE	THICK ^s	ASH%	CSND
12'	30	173'	78.0	0
10'				
8'	{ 31 33	10.60	8.5	7
6'				
4'				
2'				
0	32	0.15	94.6	0

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CARGO SUPERINTENDENTS

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

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

Certification

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APPLICANT:

COALITION MINING
c/o AUSTEN AND BUTTA LIMITED
43RD LEVEL, TOWER BUILDING
AUSTRALIA SQUARE,
SYDNEY. 2000

REPORT ON:

SUKUNKA 34
CORE NO.C6
CHAMBERLAIN SEAM (UPPER PLATE)

REPORT NO:

K71-1561

RECEIVED:

1.10.1971

REPORTED:

25.10.1971



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been performed in accordance with the
terms of registration.

A. B. Bradley
Chief Chemist.

For

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

D. J. O'Connell

INTRODUCTION:

One (1) coal ply designated CORE C6 CHAMBERLAIN SEAM (UPPER) was received on 1.10.1971 from Clifford McElroy and Associates Pty. Ltd.

The coal ply was hand crushed to $\frac{3}{4}$ " top size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids from 1.30 to 1.60 specific gravity on 0,05 steps.

The float and sink fractions and the raw -30 mesh coal fractions were weighed, prepared and analysed as detailed in this report.

The weights were adjusted where necessary to compensate for core loss.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for each coal ply after hand crushing to $\frac{3}{4}$ ".

TABLE 2 : gives the washability data necessary for the construction of the washability curves.

The washability curves and the analysis of the Floats 1.60 SG fraction of Ply 34 are included in this report.

TABLE 1

WASHABILITY DATA FOR SKR 34, 5.56' (after hand crushing to $\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	1722	65.6	1.5	8	65.6	1.5	8
S1.30- F1.35 SG	809	30.8	3.3	2	96.4	2.1	6
S1.35- F1.40 SG	52	2.0	8.9	1	98.4	2.2	6
S1.40- F1.45 SG	23	0.9	9.6	1	99.3	2.3	6
S1.45- F1.50 SG	7	0.3	13.2	1	99.6	2.3	6
S1.50- F1.55 SG	5	0.2	17.0	1	99.8	2.3	6
S1.55- F1.60 SG	3	0.1	19.3	1	99.9	2.4	6
S1.60 SG	5	0.1	33.2	1	100.0	2.4	6
-30 Mesh	257	8.9	3.2	8 $\frac{1}{2}$			

SHEET THREE ATTACHED HERETO

ANALYSIS OF FLOATS 1.60 SG FRACTION

Yield %	99.9
Air Dried Moisture %	0.9
Ash %	2.4
Volatile Matter %	22.3
Fixed Carbon %	74.4
Total Sulphur %	0.38
C.S.No.	6 $\frac{1}{2}$
Calorific Value	15330 BTU/LB

TABLE 2DATA FOR WASHABILITY CURVES - SKR 34

<u>FRACTION</u>	<u>WT.%</u>	<u>ASH%</u>	<u>WT. %</u>	<u>ASH%</u>	<u>WT.%</u>	<u>ASH%</u>	<u>±0.10 SG</u>	<u>"D"</u>
F1.30 SG	65.6	1.5	65.6	1.5	100.0	2.4	-	32.8
S1.30- F1.35 SG	30.8	3.3	96.4	2.1	34.4	4.1	-	81.0
S1.35- F1.40 SG	2.0	8.9	98.4	2.2	3.6	10.8	34.0	97.4
S1.40- F1.45 SG	0.9	9.6	99.3	2.3	1.6	13.3	3.4	98.9
S1.45- F1.50 SG	0.3	13.2	99.6	2.3	0.7	18.0	1.5	99.5
S1.50- F1.55 SG	0.2	17.0	99.8	2.3	0.4	21.6	-	99.7
S1.55- F1.60 SG	0.1	19.3	99.9	2.4	0.2	26.3	-	99.8
S1.60 SG	0.1	33.2	100.0	2.4	0.1	33.2	-	99.9

SYDNEY

27th October, 1971

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

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APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLES NO. 35, 36, 37, 38, 39
CORE NO. C6
SKEETER (~~LOWER~~) SEAM (UPPER AND LOWER PLATE) FAULT F.A.

REPORT NO. K71- 1627

DATE RECEIVED: 12. 10. 71

DATE REPORTED: 23. 11. 71



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M. Bradley
Chief Chemist.
A.R.A.C.I.

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

E. H. Deane

INTRODUCTION:

Four (4) coal samples and one (1) non coal sample designated CORE C6 SKEETER (LOWER) SEAM were received on 12.10.71 from CLIFFORD MCELROY & ASSOCIATES.

METHODS:

1. The non coal sample No.38 was weighed, prepared and analysed for ash and true specific gravity.

2. The visibly inferior coal samples Nos. 35, 36, were hand crushed to $-\frac{3}{4}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 S.G.

The float and sink fractions and raw -30 mesh coal fractions were weighed, prepared and analysed for ash and crucible swelling number and the composite raw coal sample reconstituted and the true s.g. of the sample determined.

3. The good quality coal samples Nos. 37,39 were hand crushed to $-\frac{3}{4}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.30 - 1.60 S.G. in 0.05 steps.

The float and sink fractions and raw -30 mesh coal fractions were weighed, prepared and analysed for ash and crucible swelling number, and the composite raw coal sample reconstituted and the true S.G. of the sample determined.

A cumulative floats 1.60 S.G. fraction was prepared for sample no. 39 and the analysis are given in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS:

FIGURE 1: gives the graphic log of the core.

TABLES 1 - 4: give the sizing, washability and analytical data for each coal sample after hand crushing to $-\frac{3}{4}$ " .

TABLE 1: WASHABILITY DATA FOR SAMPLE NO. 35 (after hand crushing to $-\frac{3}{4}$ ")

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60	178	96.2	7.3	8½	96.2	7.3	8½
S1.60	7	3.8	60.6	0	100.0	9.3	8
-30 Mesh RC	12	6.1	6.1	8½			

TOTAL WEIGHT SAMPLE = 197 gms

TRUE S.G. = 1.350

TABLE 2: WASHABILITY DATA FOR SAMPLE NO. 36 (after hand crushing to $-\frac{3}{4}$ ")

F1.60	1	0.1	17.2	6	0.1	17.2	6
S1.60	1148	99.9	86.5	0	100.0	86.4	0
-30 Mesh RC	53	4.4	77.6	1			

TOTAL WEIGHT SAMPLE = 1,202 gms

TRUE S.G. = 2.260

TABLE 3: WASHABILITY DATA FOR SAMPLE NO. 37 (after hand crushing to $-\frac{3}{4}$ ")

F1.30	230	49.6	2.1	9	49.6	2.1	9
S1.30 - F1.35	137	29.5	4.6	7½	79.1	3.0	8½
S1.35 - F1.40	20	4.3	8.3	4½	83.4	3.3	8
S1.40 - F1.45	23	5.0	12.12	2½	88.4	3.8	8
S1.45 - F1.50	32	6.9	14.3	1	95.3	4.6	7½
S1.50 - F1.55	8	1.7	16.4	1	97.0	4.8	7½
S1.55 - F1.60	3	0.6	18.4	½	97.6	4.9	7½
S1.60	11	2.4	55.1	0	100.0	6.1	7
-30 Mesh RC	60	11.5	3.7	9			

TOTAL WEIGHT SAMPLE = 524 gms

TRUE S.G. = 1.333

SAMPLE NO. 38

RAW COAL

TOTAL WEIGHT OF SAMPLE = 2,844 gms

ASH% = 90.7 %

TRUE S.G. = 2.500

TABLE 4: WASHABILITY DATA FOR SAMPLE NO. 39 (after hand crushing to $-\frac{3}{4}$ ")

F1.30	985	65.4	1.9	9	65.4	1.9	9
S1.30 - F1.35	347	23.1	4.9	7½	88.5	2.7	8½
S1.35 - F1.40	94	6.2	9.2	7½	94.7	3.1	8½
S1.40 - F1.45	52	3.5	12.7	6	98.2	3.5	8½
S1.45 - F1.50	12	0.8	14.4	1½	99.0	3.5	8½
S1.50 - F1.55	5	0.3	17.0	1	99.3	3.6	8½
S1.55 - F1.60	3	0.2	20.3	½	99.5	3.6	8
S1.60	7	0.5	50.2	0	100.0	3.8	8
-30 Mesh RC	341	18.5	3.1	9			

TOTAL WEIGHT SAMPLE = 1,846 gms

TRUE S.G. = 1.262

SYDNEY

23rd November, 1971.

ANALYSIS OF CUMULATIVE FLOATS 1.60 S.G. FRACTION OF SAMPLE NO. 39YIELD % ADM% ASH% V.M.% F.C.% S. % C.S. NO.CV(BTU/lb)

99.5 1.0 3.7 22.7 72.6 0.48 8 14,750

SYDNEY

23rd November, 1971.

	SPLR	THICK	ASH	CONP
25'				
24'	35	2.45	93.1	8
22'	36	0.90	86.4	0
20'	37	3.79	76.1	7
18'				
16'	38	2.36	90.7	0
14'				

14'
12'
10'
8'
6'
4'
2'
0

39 1553 38 8

K71-1627
COALITION MINING
SUKUNKA G6
(CORRECTOR LOWER
SLAM)

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

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APPLICANT:

COALITION MINING
c/o AUSTEN AND BUTTA LIMITED
43RD LEVEL, TOWER BUILDING
AUSTRALIA SQUARE,
S Y D N E Y. 2000

REPORT ON:

SUKUNKA 47
CORE NO.C6
CHAMBERLAIN SEAM (LOWER PLATE) FAULT F.A.

REPORT NO:

K71-1562

RECEIVED:

1.10.1971

REPORTED:

25.10.1971



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terms of registration.

A. Bradley
Chief Chemist.

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

R. H. ...

INTRODUCTION:

One (1) coal ply designated CORE C6 CHAMBERLAIN SEAM (LOWER) was received on 1.10.1971 from Clifford McElroy and Associates Pty. Ltd.

METHOD:

The coal ply was hand crushed to $\frac{3}{4}$ " top size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids from 1.30 to 1.60 specific gravity in 0.05 steps.

The float and sink fractions and the raw -30 mesh coal fractions were weighed, prepared and analysed as detailed in this report.

The weights were adjusted where necessary to compensate for core loss.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for each ply after hand crushing to $\frac{3}{4}$ ".

TABLE 2 : gives the washability data necessary for the construction of the washability curves.

The washability curves and the analysis of the Floats 1.60 SG fraction of Ply 47 are included in this report.

TABLE 1

WASHABILITY DATA FOR SKR 47, 9.45' (after hand crushing to $\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>			
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>	
F1.30 SG	2043	56.0	1.7	8	56.6	1.7	8	
S1.30- F1.35 SG	773	21.2	3.4	1 $\frac{1}{2}$	77.2	2.2	6	
S1.35- F1.40 SG	107	2.9	8.4	1	80.1	2.4	6	
S1.40- F1.45 SG	36	1.0	11.5	1	81.1	2.5	6	
S1.45- F1.50 SG	16	0.4	16.0	1	81.5	2.6	6	
S1.50- F1.55 SG	22	0.6	18.0	1	82.1	2.7	6	
S1.55- "1.60 SG	38	1.1	22.9	1	83.2	3.0	6	
S1.60 SG	611	16.8	51.1	0	100.0	11.0	5	
-30 mesh	1043	22.2	8.2	8 $\frac{1}{2}$				

ANALYSIS OF FLOATS 1.60 SG FRACTION

Yield %	83.2%
Air Dried Moisture %	0.7
Ash %	3.0
Volatile Matter %	20.0
Fixed Carbon %	76.3
Total Sulphur %	0.49
C.S.NO.	6
Calorific Value	15380 BTU/LB

TABLE 2DATA FOR WASHABILITY CURVES - SKR 47

<u>FRACTION</u>	<u>INDIVIDUAL</u>		<u>CUM. FLOATS</u>		<u>CUM. SINKS</u>		<u>±0.10 SG</u>	<u>"D"</u>
	<u>WT.%</u>	<u>ASH%</u>	<u>WT.%</u>	<u>ASH%</u>	<u>WT.%</u>	<u>ASH%</u>		
Fl.30 SG	56.0	1.7	56.0	1.7	100.0	11.0	-	28.0
Sl.30- Fl.35 SG	21.2	3.4	77.2	2.2	44.0	22.9	-	66.6
Sl.35- Fl.40 SG	2.9	8.4	80.1	2.4	22.8	41.1	25.5	78.7
Sl.40- Fl.45 SG	1.0	11.5	81.1	2.5	19.9	45.8	4.9	80.6
Sl.45- Fl.50 SG	0.4	16.0	81.5	2.6	18.9	47.7	3.1	81.3
Sl.50- Fl.55 SG	0.6	18.0	82.1	2.7	18.5	48.3	-	81.8
Sl.55- Fl.60 SG	1.1	22.9	83.2	3.0	17.9	49.4	-	82.7
Sl.60 SG	16.8	51.1	100.0	11.0	16.8	51.1	-	91.6

SYDNEY

26th October, 1971

STRATIGRAPHIC LOG
SUKUNKA D.D.H. - C6

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft)</i>
	No core to 9.0 ft.	GETHING FM.	
	SANDSTONE, grey, medium grained, quartz lithic, brown weathered bands.		47.0
	INTERBEDS, siltstone grey and mudstone dark grey, worm casts.		71.0
	SANDSTONE, grey, medium grained, quartz-lithic, mudstone interbeds		75.0
	MUDSTONE, dark grey.		80.0
	SANDSTONE, grey, medium grained, some vertical calcite, mudstone band at 116' and at base.		124.0
	<u>COAL.</u>	SKEETER SM.	134.0
	SILTSTONE, grey, sandy phases, some disturbed bedding.		141.0
	LAMINITE, siltstone & mudstone, grey & mudstone dark grey, general colour darkish grey.		162.0
	<u>COAL.</u>	CHAMB. SM.	167.0
	SANDSTONE, grey, medium grained becoming finer to base, pebble band 201', mottled (worm casts).		

Structure	Description of Strata	Formation or Member	Depth - Base of Stratum (ft)
	206', mudstone bands 220' and 260'.		268.0
	INTERBEDS, siltstone and sandstone grey, and mudstone dark grey interbedded.		287.0
	SANDSTONE, grey, fine to medium grained, quartz-lithic, band of pebbles at top. Mudstone bands at 337', 341', 366' and 371'. mudstone bleb bands at 334', 349', 350', 364', 366', 367'.		371.0
	INTERBEDS, siltstone grey and mudstone dark grey. Worm casts Sandstone bands at 374', 438'. Heavy calcite veins at 455'.		491.0
Fault, probable	SANDSTONE, grey, medium grained, brecciated and calcite veined.		497.0
Fault, possible	SANDSTONE, grey, medium grained, quartz-lithic. Mottled (worm casts) at 503', mudstone band at 519' underlain by pebbles, pebble band at 528'. Some calcite veining, especially at 558'.		568.0
Fault, probable	INTERBEDS, siltstone grey and mudstone dark grey. Base brecciated.		579.0
	SANDSTONE, grey, medium grained, brecciated, with calcite veining.		584.0
Fault, possible	SANDSTONE, grey, medium grained, finer at base, fault gauge at 632'. Calcite veining, "vertical" beds.		669.0

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth Base of Stratum (ft)</i>
	INTERBEDS, siltstone grey and mudstone dark grey. Sandstone bands at 689' and 701', mudstone band (4') at base.		708.0
	SANDSTONE, grey medium grained, quartz-lithic.		771.0
	MUDSTONE, dark grey.		775.0
	<u>COAL</u> ,	SKEETER SM.	799.0
	MUDSTONE, dark grey.		800.0
	INTERBEDS, siltstone grey and mudstone dark grey. Small possible fault gauge at 838', coal band at 806'.		849.0
	<u>COAL</u> ,	CHAMB. SM.	858.0
	SANDSTONE, grey, medium grained.		876.0
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		9.0		
SANDSTONE, grey with brownish banding, fine grained, quartz(?) -lithic. Core angle 45° throughout. A fracture at 75° to core axis 21.82' from top.	37.03	46.62	37.17	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey, mudstone dark grey, interbedded; worm casts and irregular sedimentary structures, some fractures. Bedding angle 45° to 50° to core axis.	23.19	69.81	23.28	
SANDSTONE, grey, medium grained, lithic, siltstone interbeds, phases and irregular masses, coaly wisps.	4.93	74.74	4.95	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and predominant mudstone dark grey, interbedded; pyrite nodules towards base.	5.14	79.88	5.16	
SANDSTONE, grey, medium grained, lithic, irregular siltstone masses, some coaly wisps, and sub-vertical calcite veins (no displacement) towards base; core broken. Bedding angle 50° to core axis throughout. Some calcite veins at 0° to core axis.	35.74	115.62	35.85	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, dark grey, some siltstone interbeds towards base. Bedding angle 50° to core axis.	0.79	116.41	0.80	
SANDSTONE, grey, medium grained, lithic, irregular siltstone masses, some coaly wisps, a sub-vertical calcite vein.	1.36	117.77	1.37	
SANDSTONE, grey, fine grained, lithic, siltstone interbeds, worm casts.	3.33	121.10	3.35	
CLAYSTONE, dark grey, becoming carbonaceous to base.	1.34	122.44	1.35	
<u>COAL</u> , mainly dull with minor bright bands.	0.76	123.20	0.08)
)
MUDSTONE, dark grey, carbonaceous, becoming stone coaly at base.	0.47	123.67	0.47)
)
<u>COAL</u> , mainly dull with minor bright bands, core broken, pyrite and chalcopryrite. Bedding angle 50° to core axis.	4.98	128.65	2.63	) SKEETER SEAM upper pla
)
dull and bright, pyrite, core broken.	0.38	129.03	0.20)
)
mainly dull with minor bright bands, pyrite and chalcopryrite. Core broken.	0.85	129.88	0.45)

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, dark grey, becoming carbonaceous.	0.25	130.13	0.25)
<u>COAL</u> , dull and bright, core broken, pyrite.	0.42	130.55	0.22)
mainly dull with minor bright bands, pyrite, core broken.	0.91	131.46	0.48)
mainly dull with minor bright bands, core broken, pyrites.	1.70	133.16	0.90)
predominantly dull, badly broken, pyrite.	1.36	134.52	0.72)
CLAYSTONE, dark grey, carbonaceous.	0.69	135.21	0.70)
CLAYSTONE, grey, coaly wisps.	1.45	136.66	1.46)
SILTSTONE, grey, sandstone and mudstone interbeds and phases.	4.00	140.66	4.03)
SILTSTONE AND CLAYSTONE INTERBEDDED, grey siltstone and dark grey claystone interbedded; some sandstone phases near top, becoming predominantly claystone towards base, slumping near top. Bedding angle 50° to core axis.	20.84	161.50	18.82)

SKEETER
SEAM
upper plate

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, grey, siltstone phases.	0.24	161.74	0.24	
<u>COAL</u> , mainly dull with minor bright bands.	0.68	162.42	0.67)
bright.	0.09	162.51	0.09)
mainly dull with minor bright bands. Bedding angle 64° to core axis.	1.02	163.53	1.02)
dull.	0.49	164.02	0.49)
mainly dull with minor bright bands.	1.34	165.36	1.33)
dull and bright.	0.44	165.80	0.44	) CHAMBERLAIN
mainly bright with minor dull bands.	0.26	166.06	0.26	) SEAM
mainly dull with minor bright bands.	0.20	166.26	0.20	) upper plat
dull and bright.	0.18	166.44	0.18)
mainly dull with minor bright bands.	0.86	167.30	0.85)

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous at top and with coaly masses. Some fine siltstone interbeds.	12.57	179.87	12.52	
SANDSTONE, grey, quartz-lithic, medium grained, some siltstone interbeds, sub-vertical calcite vein. Bedding angle 50° to core axis, calcite vein 80° to core axis.	18.87	198.74	18.80	
SANDSTONE, as above, with some coaly wisps, a carbonaceous band (0.10') 1.75' from top, above which band pebble conglomerate (0.13') mottled (worm casts) near 206'. Bedding angle 50° to core axis.	19.32	218.06	19.24	
SANDSTONE, grey, medium grained, becoming fine grained to base, some siltstone and coaly wisps and interbeds, pyrite filled fracture. Bedding angle 45° to core axis. Fracture 28° to core axis, opposed to bedding.	19.29	237.35	19.21	
SANDSTONE, fine as above, siltstone interbeds. Bedding angle 48° to core axis.	22.71	260.06	22.62	
MUDSTONE, dark grey.	1.55	261.61	1.54	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, fine grained, coaly lens near top, mudstone interbeds and phases.	6.11	267.72	6.09	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone and mudstone dark grey (younging upwards). Bedding angle 51° to core axis.	8.23	275.95	8.20	
SILTSTONE AND MUDSTONE INTERBEDDED, as above, coaly parting 3.60' from top.	10.86	286.81	10.82	
CONGLOMERATE, grey, granule, fine calcite vein, one siltstone band.	0.62	287.43	0.62	
SANDSTONE, grey, fine grained, quartz-lithic. Bedding angle 42° - 50° to core axis, fractures 37° to core axis, opposed to bedding.	26.96	314.39	26.85	
SANDSTONE, as above, some calcite veins. Bedding angle 47° to core axis, fractures 28° to core axis, calcite veins 25° to core axis.	18.97	333.36	18.89	
SANDSTONE, as above, mudstone phases with coaly partings, 3.2' from top.	7.05	340.41	7.02	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey, coaly wisps, siltstone interbeds.	0.77	341.18	0.77	
SANDSTONE, as above, siltstone interbeds near top, occasional mudstone breccia bands. Bedding angle 50° to core axis.	10.18	351.36	9.12	
SANDSTONE, as above, mudstone breccia bands and mudstone phases. Bedding angle 50° to core axis.	19.77	371.13	18.05	
SANDSTONE AND CLAYSTONE INTERBEDDED, sandstone grey, very fine grained and mudstone dark grey, (younging upwards).	4.37	375.50	4.35	
SANDSTONE AND CLAYSTONE INTERBEDDED, as above. Sandstone grey, very fine grained and mudstone dark grey, interbedded. Bedding angle 50° to core axis.	33.12	408.62	32.93	
SANDSTONE AND CLAYSTONE INTERBEDDED, as above, grainsize becoming finer, mudstone predominant, sandstone becomes siltstone, two calcite veins with slickensiding. Bedding angle 50° to core axis, fractures (no calcite) 50° to core axis, opposed to bedding.	19.10	427.72	19.00	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE AND CLAYSTONE INTERBEDDED, as above, bedding angle 45° to core axis, no fractures.	19.27	446.99	19.16	
SANDSTONE AND CLAYSTONE INTERBEDDED, as above. Bedding angle 46° to core axis. Calcite fractures parallel to bedding at slump structure, calcitic fractures also vertical, some shearing of mudstone.	18.65	465.64	18.55	
SANDSTONE AND CLAYSTONE INTERBEDDED, as above, calcite veins parallel to bedding, beds slumped. Bedding angle (unslumped) 28° to core axis. Fracture angle 18° to core axis.	27.24	492.88	28.39	
SANDSTONE, grey, medium grained, quartz-lithic, angular blocks in calcite matrix together with mudstone fragments. Bedding highly disturbed and randomly oriented. Core shattered.	3.82	496.70	4.39	
SANDSTONE, grey, medium grained quartz-lithic, massive, core fractured near top, no calcite. Bedding angle 67° to core axis.	25.32	522.02	25.41	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, as above. Bedding angle 75° to core axis. Pebble band 13.0 ft from base. Calcite veins 15° to core axis.	18.94	540.96	19.01	
SANDSTONE, as above, bedding highly disturbed at 558', calcite filled fractures for 1'. Bedding angle 64° to core axis. Calcite planes 19° to core axis.	27.66	568.62	14.97	
MUDSTONE AND SILTSTONE INTERBEDDED, siltstone grey and mudstone dark grey, core broken towards base, calcite veins present. Bedding angle 40° to core axis. Fractures (some) parallel to bedding and calcite filled.	10.33	578.95	10.37	
SANDSTONE, grey, fine grained, quartz-lithic, brecciated. Bedding disorientated.	5.37	584.32	5.39	
SANDSTONE, as above. Bedding intact. Bedding angle steeply dipping - vertical to 50° to core axis. Calcite veins 50° to core axis. 6' fault zone.	14.06	598.38	14.11	
SANDSTONE, as above. Bedding angle 17° to core axis at top, 35° to core axis in middle and at base, Some calcite veins parallel to bedding and oblique 20° to core axis.	34.39	632.77	34.51	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey, soft with calcite veined sandstone fragments, fault gouge (?).	0.42	633.19	0.42	
SANDSTONE, as above, core broken, calcite veins throughout.	2.15	635.34	2.16	
SANDSTONE, as above, core intact. Bedding angle 42° to core axis. Calcite veins 19° rotated normal to bedding. Lower 3' of core is fault. Below 0.58', bedding variable from vertical near centre and base to 50° to core axis at top. Calcite veins in upper half plus several planes 21° & 50° to core axis, opposed to bedding.	33.18	668.52	33.30	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey, (younging upwards). Numerous soft sediment structures. Bedding angle 42° to core axis. Calcite veins 13° to core axis, opposed to bedding.	31.89	700.41	32.01	
SANDSTONE, grey, medium grained, quartz-lithic.	1.44	701.85	1.45	
INTERBEDS, as above, becoming fine grained at base.	5.44	707.29	5.46	
CLAYSTONE, carbonaceous, dark brown, listric surfaces at centre.	1.59	708.88	1.60	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and laminations throughout.	1.68	710.56	1.69	
SANDSTONE, as above, coaly layer 4.76' from top. Bedding angle 60° to core axis in top third, 50° to core axis in centre and 60° to core axis in bottom third. Bedding disturbed and calcite veining 9.41' from top.	56.34	766.90	52.66	
SANDSTONE, grey, medium grained and becoming fine towards base, quartz-lithic, siltstone and coaly wisps, partings and irregular masses.	4.84	771.74	4.47	
CLAYSTONE, dark brownish grey, carbonaceous, bedding angle steepens and returns to normal from top to bottom of section. Calcitic and coaly wisps. Listric surfaces.	3.26	775.00	3.01	
<u>COAL</u> , mainly dull with minor bright bands, core very broken.	3.43	778.43	0.55)
MUDSTONE, grey, coaly partings.	0.90	779.33	0.90	) SKEETER SEAM
<u>COAL</u> , mainly dull with minor bright bands, core badly broken.	3.79	783.12	1.30	) upper pl fraction Fault F.

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, fine grained, quartz-lithic, coaly wisps, calcite veins (thin) at 30° to core axis. Bedding angle 50° to core axis in the opposed direction.	0.99	784.11	0.99	) SKEETER SEAM
CLAYSTONE, dark grey, with mudstone phases, coaly wisps, listric surfaces.	1.37	745.48	1.37	) lower plat Skeeter Roof
<u>COAL</u> , mainly dull with minor bright bands overall, core fragmented.	5.50	790.98	1.87)
core fragmented, listric surfaces, friable where coal type recognisable dull and minor bright bands.	3.85	794.83	1.31)
core fragmented, listric surfaces, where identifiable - mainly dull with minor bright bands.	6.18	801.01	2.10	) SKEETER SEAM
MUDSTONE, grey, fine siltstone interbeds.	4.36	805.37	4.36	) lower plat Fault F.A.
<u>COAL</u> , mainly dull with minor bright bands.	0.38	805.75	0.13)
MUDSTONE, grey, calcite vein.	0.21	805.96	0.07)

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
COAL, mainly dull with minor bright bands.	0.26	806.22	0.09	) SKEETER SEAM
stonny.	0.24	806.46	0.08	) lower plat Fault F.A.
CLAYSTONE, dark grey, siltstone interbeds and phases. Core very broken 2' from top, listric surfaces.	6.91	813.37	6.69	
SILTSTONE, grey, mudstone interbeds, slump structure.	3.51	816.88	3.40	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey, calcite veins towards centre along bedding planes. Bedding angle 55° to core axis.	18.62	835.50	18.02	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey, some calcite veins at top. Bedding angle at top 65° to core axis steepening to 20°, 3.6' from top, and 0° at 3.9' from top. Junction of angled bedding with that below not continuous, core broken at a mudstone phase which runs from 3.05' to 6.15' from top with indistinct boundaries; thick calcite veining at 5.12' from top and core broken from 3.6' to 5.12' from top.	13.59	849.09	13.15	

SUKUNKA D.D.H. C-6

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , coal types indeterminate, core breaks into flakes with listric surfaces.	3.22	852.31	2.44)
<u>COAL</u> , core badly broken and sheared. Sub-divisions broad. mainly dull with minor bright bands. dull and bright. mainly dull with minor bright bands.	1.94	854.25	1.47	) CHAMBERLAIN SEAM lower plane Fault F.A.
SANDSTONE, grey, medium grained, quartz-lithic, coaly partings between 0.2' and 0.4' from top.	11.87	870.41	11.66)
SANDSTONE, as above, some current bedding. Bedding angle 48° to core axis.	5.59	876.00	5.49	) <u>Base of Hole</u>

657

BORE NUMBER

C-8

Grid Reference 46134.0 N 85226.4 E
Exploration Grid Reference D/3+1000'E

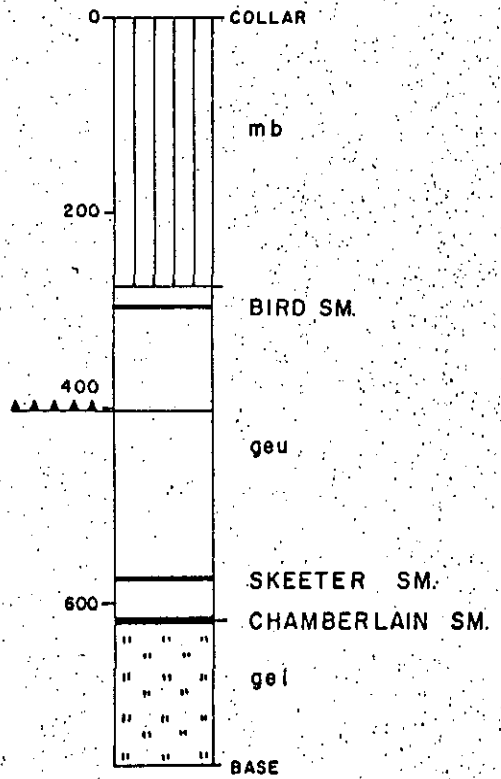
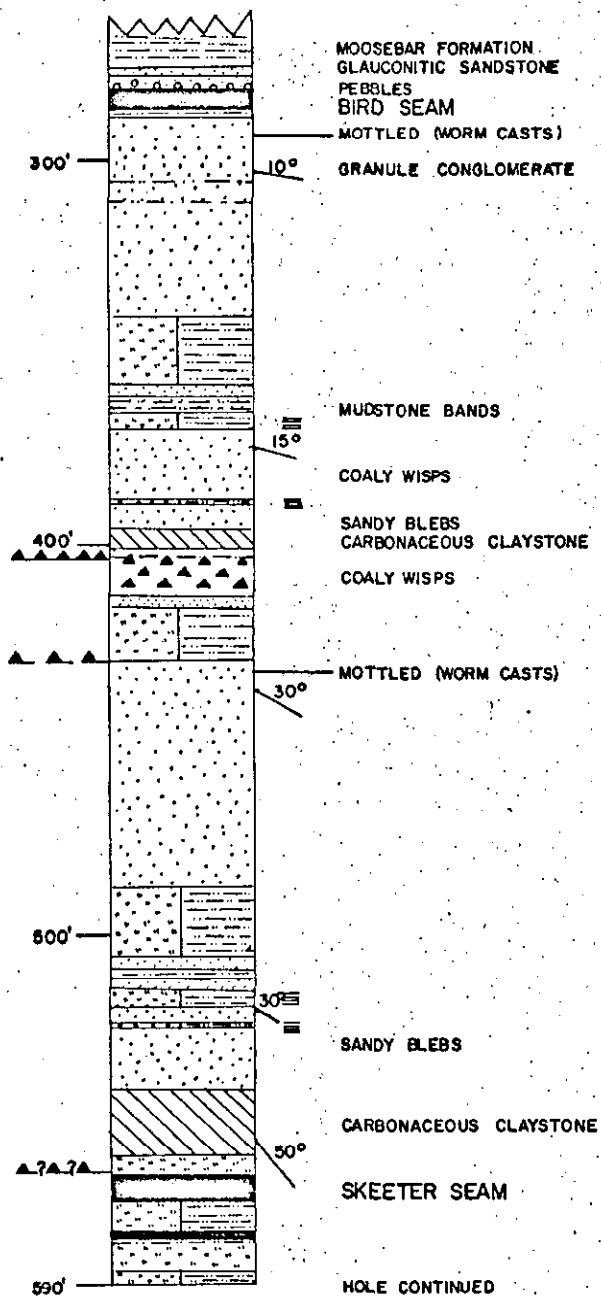
Date Commenced 19 Aug 71 Completed 23 Aug 71

Collar R.L. 4148.5 ft. Standard Datum
Total Depth 762 ft. Electrically Logged ~~Yes~~/No
Drilled by Connors Drilling Ltd.
For Coalition Mining Limited
Logged by F.H.S.Tebbutt

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter	3580.64	6.32	42%	
Chamberlain	3533.5	8.49	83%	
"4th Seam"	3499.06	3.82	46%	

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd JUL 25 1975		

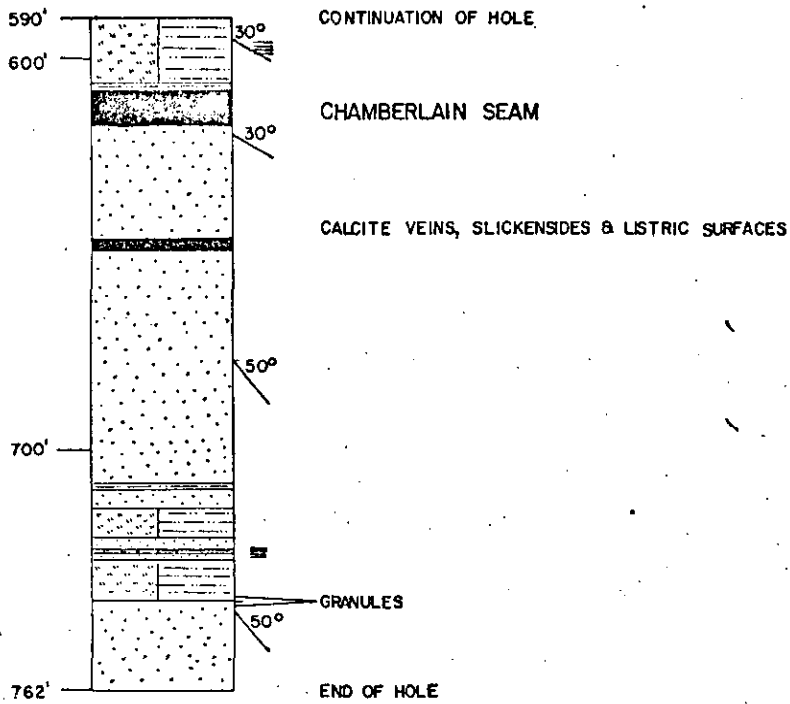


DETAIL OF GETHING FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH. C-8



DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-8

DRAWN BY S.A.

DATE: January '72

PAGE 2 of 2

SKEETER SEAM

ASH %
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C.S. No.	INCL. BANDS	EXCL. BANDS
561.54	4.03	-	5.5	5	5.5	
	0.18					
	2.11					
567.86	7.64					
575.50						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-8

COALITION MINING LIMITED

DRW BY TR

DATE 26/11/71

SCALE: 1"=2'

PAGE 1 of 1

CHAMBERLAIN SEAM

ASH %
CUMULATIVE
FROM FLOOR

	WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
606.50				4.7	
611.00	-	4.7	7		
614.99					



Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-8

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1' to 2'

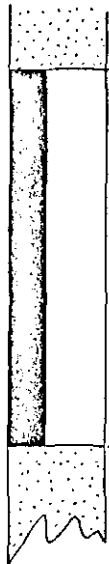
PAGE 1 of 1

SEAM 4

ASH %
CUMULATIVE
FROM FLOOR

645.62

649.44



3.82

WT%	ASH%	C. S. N°	INCL. BANDS	EXCL. BANDS
			4.6	
-	4.6	8		

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-8

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

PAGE 1 of 1

Telegrams and Cables:

"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLE NO. 40
CORE NO. C8
SKEETER SEAM

REPORT NO. K71-1628

RECEIVED: 12. 10. 1971

REPORTED: 11. 11. 1971



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.

For

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

P. B. Bradley
A.R.A.C.I.

Chief Chemist.

INTRODUCTION:

One (1) coal sample designated CORE NO. C8 SKEETER SEAM was received on 12. 10. 1971 from Clifford McElroy & Associates.

METHOD:

The good quality coal sample No. 40 was hand crushed to $\frac{3}{4}$ " , 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 and 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 S.G. of the sample determined.

A cumulative floats 1.60 specific gravity fraction was prepared for Sample No. 40 and the analysis are given also in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses and sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for the sample after hand crushing to $\frac{3}{4}$ " .

TABLE 1

WASHABILITY DATA FOR SAMPLE NO. 40 (after hand crushing to $\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	399	25.9	2.4	9	25.9	2.4	9
S1.30 - F1.35 SG	841	54.5	3.4	4½	80.4	3.1	6
S1.35 - F1.40 SG	148	9.6	8.9	2½	90.0	3.7	5½
S1.40 - F1.45 SG	76	4.9	14.2	1	94.9	4.2	5½
S1.45 - F1.50 SG	32	2.1	16.6	1	97.0	4.5	5½
S1.50 - F1.55 SG	9	0.6	21.6	1	97.6	4.6	5
S1.55 - F1.60 SG	7	0.5	27.4	½	98.1	4.7	5
S1.60 SG	30	1.9	44.2	0	100.0	5.5	5
-30 Mesh	179	10.4	5.4	9			

Total Weight of Sample = 1721 grams

True Specific Gravity = 1.339

ANALYSIS OF CUMULATIVE FLOATS 1.60 SG FRACTION FOR SAMPLE NO. 40

Yield %	98.1
Air Dried Moisture %	1.0
Ash %	4.7
Volatile Matter %	20.7
Fixed Carbon %	73.6
Total Sulphur %	0.47
C.S.NO.	5½
Calorific Value	14760 BTU/LB

SYDNEY : 22nd November 1971

K71-1628
COALITION MINING
SUKUNKA G3
(PRESTON BEAM)

	SPLR	THICK	ASH%	CSNO
5				
4	40	6.32'	5.5	5
2				

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING
c/o AUSTEN & BUTTA LIMITED
43rd Level, Tower Building
Australia Square,
S Y D N E Y. 2000

REPORT ON: SUKUNKA 41
CORE NO. C8
CHAMBERLAIN SEAM (UPPER)

REPORT NO. K71-1563

RECEIVED: 1. 10. 1971

REPORTED: 25. 10. 1971



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 Chemist.

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

INTRODUCTION:

One (1) coal ply designated CORE NO. C8 CHAMBERLAIN SEAM (UPPER) was received on 1. 10. 1971 from Clifford McElroy & Associates Pty. Ltd.

METHOD:

The coal ply was hand crushed to ¾" top size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids from 1.30 to 1.60 specific gravity in 0.05 steps.

The float and sink fraction and the raw -30 mesh coal fraction were weighed, prepared and analysed as detailed in this report.

The weights were adjusted where necessary to compensate for core loss.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for each ply after hand crushing to ¾".

TABLE 2 : gives the washability data necessary for the construction of the washability curves.

The washability curves and the analysis of the Floats 1.60 SG fraction of Ply 41 are included in this report.

TABLE 1

WASHABILITY DATA FOR SKR 41, 8.49' (after hand crushing to ¾")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	2280	56.3	2.6	8½	56.3	2.6	8½
S1.30 - F1.35 SG	1240	30.6	4.4	6½	86.9	3.2	8
S1.35 - F1.40 SG	217	5.4	8.5	1	92.3	3.5	7½
S1.40 - F1.45 SG	127	3.1	13.6	1	95.4	3.9	7
S1.45 - F1.50 SG	93	2.3	19.2	1	97.7	4.2	7
S1.50 - F1.55 SG	29	0.7	19.5	1	98.4	4.3	7
S1.55 - F1.60 SG	22	0.5	24.3	1	98.9	4.4	7
S1.60 SG	42	1.1	34.5	1	100.0	4.8	7
-30 Mesh	435	9.7	3.6	8½			

ANALYSIS OF FLOATS 1.60 SG FRACTION

Yield %	98.9
Air Dried Moisture %	0.7
Ash %	4.5
Volatile Matter %	21.8
Fixed Carbon %	73.0
Total Sulphur %	0.39
C.S.NO.	7½
Calorific Value	15070 BTU/LB

TABLE 2

DATA FOR WASHABILITY CURVES - SKR 41

FRACTION	INDIVIDUAL		CUM. FLOATS		CUM. SINKS		±0.10 SG	"D"
	WT. %	ASH%	WT. %	ASH%	WT. %	ASH%		
F1.30 SG	56.3	2.6	56.3	2.6	100.0	4.8	-	28.2
S1.30 - F1.35 SG	30.6	4.4	86.9	3.2	43.7	7.6	-	71.6
S1.35 - F1.40 SG	5.4	8.5	92.3	3.5	13.1	15.0	41.4	89.6
S1.40 - F1.45 SG	3.1	13.6	95.4	3.9	7.7	19.5	11.5	93.9
S1.45 - F1.50 SG	2.3	19.2	97.7	4.2	4.6	23.5	6.6	96.6
S1.50 - F1.55 SG	0.7	19.5	98.4	4.3	2.3	27.7	-	98.1
S1.55 - F1.60 SG	0.5	24.3	98.9	4.4	1.6	31.3	-	99.5
S1.60 SG	1.1	34.5	100.0	4.8	1.1	34.5	-	99.5

SYDNEY
27th October 1971

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT:

COALITION MINING
c/o AUSTEN & BUTTA LIMITED
43rd Level, Tower Building,
Australia Square,
S Y D N E Y. 2000

REPORT ON:

SUKUNKA 42
CORE NO. C8
~~CHAMBERLAIN SEAM (LOWER)~~ SEAM "4"

REPORT NO.

K71-1564

RECEIVED:

1. 10. 1971

REPORTED:

25. 10. 1971



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.

M. Bradley
A.R.A.C.I.

Chief Chemist

For

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

Bill Vane

INTRODUCTION:

One (1) coal ply designated CORE C8 CHAMBERLAIN SEAM (LOWER) was received on 1. 10. 1971 from Clifford McElroy & Associates Pty. Ltd.

METHOD:

The coal ply was hand crushed to $\frac{3}{4}$ " top size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids from 1.30 to 1.60 specific gravity in 0.05 steps.

The float and sink fractions and the raw -30 mesh coal fraction were weighed, prepared and analysed as detailed in this report.

The weights were adjusted where necessary to compensate for core loss.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for each ply after hand crushing to $\frac{3}{4}$ "

TABLE 2 : gives the washability data necessary for the construction of the washability curves.

The washability curves and the analysis of the Floats 1.60 SG fraction of Ply 42 are included in this report.

TABLE 1

WASHABILITY DATA FOR SKR 42, 3.00' (after hand crushing to $\frac{3}{4}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	775	73.0	2.1	8½	73.0	2.1	8½
S1.30 - F1.35 SG	162	15.2	5.0	7½	88.2	2.6	8½
S1.35 - F1.40 SG	30	2.8	8.3	6½	91.0	2.8	8½
S1.40 - F1.45 SG	25	2.3	13.7	4½	93.3	3.0	8
S1.45 - F1.50 SG	24	2.2	15.7	4½	95.5	3.3	8
S1.50 - F1.55 SG	13	1.2	17.2	1	96.7	3.5	8
S1.55 - F1.60 SG	4	0.4	18.3	1	97.1	3.6	8
S1.60 SG	30	2.9	43.9	½	100.0	4.7	8
-30 Mesh	55	4.9	3.2	8½			

ANALYSIS OF FLOATS 1.60 SG FRACTION

Yield %	97.1
Air Dried Moisture %	0.7
Ash %	3.7
Volatile Matter %	23.4
Fixed Carbon %	72.2
Total Sulphur %	0.40
C.S.NO.	8½
Calorific Value	14970 BTU/LB

SHEET THREE ATTACHED HERETO

TABLE 2

DATA FOR WASHABILITY CURVES - SKR 42

<u>FRACTION</u>	<u>INDIVIDUAL</u>		<u>CUM. FLOATS</u>		<u>CUM. SINKS</u>		<u>±0.10 SG</u>	<u>"D"</u>
	<u>WT.%</u>	<u>ASH%</u>	<u>WT. %</u>	<u>ASH%</u>	<u>WT. %</u>	<u>ASH%</u>		
F1.30 SG	73.0	2.1	73.0	2.1	100.0	4.7	-	36.5
S1.30 - F1.35 SG	15.2	5.0	88.2	2.6	27.0	11.9	-	80.6
S1.35 - F1.40 SG	2.8	8.3	91.0	2.8	11.8	20.7	22.5	89.6
S1.40 - F1.45 SG	2.3	13.7	93.3	3.0	9.0	24.6	8.5	92.2
S1.45 - F1.50 SG	2.2	15.7	95.5	3.3	6.7	28.3	6.1	94.4
S1.50 - F1.55 SG	1.2	17.2	96.7	3.5	4.5	34.5	-	96.1
S1.55 - F1.60 SG	0.4	18.3	97.1	3.6	3.3	40.8	-	96.9
S1.60 SG	2.9	43.9	100.0	4.7	2.9	43.9	-	98.6

SYDNEY

27th October 1971

STRATIGRAPHIC LOG
SUKUNKA D.D.II. - C8

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth - Base of Stratum (ft)</i>
	No core to 22.0 ft.		
	MUDSTONE, dark grey, fault gouge at 218'.	MOOSEBAR FM.	277.0
	SANDSTONE, dark grey, medium grained, glauconitic.	GETHING FM.	279.0
	SANDSTONE, grey medium to coarse grained, pebbles at base.		282.0
	<u>COAL.</u>	BIRD SEAM	288.0
	MUDSTONE, dark grey.		289.0
	SANDSTONE, grey, medium grained becoming finer to base, mottled (worm casts) at 294', mudstone bands at 307' and 310', granules at 309'.		341.0
	SILTSTONE and MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, worm casts.		358.0
	SANDSTONE, grey, medium grained, quartz-lithic, mudstone band at 363'.		367.0
	LAMINITE, siltstone and mudstone grey, mudstone band at base.		371.0

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
	SANDSTONE, grey, medium grained, quartz lithic, coaly wisps.		373.0
	LAMINITE, siltstone and mudstone, grey.		374.5
	SANDSTONE, grey, medium grained quartz-lithic, coaly wisps.		388.0
	LAMINITE, siltstone and mudstone, mudstone at base.		389.5
	SANDSTONE, grey, medium grained, quartz-lithic, sandy blebs.		396.0
Fault, established	CLAYSTONE, carbonaceous, broken, slickensides, brecciated sandstone bands to base.		402.0
	SANDSTONE, grey, medium grained, quartz-lithic, becoming very fine at base, quartz veins.		417.0
Fault, probable	SILTSTONE and MUDSTONE INTERBEDS, siltstone and mudstone grey, fractured and slickensided to base.		429.0
	SANDSTONE, grey, medium grained becoming finer towards base. Mottled (worm casts) at 435'.		488.0
	SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, worm casts.		505.0
	SANDSTONE, grey, medium grained, quartz-lithic, granules at top,		

Structure	Description of Strata	Formation or Member	Depth : Base of Stratum (ft)
	mudstone band at 509'.		514.0
	LAMINITE, siltstone grey and mudstone brownish grey, mudstone grey at base.		519.0
	SANDSTONE, grey, medium grained, quartz-lithic, laminite bands at 623' and 535'. Sandstone blebs at 537'.		540.0
	CLAYSTONE, carbonaceous.		552.0
Fault, possible	SILTSTONE, grey, some calcite, brecciated sandstone band and slickensides at 555'.		561.0
	<u>COAL</u> , to 568')	SKEETER SM.	576.5
	SILTSTONE AND MUDSTONE INTERBEDS TO 576'.)		
	<u>COAL</u> , to 576.5'.)		
	SILTSTONE, grey, mudstone at top.		586.0
	SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey, and mudstone dark grey.		590.0
	LAMINITE, siltstone and mudstone.		606.5
	<u>COAL</u> .	CHAMB. SM.	615.0
Fault, possible	SANDSTONE, grey, medium grained, quartz-lithic, brecciated at base.		646.0
	<u>COAL</u> .		649.0

Structure	Description of Strata	Formation or Member	Depth of Base of Stratum (ft)
	SANDSTONE, grey, medium grained, quartz-lithic, mudstone band at 710'.		715.0
	SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey.		722.0
	SANDSTONE, grey, medium to fine grained, interbed band at 725'.		726.0
	SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey, mudstone dark grey, granule band at 737'.		738.0
	SANDSTONE, grey, medium grained, quartz-lithic, granule band at top.		762.0
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata.</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
No core, soil and unconsolidated material.		22.00		
BOULDER OVERBURDEN, fragments of Gates conglomerate and quartzite with pebbles in a clay matrix, mixture of lithologies.	3.42	25.42	1.85	
MUDSTONE, dark grey, core broken.	1.58	27.00	1.56	
SANDSTONE, and mudstone, dark grey, core broken.	0.68	27.68	0.67	
MUDSTONE, dark grey, massive.	58.86	86.54	58.27	
SILTSTONE, dark grey, micaceous, massive.	7.88	94.42	7.80	
MUDSTONE, dark grey, massive.	0.67	95.09	0.66	
CLAY, white, core broken, angular mudstone fragments, pyritic, possible fault gouge.	0.22	95.31	0.22	
MUDSTONE, dark grey, massive.	58.31	153.62	57.71	
MUDSTONE, grey, pyritic nodules.	12.84	166.46	12.71	
MUDSTONE, as above, pyritic nodules absent.	8.44	174.90	8.35	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, light grey, forms a slump structure, tension fractures and calcite at base.	0.32	175.22	0.32	
MUDSTONE, dark grey, massive, micaceous.	1.94	177.16	1.92	
MUDSTONE, as above, tension fractures with calcite and slickensiding, sheared, mudstone with subvertical jointing, possible fault plane.	0.33	177.49	0.33	
MUDSTONE, as above, several planes with calcite, tension joints.	5.96	183.45	5.90	
MUDSTONE, light grey, massive, possible concretion or isoclinal fold core, core pyritic with calcite filled tension fractures, external surfaces slickensided.	5.88	189.33	5.82	
MUDSTONE, dark grey, micaceous, massive, calcite and tension cracks near base.	2.24	191.57	2.22	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey, micaceous, massive.	4.19	195.76	4.14	
CLAY, white, fretted, impure bentonite (?), fault gouge or sedimentary bed.	0.42	196.18	0.42	
MUDSTONE, light grey, tension fractures and calcite, crushed dark grey mudstone at base.	0.17	196.35	0.17	
MUDSTONE, dark grey, micaceous, massive.	4.63	200.98	4.58	
MUDSTONE, light grey, brecciated dark grey mudstone fragments, calcite and pyrite, structure possibly sedimentary.	0.71	201.69	0.70	
MUDSTONE, dark grey, micaceous, massive.	16.11	217.80	15.95	
CLAY, white, sheared, talc-like, slickensiding at base of overlying mudstone, fault gouge or sedimentary member.	0.96	218.76	0.95	
MUDSTONE, dark grey, micaceous, massive, with light grey siltstone concretions.	30.51	249.27	30.20	
CLAY, white, angular dark grey claystone fragments, pyritic at base.	0.12	249.39	0.12	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey, micaceous, massive.	18.79	268.18	18.60	
MUDSTONE, dark grey, micaceous, massive calcite filled fractures and slickensiding towards base.	8.80	276.98	8.71	
CLAY, white, impure bentonitic, probably marker bed, possible fault gouge.	0.25	277.23	0.25	
SANDSTONE, green to dark grey, medium grained, glauconitic, rounded pebble fragments at base, 0.07' pyritic layer below, massive.	4.70	281.93	4.65	) BASE OF MOOSEBAR FORMATION
COAL, mainly dull with minor bright bands, pyritic nodules to 0.04'.	5.92	287.85	3.60	
CLAYSTONE, dark grey, carbonaceous at top, slickensided throughout, core broken.	0.96	288.81	0.96	
SANDSTONE, medium grained, grey at top - becoming light grey, dark coloured fragments in a light matrix, quartz-lithic, rare silty interbeds.	19.11	307.92	19.06	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, as above. Bedding angle sub-horizontal (5° - 10°) coarse phase near top.	33.59	341.51	33.50	
MUDSTONE AND SILTSTONE INTERBEDDED, dark grey micaceous mudstone with light grey siltstone grading in part fine sandstone, Series of narrow overlying graded beds. Bedding upright, load casts at base, sedimentary penetration structures present.	17.62	359.13	17.57	
SANDSTONE, light grey, medium grained, quartz-lithic, massive.	3.00	362.13	2.99	
MUDSTONE, dark grey, silty in centre.	1.06	363.19	1.06	
SANDSTONE, light grey, medium grained, quartz-lithic, massive.	0.86	364.05	0.86	
MUDSTONE AND SILTSTONE INTERBEDS, bedding angle steeper (5° - 15°), dark grey micaceous mudstone with light grey siltstone or fine sandstone interbedded, series of finely graded thin beds.	6.80	370.85	6.78	
MUDSTONE, massive, black.	0.27	371.12	0.27	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, medium grained, light grey, some dark grey silty phases, coaly wisps towards base.	4.64	375.76	4.63	
MUDSTONE AND SILTSTONE INTERBEDS, dark grey micaceous mudstone with light grey siltstone or fine sandstone, interbedded, finely graded beds.	1.65	377.41	1.65	
SANDSTONE, light grey, medium grained, some dark grey silty phases, coaly wisps towards base.	6.32	383.73	6.30	
SANDSTONE, as above, some irregular coaly masses.	4.35	388.08	4.34	
CLAYSTONE, dark grey to carbonaceous, with fine sandy interbeds, two zones of fine calcite veins 0.08' and 0.60' from base.	1.86	389.94	1.86	
SANDSTONE, as above, some fine silty interbeds, shallow angle of dip (5°). Spots - possible worm tracks.	4.75	394.69	4.74	
CLAYSTONE, carbonaceous, some silty interbeds near top, pyritic, core broken.	2.31	397.00	2.30	
<u>COAL</u> , dull.	1.78	398.78	0.17	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SHALE, dark grey, becoming carbonaceous, coaly wisps, silty interbeds and lenses containing transverse calcite veins, sheared with slickensides developed at oblique angle.	2.23	401.01	2.22	
SANDSTONE, grey, fine grained, quartz lithic, coaly wisps and irregular masses, numerous irregular calcite veins, silty interbeds becoming carbonaceous and showing slickensides on oblique fractures. Angle of dip at base increased to about 45°.	2.39	403.40	2.38	
SANDSTONE, as above, steep dip continues for 1.12' where it suddenly lessens back to 5° approximately. Numerous irregular calcite veins in steeply dipping section, becoming less numerous until the bottom 0.25' where calcite veining is strong.	9.83	413.23	9.80	
SANDSTONE, grey, fine grained, calcite veins.	2.92	416.15	2.91	
MUDSTONE AND SILTSTONE INTERBEDS, showing steep dips and disturbed bedding. Oblique fractures, some curved sub-vertical, slickensides calcite veins, structures past depositional - soft sediment oriented on a plane				

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
opposed to predominant calcite planes. The two events appear unrelated.	13.01	429.16	12.97	
CLAYSTONE, dark grey, slickensided, core broken, coaly fragments.	0.33	429.49	0.33	
SANDSTONE, medium grained, light grey, quartz-lithic, some calcite fractures at top and 31° to core axis. Bedding 70° to core axis. The two planes are almost at right angles.	11.91	441.40	11.87	
SANDSTONE, light grey, medium grained, quartz-lithic. Bedding 20° to core axis, slickensiding 24° to core axis, few silty interbeds.	46.87	488.27	46.71	
MUDSTONE AND SILTSTONE INTERBEDS, beds not overturned Bedding disturbed locally by small scale slumping, worm casts present.	18.35	506.62	18.28	
SANDSTONE, medium grained, light grey, quartz-lithic.	2.38	509.00	2.37	
CLAYSTONE, dark grey, massive light grey phase in centre.	1.72	510.72	1.71	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, light grey, medium grained, quartz-lithic, coaly wisps towards the base.	0.58	511.30	0.58	
SANDSTONE, fine grained, light grey, quartz-lithic, some silty phases, bedding disturbed by worm casts.	2.65	513.95	2.64	
SHALE AND SILTSTONE INTERBEDS, dark grey shale and light grey siltstone.	4.93	518.88	4.91	
CLAYSTONE, dark grey.	0.42	519.30	0.42	
SANDSTONE, fine to medium grained, light grey quartz-lithic, some silty interbeds.	2.64	521.94	2.63	
LAMINITE, small slump structure at base, light grey sandstone and dark grey mudstone.	1.32	523.26	1.32	
SANDSTONE, meduim grained with thin dark grey shaly laminations throughout.	11.90	535.16	11.86	
CLAYSTONE, dark grey with light grey fine grained sandstone interbeds.	1.21	536.37	1.21	

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, light grey, medium grained, quartz-lithic, fracture near top filled with calcite, at 22° to core axis. Bedding 60° to core axis. Worm casts.	4.55	540.92	4.53	
CLAYSTONE, dark grey, coaly lenses and thin coal bands.	11.50	552.42	11.46	
SANDSTONE, fine grained, light grey, quartz-lithic with dark grey shale interbeds throughout.	3.06	555.48	3.05	
SILTSTONE, grey, several other lithologies present, angular fragments, bedding highly disturbed, calcite veins throughout.	0.57	556.05	0.57	
SANDSTONE AND SILTSTONE INTERBEDS, grey, bedding 43° to core axis.	5.49	561.54	5.47	
<u>COAL</u> , too sheared and broken to properly determine type, but recognisable fragments all dull or dull with bright bands.	4.03	565.57	3.16)
dull and bright, core broken.	0.18	565.75	0.14)
mainly dull with minor bright bands.	2.11	567.86	1.65	) SKEETER SEAM

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey. Bedding angle 54° to core axis.	7.64	575.50	7.64)
<u>COAL</u> , very broken, mainly dull with minor bright bands, becoming dull and bright towards base.	1.08	576.58	0.57	) SKEETER SEAM
CLAYSTONE, carbonaceous.	0.77	577.35	0.74	
SANDSTONE, grey, fine grained, quart-lithic, siltstone at top, irregular siltstone and mudstone phases and interbeds, slickensides, some calcite.	8.23	585.58	7.87	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, sandstone phases, some calcite along bedding. Bedding angle 32° to core axis.	7.41	592.99	7.09	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, interbedded. Bedding angle 58° to core axis.	13.51	606.50	12.91	
<u>COAL</u> , core badly broken and sheared. Coal type difficult to determine. Fragments mainly dull or dull with minor bright bands.	4.50	611.00	5.44	) CHAMBERLAIN SEAM

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull.	3.99	614.99	3.78	) CHAMBERLAIN SEAM)
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous at top, some coaly wisps and minor calcite veining. Bedding angle 62° to core axis.	10.07	625.06	9.93	
SANDSTONE, grey, fine to medium grained, quartz-lithic, silty interbeds. Minor calcite veining, but zone of irregular calcite concentration 0.70' from base, no apparent displacement. Bedding angle 67° to core axis.	18.93	643.99	18.65	
SANDSTONE, as above, with abundant irregular calcite masses and band of sandstone breccia in coal (0.05') at base.	1.63	645.62	1.61	
<u>COAL</u> , mainly dull with minor bright bands, listric surfaces, sheared.	3.82	649.44	2.80	) SEAM 4)
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous at top, silty interbeds and minor calcite veining. Bedding angle 40° to core axis.	14.19	663.63	13.97	
SANDSTONE, grey, medium to fine grained, quartz-lithic,				

SUKUNKA D.D.H. C-8

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
bedding angle 48° to core axis, fine calcite veins at 58° to core axis and opposed to the bedding.	18.91	682.54	18.62	
SANDSTONE, grey, fine grained, quartz-lithic, minor calcite veins at top. Bedding angle 48° to core axis. Some fractures at 43° to core axis opposed to bedding.	27.32	709.86	26.91	
SANDSTONE AND MUDSTONE INTERBEDS, sandstone grey, fine grained very fine grained, and mudstone dark grey interbedded, sandstone and mudstone phases. Bedding angle 48° to core axis.	10.50	720.36	10.35	
INTERBEDS, as above, some coarse sandy phases and calcite veins with slickensides.	17.91	738.27	17.64	
SANDSTONE, grey, medium grained, quartz-lithic, minor calcite.	23.90	762.17	23.54	
				Base of Hole

657

BORE NUMBER

C-9 & 9A

Grid Reference 43469.2 N 83264.9 E
Exploration Grid Reference E+1000'N/2

Date Commenced C-9 18 Aug 71 Completed 27 Aug 71
 C-9A 27 Aug 71 30 Aug 71

Collar R.L. 4891.7 ft. Standard Datum
Total Depth 1472 ft. Electrically Logged ~~XXX~~/No

Drilled by Connors Drilling Ltd.
For Coalition Mining Limited

Logged by F.H.S.Tebbutt

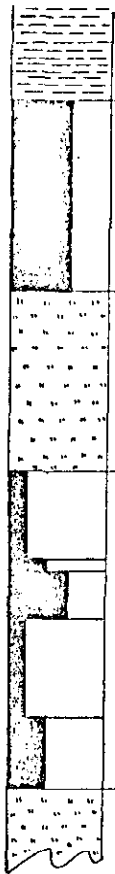
COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter	3484.7	7.00	59%	) Redrilled as C-9A
Chamberlain	3420.34	14.36	46%	
Skeeter	3484.70	8.05	46%	) Coal friable
Chamberlain	3421.38	13.98	54%	

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd JUL 25 1975		

SKEETER SEAM

ASH %
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
1400.00		-	25.2	3½		
		-	87.8	0		
		-	5.9	7		
1407.00						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

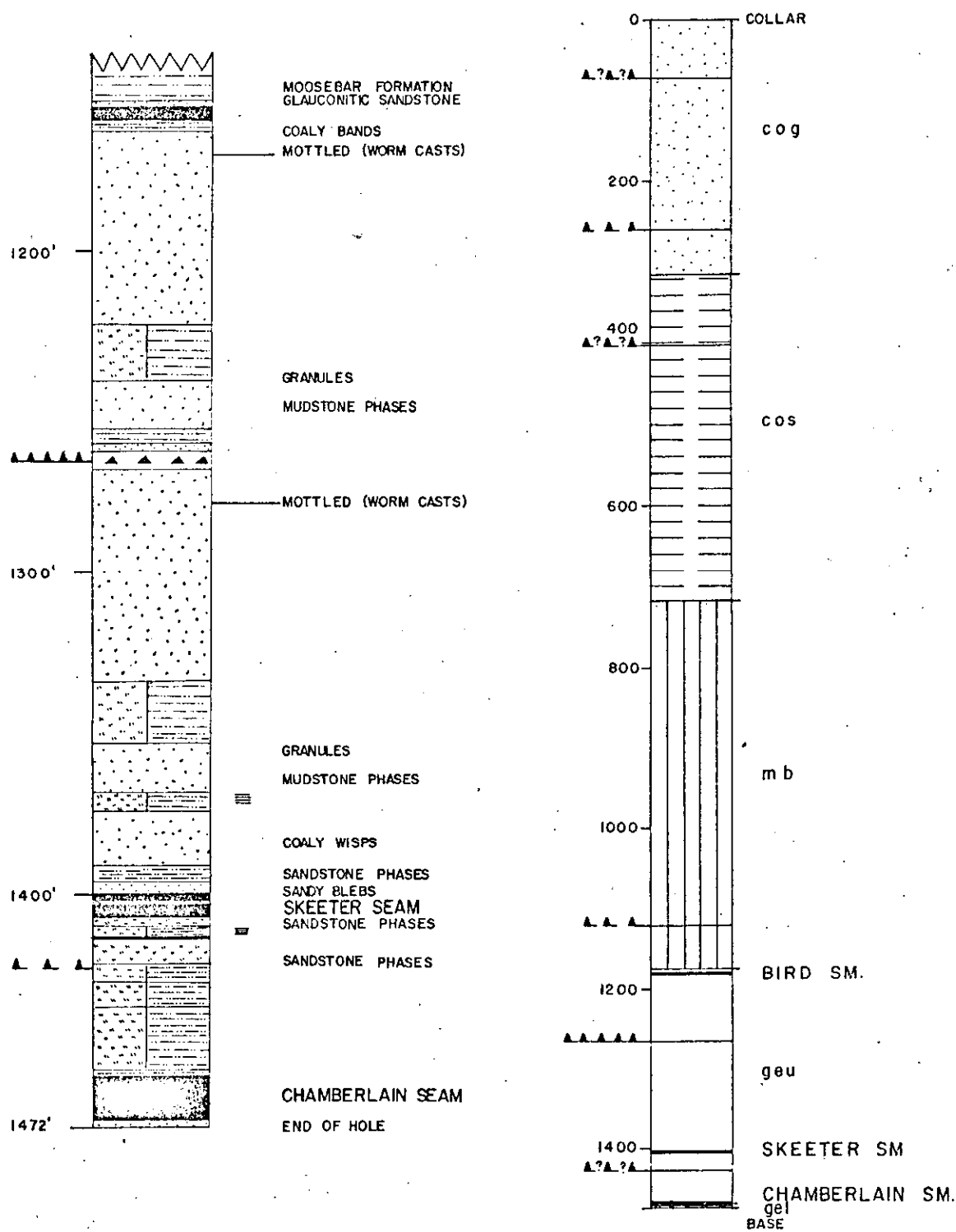
SEAM SECTIONS
DDH C-9

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

PAGE 1 of 1



DETAIL OF GETTING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

STRATIGRAPHIC LOGS

for
COALITION MINING LIMITED

DDH C-9

CHAMBERLAIN SEAM

ASH %
CUMULATIVE
FROM FLOOR

1457.00

14.36

1471.36

WT %	ASH %	C. S. N ^o	INCL. BANDS	EXCL. BANDS
			6.9	
-	6.9	6		

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED
DRAWN BY pm DATE Jan '72

SEAM SECTIONS
DDH C-9

SCALE: 1' to 2'

PAGE 1 of 1

SKEETER SEAM

ASH %
CUMULATIVE
FROM FLOOR

1398.95



1.98

WT%

ASH%

C. S. N^o

INCL.
BANDS

EXCL.
BANDS

-

14.7

6

1.82

-

91.9

0

4.25

-

6.8

6

1407.00

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SEAM SECTIONS
DDH C-9A

DATE Jan '72

SCALE: 1' to 2'

PAGE 1 of 1

CHAMBERLAIN SEAM

1456.34



0.65

WT%

ASH%

C. S. N^o

ASH %
CUMULATIVE
FROM FLOOR

INCL.
BANDS

EXCL.
BANDS

-

48.1

0

6.0

13.33

-

6.0

6

1470.32

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1' to 2'

SEAM SECTIONS

DDH C-9A

PAGE 1 of 1

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLES NO. 50, 51, 52
CORE NO. C9
SKEETER SEAM

REPORT NO. K71-1629

RECEIVED: 12. 10. 1971

REPORTED: 11. 11. 1971



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.

M. Bradley
A.R.A.C.I. Chief Chemist.

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

[Signature]

INTRODUCTION:

Three (3) coal samples designated CORE NO. C9 SKEETER SEAM were received on 12. 10. 1971 from Clifford McElroy & Associates.

METHODS:

1. The visibly inferior coal samples No. 50, 51 were hand crushed to $\frac{3}{8}$ ", sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 SG.

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

2. The good quality coal Sample No. 52 was hand crushed to $\frac{3}{8}$ ", sized at 30 mesh BSS and the +30 mesh BSS fractions 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 fractions were weighed, prepared and analysed for Ash and Crucible Swelling Number and the composite raw coal sample reconstituted and the true S.G. of the sample determined.

The cumulative floats 1.60 specific gravity was prepared for Sample No. 52 and the analysis are also given in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS:

FIGURE 1 : gives the graphic log of the core

TABLES 1-3 : give the sizing, washability and analytical data for each coal sample after hand crushing to $\frac{3}{8}$ "

TABLE 1WASHABILITY DATA FOR SAMPLE NO. 50 (after hand crushing to $\frac{3}{8}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.60 SG	64	61.0	12.8	5	61.0	12.8	5
S1.60 SG	41	39.0	44.5	1	100.0	25.2	3½
-30 Mesh	6	5.4	10.2	9			

Total Weight of Sample = 111 grams
True Specific Gravity = 1.481

TABLE 2

WASHABILITY DATA FOR SAMPLE NO. 51 (after hand crushing to $-\frac{3}{4}$ "!)

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60 SG	19	1.0	15.7	2	1.0	15.7	2
S1.60 SG	1931	99.0	88.7	0	100.0	87.8	0
-30 Mesh	71	3.5	72.2	$\frac{1}{2}$			
Total Weight of Sample = 2021 grams							
True Specific Gravity = 2.424							

TABLE 3

WASHABILITY DATA FOR SAMPLE NO. 52 (after hand crushing to $-\frac{3}{4}$ "!)

F1.30 SG	404	30.2	2.3	9	30.2	2.3	9
S1.30 - F1.35 SG	627	46.8	4.3	7	77.0	3.5	8
S1.35 - F1.40 SG	132	9.9	8.7	6	86.9	4.1	7 $\frac{1}{2}$
S1.40 - F1.45 SG	68	5.1	11.4	1	92.0	4.5	7
S1.45 - F1.50 SG	62	4.6	17.5	1	96.6	5.1	7
S1.50 - F1.55 SG	24	1.8	18.5	1	98.4	5.4	7
S1.55 - F1.60 SG	11	0.8	25.0	1	99.2	5.5	7
S1.60 SG	11	0.8	45.6	$\frac{1}{2}$	100.0	5.9	7
-30 Mesh	108	7.5	6.7	9			
Total Weight of Sample = 1447 grams							
True Specific Gravity = 1.312							

ANALYSIS OF COMPOSITE FLOATS 1.60 SG FRACTION OF
SAMPLE NO. 52

Yield %	99.2
Air Dried Moisture %	1.0
Ash %	5.6
Volatile Matter %	22.3
Fixed Carbon %	71.1
Total Sulphur %	0.35
C.S.NO.	7
Calorific Value	14870 BTU/LB

SYDNEY

22nd November 1971

K71-1627
COALITION MINING
SUKUNISA C9
(SHEETER SEAM)

	SOLE	THICK	ASH%	CSW%
6'	50	1.95	25.2	3/4
4'	51	1.81	87.2	0
2'	52	3.25	5.9	7

Telegrams and Cables:

"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLE NO. 53
CORE NO. C9
CHAMBERLAIN SEAM

REPORT NO. K71-1629A

RECEIVED: 12. 10. 1971

REPORTED: 11. 11. 1971



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M. Bradley
A.R.A.C.I. Chief Chemist.

For

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

[Signature]

INTRODUCTION:

One (1) coal sample designated CORE NO. C9 CHAMBERLAIN SEAM was received on 12. 10. 1971 from Clifford McElroy & Associates.

METHOD:

The good quality coal sample No. 53 was hand crushed to $\frac{3}{8}$ " , 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 and 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 S.G. of the sample determined.

A cumulative floats 1.60 specific gravity fraction was prepared for Sample No. 53 and the analysis are given also in this report.

COMMENT:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for the sample after hand crushing to $\frac{3}{8}$ ".

TABLE 1WASHABILITY DATA FOR SAMPLE NO. 53 (after hand crushing to $\frac{3}{8}$ "

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT.%	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.30 SG	1455	37.2	1.9	9	37.2	1.9	9
S1.30 - F1.35 SG	1368	35.0	4.6	7½	72.2	3.2	8½
S1.35 - F1.40 SG	569	14.5	8.5	1	86.7	4.1	7
S1.40 - F1.45 SG	135	3.5	13.1	1	90.2	4.4	7
S1.45 - F1.50 SG	77	2.0	15.5	1	92.2	4.7	7
S1.50 - F1.55 SG	40	1.0	16.7	1	93.2	4.8	6½
S1.55 - F1.60 SG	37	0.9	18.6	1	94.1	4.9	6½
S1.60 SG	231	5.9	38.6	0	100.0	6.9	6
-30 Mesh	454	10.4	5.3	9			

Total Weight of Sample = 4366 grams

True Specific Gravity = 1.361

ANALYSIS OF CUMULATIVE FLOATS 1.60 SG FRACTION OF SAMPLE NO. 53

Yield %	94.1
Air Dried Moisture %	1.0
Ash %	5.0
Volatile Matter %	22.3
Fixed Carbon %	71.7
Total Sulphur %	0.42
C.S.NO.	7
Calorific Value	14840 BTU/LB

K71-1629A

COALITION MINING

BUKUNKA 69

(CHAMBERLAIN BEAM)

DEPTH	SPL. THICK	ASH%	CSN%
14'			
12'			
10'			
8'	53	14.3%	6.9
6'			
4'			
2'			
0'			

Telegrams and Cables:

"Visor", Sydney

Telephone: 241 1105

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Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLES NO. 56, 57, 58
CORE NO. C9A
SKEETER SEAM

REPORT NO. K71-1630

RECEIVED: 12. 10. 1971

REPORTED: 11. 11. 1971



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M. Bradley
A.R.A.C.I. Chief Chemist.

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

L. W. ...

INTRODUCTION:

Three (3) coal samples designated CORE NO. C9A SKEETER SEAM were received on 12. 10. 1971 from Clifford McElroy & Associates.

METHODS:

1. The visibly inferior coal samples No. 56, 57 were hand crushed to $\frac{3}{8}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 S.G. The float and sink fractions and raw -30 mesh coal fractions were weighed, prepared and analysed for Ash and Crucible Swelling Number and the composite raw coal sample reconstituted and the true S.G. of the sample determined.
2. The good quality coal sample No. 58 was hand crushed to $\frac{3}{8}$ " , 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 S.G. of the sample determined.

The cumulative floats 1.60 specific gravity was prepared for Sample No. 58 and the analysis are also given in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses exclude further calculations and the construction of washability tables and graphs.

RESULTS:

FIGURE 1 : gives the graphic log of the core

TABLES 1-3 : give the sizing, washability and analytical data for each coal sample after hand crushing to $\frac{3}{8}$ "

TABLE 1

WASHABILITY DATA FOR SAMPLE NO. 56 (after hand crushing to $\frac{3}{8}$ ")

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT.%	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60 SG	193	94.6	13.9	6½	94.6	13.9	6½
S1.60 SG	11	5.4	28.1	½	100.0	14.7	6
-30 Mesh	4	1.9	10.6	7			
Total Weight of Sample = 208 grams							
True Specific Gravity = 1.520							

TABLE 2

WASHABILITY DATA FOR SAMPLE NO. 57 (after hand crushing to - $\frac{3}{4}$ "

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT.%	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60 SG	16	0.8	18.0	3½	0.8	18.0	3½
S1.60 SG	2009	99.2	92.5	0	100.0	91.9	0
-30 Mesh	61	2.9	74.7	½			

Total Weight of Sample = 2086 grams

True Specific Gravity = 2.469

TABLE 3

WASHABILITY DATA FOR SAMPLE NO. 58 (after hand crushing to - $\frac{3}{4}$ "

F1.30 SG	278	26.7	2.5	9	26.7	2.5	9
S1.30 - F1.35 SG	457	43.9	4.6	7	70.6	3.8	8
S1.35 - F1.40 SG	135	13.0	9.0	4	83.6	4.6	7
S1.40 - F1.45 SG	108	10.4	14.4	1½	94.0	5.7	6½
S1.45 - F1.50 SG	48	4.6	21.8	1½	98.6	6.4	6½
S1.50 - F1.55 SG	5	0.5	33.4	1	99.1	6.6	6½
S1.55 - F1.60 SG	4	0.4	35.6	1	99.5	6.7	6½
S1.60 SG	5	0.5	36.3	1	100.0	6.8	6
-30 Mesh	63	5.7	8.2	8			

Total Weight of Sample = 1103 grams

True Specific Gravity = 1.352

ANALYSIS OF CUMULATIVE FLOATS 1.60 SG FRACTION OF
SAMPLE NO. 58

Yield %	99.5
Air Dried Moisture %	1.0
Ash %	6.8
Volatile Matter %	21.2
Fixed Carbon %	71.0
Total Sulphur %	0.46
C.S.NO.	7
Calorific Value	14310 BTU/LB

SYDNEY

25th November 1971

KTI-1630
 COALITION MINING
 SUKUNKA GQA
 (SKEETER GRAM)

	5154	5155	5156	5157
6	55	132	140	4
11	57	132	219	2
14	58	132	157	6
20				
0				

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

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SYDNEY, 2000

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APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLES NO. 54, 55
CORE NO. C9A
CHAMBERLAIN SEAM

REPORT NO. K71-1630/A

RECEIVED: 12. 10. 1971

REPORTED: 11. 11. 1971



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terms of registration.

A. Bradley
A.R.A.C.I. Chief Chemist.

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

[Signature]

INTRODUCTION:

Two (2) coal plies designated CORE NO. C9A CHAMBERLAIN SEAM were received on 12. 10. 1971 from Clifford McElroy & Associates.

METHODS:

1. The visibly inferior coal sample No. 54 was hand crushed to $-\frac{3}{8}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 specific gravity. The float and sink fractions, and 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.
2. The good quality coal sample No. 55 was hand crushed to $-\frac{3}{8}$ " , 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 and 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 S.G. of the sample determined.

A cumulative floats 1.60 specific gravity fraction was prepared for sample No. 55 and the analysis is also given in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS:

FIGURE 1 : gives the graphic log of the core

TABLES 1-2 : give the sizing, washability and analytical data for each coal sample after hand crushing to $\frac{3}{8}$ "

TABLE 1WASHABILITY DATA FOR SAMPLE NO. 54 (after hand crushing to $-\frac{3}{8}$ ")

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.60 SG	3	1.1	34.0	1	1.1	34.0	1
S1.60 SG	278	98.9	48.3	0	100.0	48.1	0
-30 Mesh	7	2.4	43.6	1			
Total Weight of Sample = 288 grams							
True Specific Gravity = 1.794							

TABLE 2

WASHABILITY DATA FOR SAMPLE NO. 55 (after hand crushing to - $\frac{3}{4}$ "

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
F1.30 SG	1297	31.5	2.2	9	31.5	2.2	9
S1.30 - F1.35 SG	1520	37.0	3.9	8	68.5	3.1	8½
S1.35 - F1.40 SG	736	17.9	8.4	1½	86.4	4.2	7
S1.40 - F1.45 SG	260	6.3	13.9	1	92.7	4.9	6½
S1.45 - F1.50 SG	121	2.9	17.9	1	95.6	5.3	6½
S1.50 - F1.55 SG	90	2.2	19.6	1	97.8	5.6	6½
S1.55 - F1.60 SG	34	0.8	20.4	1	98.6	5.7	6½
S1.60 SG	55	1.4	29.2	½	100.0	6.0	6
-30 Mesh	438	9.6	5.8	9			

Total Weight of Sample = 4551 grams

True Specific Gravity = 1.304

ANALYSIS OF CUMULATIVE FLOATS 1.60 SG FRACTION
OF SAMPLE NO. 55

Yield %	98.6
Air Dried Moisture %	1.0
Ash %	5.6
Volatile Matter %	21.9
Fixed Carbon %	71.5
Total Sulphur %	0.38
C.S.NO.	7
Calorific Value	14720 BTU/LB

SYDNEY

25th November 1971

K71-1630A
 COALITION MINING
 BUKUNKA CQA
 (CHAMBERLAIN SEAM)

	SPLE	THICK ^s	ASH% ^s	CON ^s
14'	54	0.65	49.1	0
12'				
10'				
8'	55	13.33	6.0	6
6'				
4'				
2'				
0				

STRATIGRAPHIC LOG
SUKUNKA D.D.H. - C9

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft.)
	No core to 12.0 ft.		
Dip 0° 60°	SANDSTONE.	GATES MB.	65.0
	SANDSTONE AND MUDSTONE, brecciated.		72.0
	CLAYSTONE, sandy phases, coaly bands.		115.0
30°	CONGLOMERATE.		154.0
Dip = 30° at 180'	SANDSTONE.		201.0
30° at 290'	SANDSTONES, mudstone phases.		
35° at 300'	Brecciated zone 272-286' and		
20° at 400'	257-267'.		318.0
5° at 450'	SILTSTONE, mudstone and sandstone	SUKUNKA	
	interbedded, worm casts. Fault gouge at 402' (1').	MB.	718.0
Fault, probable	MUDSTONE, ash beds at base. Breccia zone from 1415-1426'.	MOOSEBAR FM.	1154.0
Dip 0°-5°	SANDSTONE, glauconitic.	GETHING FM.	1156.0
30° at 1150'			
20° at 1260'	<u>COAL.</u>	BIRD SEAM	1159.0
	MUDSTONE, coaly bands at base.		1163.0
	SANDSTONE, mottled (worm casts at 1170').		1223.0

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)	
Dip = 30° at 1300'	SILTSTONE AND MUDSTONE INTERBEDDED, granules at base.		1239.0	
	SANDSTONE, mudstone phases.		1255.0	
	MUDSTONE.		1261.0	
	SANDSTONE.		1262.0	
	Fault, established	SANDSTONE AND SILTSTONE, breccia.		1268.0
		SANDSTONE, mottled (worm casts at 1278').		1334.0
		SILTSTONE AND MUDSTONE INTERBEDDED, granules at base.		1353.0
		SANDSTONE, mudstone phases.		1369.0
		LAMINITE, siltstone and mudstone, mudstone layer at base.		1374.0
		SANDSTONE, coaly wisps.		1392.0
Dip = 30° at 1400'	MUDSTONE, sandy phases.		1396.0	
	SANDSTONE, mudstone at base, sandy blebs at 1396.5'.		1400.0	
	<u>COAL.</u>)		1402.0	
	CLAYSTONE, carbonaceous.)	SKEETER SM.	1403.0	
	<u>COAL.</u>)		1407.0	
	SILTSTONE, sandy phases.		1409.0	

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
Fault, possible Dip = 30°	LAMINITE, siltstone and mudstone.		1413.0
	<u>COAL.</u>		1413.5
	SILTSTONE, sandy phases.		1422.0
	SILTSTONE AND MUDSTONE INTERBEDDED, some breccia zones.		1427.0
	SILTSTONE AND MUDSTONE INTERBEDDED.		1435.0
	LAMINITE, siltstone and mudstone, mudstone at base.		1457.0
	<u>COAL.</u>	CHAMB. SM.	1471.0
	SANDSTONE.		1472.0
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-9

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		1340.68		
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey,interbedded; sandy interbeds and one sandy phase (1.0') 2.7' from top, worm casts, some dislocation in bottom 0.25' and fine calcite veining.	11.95	1352.63	11.86	
SANDSTONE, grey, medium grained becoming finer towards base, quartz-lithic, mudstone blebs near top, calcite veins more abundant in top 3.5',dipping at various angles, zone of brecciation (0.5') 0.7' from top. Bedding angle 66° to core axis, slickensided fractures at 65° to core axis in a plane at approximately 90° to dip direction.	6.64	1359.27	6.59	
SANDSTONE, grey, fine grained, quartz-lithic, calcite partings at base.	1.57	1360.84	1.56	
MUDSTONE, dark grey.	1.22	1362.06	1.21	

SUKUNKA D.D.H. C-9

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, fine grained, quartz-lithic, silty and some muddy interbeds.	6.23	1368.29	6.18	
LAMINITE, siltstone grey and mudstone dark grey, interbedded.	5.19	1373.48	5.15	
CLAYSTONE, dark grey, carbonaceous.	0.74	1374.22	0.73	
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and thin carbonaceous phases.	3.91	1378.13	3.88	
SANDSTONE, as above, sandy blebs in bottom 0.5'.	19.04	1397.17	18.89	
SANDSTONE, as above, but with sandy blebs in top 0.7'.	1.80	1398.97	1.79	
CLAYSTONE, dark grey, carbonaceous.	1.03	1400.00	1.02	
<u>COAL</u> , dull and bright, 1.33' core loss noted by driller.	1.95	1401.95	0.33)
)
SILTSTONE, darkish grey, carbonaceous at top and bottom.	1.80	1403.75	1.80)
)
<u>COAL</u> , dull.	0.89	1404.64	0.75)
)
				SKEETER SEAM

SUKUNKA D.D.H. C-9

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , mainly dull with minor bright bands.	0.13	1404.77	0.11)
dull and bright.	0.47	1405.24	0.40)
dull.	1.03	1406.27	0.87	) SKEETER SEAM
core broken, probably mainly dull with minor bright bands.	0.73	1407.00	0.62)
SILTSTONE, dark grey, becoming carbonaceous, a few mudstone laminae towards base.	5.18	1412.18	5.18	
<u>COAL</u> , stony, a few bright bands.	1.26	1413.44	0.30	
CLAYSTONE, carbonaceous.	0.38	1413.82	0.38	
SILTSTONE, grey, sandy phases.	6.79	1420.61	6.76	

SUKUNKA D.D.H. C-9

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey, some fine calcite veining, and one calcite vein 0.5' from top, containing brecciated mudstone fragments, no apparent displacement, slickensides.	3.67	1424.28	3.66	
SILTSTONE, grey, mudstone phases and sandy interbeds, few calcite veins and minor fillings of tension cracks, slickensides.	8.64	1432.92	8.61	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, interbedded. Bedding sub - horizontal.	2.13	1435.05	2.12	
SILTSTONE AND MUDSTONE INTERBEDS, as above, some slickensides, core broken 4.3' from top for 1.2'.	12.33	1447.38	12.28	
CLAYSTONE, dark grey.	1.53	1448.91	1.52	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey. Bedding angle 70° to core axis.	4.60	1453.51	4.58	

SUKUNKA D.D.H. C-9

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, dark grey with silty interbeds in top 2.4'.	3.49	1457.00	3.48	
<u>COAL</u> , core fragmented, fragments include some coal stony and coal mainly dull or dull with minor bright bands.	2.10	1459.10	0.42)
mainly dull with minor bright bands.	2.10	1461.20	0.42	) CHAMBERLAI SEAM
core sheared and coal type difficult to determine. Most fragments dull or dull with bright bands.	10.16	1471.36	7.92)
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous.	0.64	1472.00	0.64	
REDRILL D.D.H. C-9A REQUIRED.				

SUKUNKA D.D.H. C-9A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Re-drill of D.D.H. C-9. Start coring from 1371'.		1371.00		
MUDSTONE, dark grey.	2.49	1373.49	0.90	
SANDSTONE, grey, medium grained, quartz-lithic, coaly and silty wisps, fine carbonaceous phases and pennybands of coal.	18.02	1391.51	18.02	
SANDSTONE, as above, with carbonaceous claystone phases at 0.7' from top (0.55'), 3.5' from top (0.5') and at base (0.85'), sand blebs from 4.2' to 5.5' from top.	7.44	1398.95	7.44	
<u>COAL</u> , mainly dull with minor bright bands.	1.98	1400.93	0.40)
)
SILTSTONE, grey, carbonaceous and with coaly masses and wisps in top 0.55', pennyband coal 0.09' from base.	1.82	1402.75	1.82)
)
<u>COAL</u> , mainly dull with minor bright bands.	0.73	1403.48	0.48)
)
dull.	0.46	1403.94	0.30)
)
mainly dull with minor bright bands.	0.08	1404.02	0.05)
)

SKEETER
SEAM

SUKUNKA D.D.H. C-9A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull.	2.55	1406.57	1.67)
dull and bright.	0.43	1407.00	0.28)
SILTSTONE, grey, mudstone interbeds.	3.43	1410.43	3.22)
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, interbedded. Bedding angle 56° to core axis.	1.85	1412.28	1.74)
CLAYSTONE, carbonaceous, coaly wisps.	0.40	1412.68	0.38)
SILTSTONE, grey, sandy interbeds and phases, some coaly wisps, irregular calcite veining mainly below 1.1', brecciated zone 6.6' from top, slickensides. Bedding angle at base 75° to core axis.	17.05	1429.73	16.12	
SILTSTONE, grey, sandy interbeds near top, mudstone interbeds throughout.	2.40	1432.13	2.39	
MUDSTONE, dark grey.	1.28	1433.41	1.27	

SKEETER
SEAM

SUKUNKA D.D.H. C-9A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SILTSTONE, grey, mudstone interbeds.	7.63	1441.04	7.59	
MUDSTONE, dark grey, calcite and breccia zone (0.14') 0.75' from top.	1.20	1442.24	1.19	
MUDSTONE, dark grey, numerous silty interbeds.	2.83	1445.07	2.82	
MUDSTONE, dark grey.	0.68	1445.75	0.68	
MUDSTONE, dark grey, silty interbeds.	2.91	1448.66	2.90	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey, becoming laminite towards base.	7.16	1455.82	7.12	
CLAYSTONE, black.	0.52	1456.34	0.52	
<u>COAL</u> , stony, sandy lenses at top, broken, listric surfaces.	0.65	1456.99	0.49)
mainly dull with minor bright bands.	0.69	1457.68	0.52)
dull and bright.	0.23	1457.91	0.17)
				) CHAMBERLAIN SEAM

SUKUNKA D.D.H. C-9A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , mainly dull with minor bright bands.	0.27	1458.18	0.20)
dull and bright.	0.60	1458.78	0.45)
mainly dull with minor bright bands.	1.84	1460.62	0.53)
dull and bright.	0.29	1460.91	0.22)
mainly dull with minor bright bands.	0.69	1461.60	0.52)
dull and bright.	0.15	1461.75	0.11)
mainly dull with minor bright bands.	0.60	1462.35	0.45	) CHAMBERLAI SEAM
Determination of the following units is hindered by shearing.)
mainly dull with minor bright bands.	3.76	1466.11	2.82)
dull and bright.	0.73	1466.84	0.55)
mainly dull with minor bright bands.	1.87	1468.71	1.40)

SUKUNKA D.D.H. C-9A

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull and bright.	0.37	1469.08	0.28)	
mainly dull with minor bright bands.	0.60	1469.68	0.45)	CHAMBERLAIN
dull and bright.	0.64	1470.32	0.48)	SEAM
SANDSTONE, grey, medium grained, quartz-lithic, becoming fine grained towards base, carbonaceous zone (0.05') 5.50' from top, mudstone band (0.03') 1.9' above base. At 3' from top some fractures (some calcite filled) at 15° to core axis, but no slickensides. Bedding angle 70° to core axis.	15.60	1485.92	15.63	
SANDSTONE, grey, fine grained, quartz-lithic.	18.59	1504.51	18.62	
SANDSTONE, as above, bottom 10' with calcite veins at various angles, but most commonly 55° to core axis, mudstone band (0.09') 7.8' from base.	18.39	1522.90	18.41	
				<u>Base of Hole</u>

657

BORE NUMBER

C-12

Grid Reference 41570.1 N 83755.0 E
Exploration Grid Reference F+1000'N/1+1500'E

Date Commenced 25 Aug 71 Completed 30 Aug 71

Collar R.L. 4441.1 ft. Standard Datum
Total Depth 975 ft. Electrically Logged ~~XXX~~/No

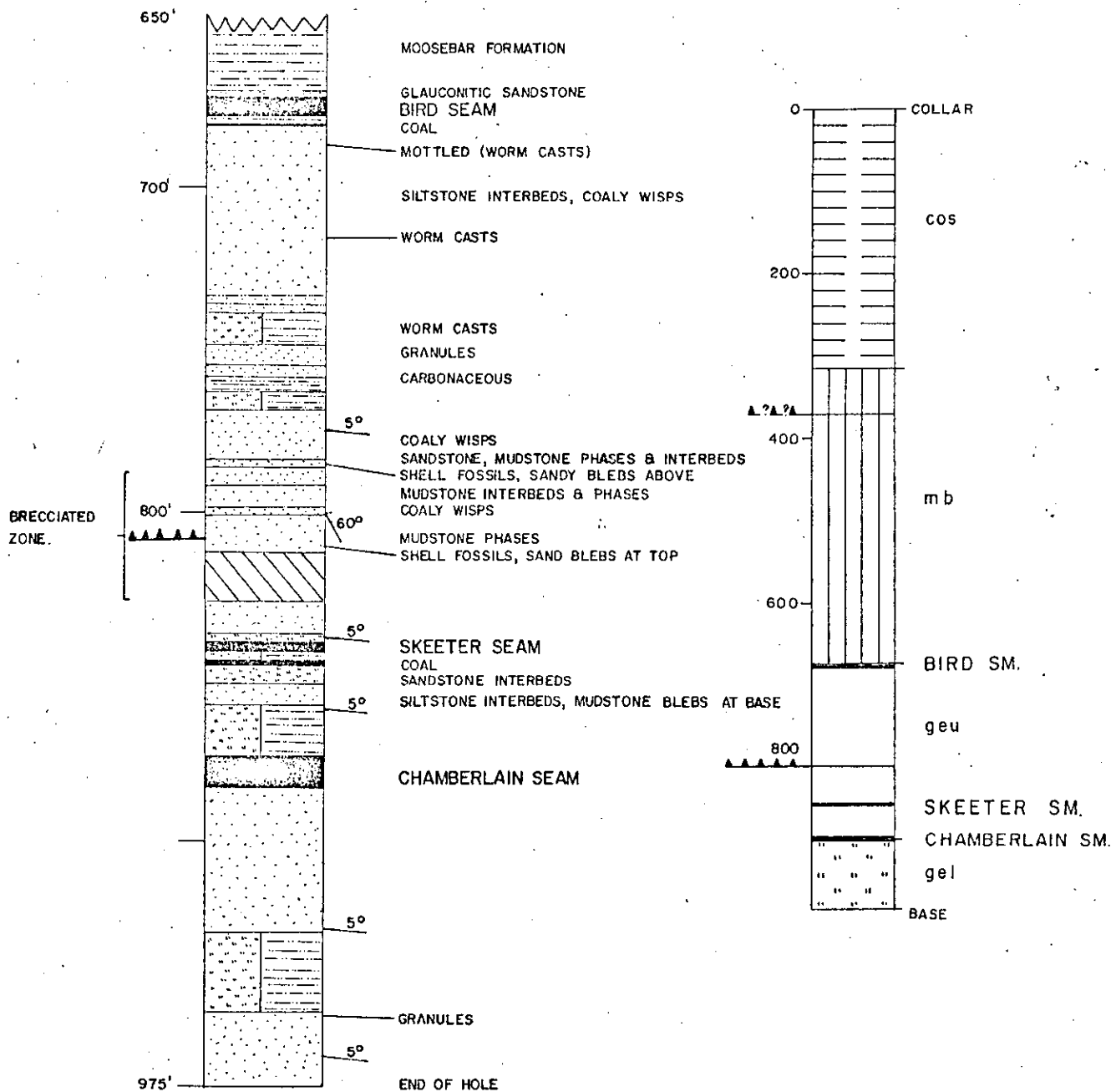
Drilled by Connors Drilling Ltd.
For Coalition Mining Limited

Logged by F.H.S. Tebbutt & G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter	3601.75	3.94	77%	
Chamberlain	3561.48	10.04	87%	

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd JUL 25 1975		



DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

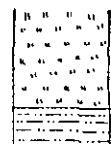


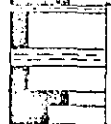
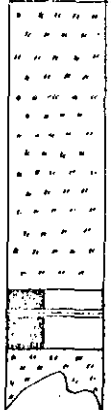
SCALE: 1" to 200'

Prepared by :
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-12

SKEETER SEAM

ASH %
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
838.41					13.2	
		2.72	67.5	6		
841.13					27.5	
		1.22	32.5	5½		
842.35						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-12

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1' to 2'

PAGE 1 of 1

CHAMBERLAIN SEAM

ASH
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
872.58						
873.20	0.62	-	43.4	0	9.4	
	9.42	100.0	9.4 44	7		
882.62						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.

SEAM SECTIONS

for

DDH C-12

COALITION MINING LIMITED

DRAWN BY pm

DATE Jan '72

SCALE: 1" to 2'

PAGE 1 of 1

Telegrams and Cables:
"Visor", Sydney

CARGO SUPERINTENDENTS

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Telephone: 241 1105

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

Certification

This is to Certify

APPLICANT:

COALITION MINING

SUBJECT:

SUKUNKA SAMPLE NO. 43, 44
CORE NO. C12
SKEETER SEAM

REPORT NO.

K71-1633

DATE RECEIVED:

12.10.71

DATE REPORTED:

23.11.71



N.S.W. Reg. No. 554
QLD. Reg. No. 637

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

For

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

Chief Chemist.

INTRODUCTION:

Two (2) coal samples designated Hole No. C12 SKEETER SEAM were received on 12.10.71 from CLIFFORD McELROY & ASSOCIATES.

METHOD:

1. The good quality coal samples nos. 43 and 44 were hand crushed to $-\frac{3}{4}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.30 - 1.60 specific gravity.

The float and sink fraction, raw -30 mesh coal fractions were weighed, prepared and analysed for ash and crucible swelling number, and the composite raw coal sample reconstituted and the true S.G. of the sample determined.

A cumulative floats 1.60 S.G. fraction was prepared for the Full Seam and the analysis are also given in this report.

COMMENTS:

Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude the construction of washability tables and graphs.

RESULTS:

FIGURE 1: gives the graphic log of the core

TABLES 1 - 2: give the sizing, washability and analytical data for each sample after hand crushing to $-\frac{3}{4}$ ".

TABLE 3: gives the calculated washability data for samples 43 and 44.

SHEET THREE ATTACHED:

TABLE 1: WASHABILITY DATA FOR SAMPLE NO. 43 (after hand crushing to $-\frac{3}{4}$ ")

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.30	355	27.3	2.6	9	27.3	2.6	9
S1.30 - F1.35	722	55.5	4.5	6 $\frac{1}{2}$	82.8	3.9	7 $\frac{1}{2}$
S1.35 - F1.40	105	8.1	9.7	1	90.9	4.4	7
S1.40 - F1.45	73	5.6	12.8	1	96.5	4.9	6 $\frac{1}{2}$
S1.45 - F1.50	8	0.6	16.2	1	97.1	5.0	6 $\frac{1}{2}$
S1.50 - F1.55	3	0.2	19.6	1	97.3	5.0	6 $\frac{1}{2}$
S1.55 - F1.60	2	0.2	26.1	1	97.5	5.0	6 $\frac{1}{2}$
S1.60	34	2.5	56.0	0	100.0	6.3	6
-30 Mesh RC	79	5.7	5.8	8			

TOTAL WEIGHT OF SAMPLE = 1,381 gm

TRUE S.G. = 1.326

TABLE 2: WASHABILITY DATA FOR SAMPLE NO. 44 (after hand crushing to $-\frac{3}{4}$ ")

F1.30	212	35.6	3.0	9	35.6	3.0	9
S1.30 - F1.35	92	15.4	6.7	9	51.0	4.1	9
S1.35 - F1.40	30	5.0	11.3	8	56.0	4.8	9
S1.40 - F1.45	15	2.5	16.9	8	58.5	5.3	9
S1.45 - F1.50	9	1.5	23.0	7 $\frac{1}{2}$	60.0	5.7	9
S1.50 - F1.55	13	2.2	24.5	6 $\frac{1}{2}$	62.2	6.4	9
S1.55 - F1.60	17	2.9	30.4	1	65.1	7.5	8 $\frac{1}{2}$
S1.60	208	34.9	64.9	0	100.0	27.5	5 $\frac{1}{2}$
-30 Mesh RC	69	10.4	20.6	9			

TOTAL WEIGHT OF SAMPLE = 665 gms

TRUE S.G. = 1.565

TABLE 3: CALCULATED WASHABILITY DATA FOR SAMPLES 43 + 44 (3.94)

F1.30	30.0	2.8	9	30.0	2.8	9
S1.30 - F1.35	42.5	4.8	8	72.5	4.0	8 $\frac{1}{2}$
S1.35 - F1.40	7.1	10.1	4 $\frac{1}{2}$	79.6	4.5	8
S1.40 - F1.45	4.6	13.5	4 $\frac{1}{2}$	84.2	5.0	8
S1.45 - F1.50	0.9	19.7	4	85.1	5.2	8
S1.50 - F1.55	0.9	22.4	3 $\frac{1}{2}$	86.0	5.3	8
S1.55 - F1.60	1.1	29.3	1	87.1	5.6	7 $\frac{1}{2}$
S1.60	12.9	64.4	0	100.0	13.2	6 $\frac{1}{2}$

TOTAL WEIGHT OF SAMPLE = 2,046 gms

ANALYSIS OF CUMULATIVE FLOATS 1.60 S.G. FRACTION OF SAMPLES 43 + 44

YIELD %	ADM%	ASH%	V.M.%	F.C.%	S. %	C.S.NO.	CV(BTU/lb)
87.1	1.0	5.7	22.4	70.9	0.54	7 $\frac{1}{2}$	14,210

SYDNEY

23rd November, 1971.

K71-1633
COALITION MINING
SUKUNKA G12
(SUKUTER SUMA)

44

2

0

SPLK	THICK	WT%	ASH%	CSNO	ASPH. SPLK
					132
43	272	67.5	63	6	
					275
44	122	32.5	27.5	5 1/2	

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

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

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING

SUBJECT: SUKUNKA 45 and 46
CORE NO. C12
CHAMBERLAIN SEAM

REPORT NO. K71-1566

DATE RECEIVED: 1. 10. 71

DATE REPORTED: 25. 10. 71



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.

M. Bradley
A.R.A.C.I. Chief Chemist.

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

L. W. ...

INTRODUCTION:

One (1) coal ply and one (1) non coal ply designated CORE C12 CHAMBERLAIN SEAM were received on 1.10.71 from CLIFFORD MCELROY & ASSOCIATES PTY. LTD.

METHOD:

The coal ply was hand crushed to $\frac{3}{4}$ " top size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids from 1.30 to 1.60 S.G. in 0.05 steps.

The float and sink fractions, the raw -30 mesh coal fraction and the non coal ply were weighed, prepared and analysed as detailed in this report.

The weights were adjusted where necessary to compensate for core loss.

RESULTS:

FIGURE 1: gives the graphic log of the core.

TABLE 1: gives the sizing, washability and analytical data for each ply after hand crushing to $\frac{3}{4}$ ".

TABLE 2: gives the washability data necessary for the construction of the washability curves.

The washability curves and the analysis of the Floats 1.60 SG fraction of Ply 46 are included in this report.

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
RAW COAL SKR-45, 0.62'	477	100.0	43.4	0	100.0	43.4	0

TABLE 1: WASHABILITY DATA FOR SKR - 46, 9.42' (after hand crushing to $\frac{3}{4}$ ")

F1.30	2516	53.6	2.0	9	53.6	2.0	9
S1.30 - F1.35	1632	34.7	4.9	5½	88.3	3.1	7½
S1.35 - F1.40	339	7.2	8.7	1½	95.5	3.6	7
S1.40 - F1.45	93	2.0	11.5	1½	97.5	3.7	7
S1.45 - F1.50	34	0.7	20.2	1	98.2	3.8	7
S1.50 - F1.55	30	0.6	22.8	1	98.8	4.0	7
S1.55 - F1.60	21	0.4	29.6	1	99.2	4.1	7
S1.60	33	0.8	49.0	1½	100.0	4.4	7
-30 Mesh RC	466	9.0	4.2	8			

ANALYSIS OF FLOATS 1.60 S.G.

YIELD %	ADM%	ASH%	V.M.%	F.C.%	S. %	C.S.NO.	CV(BTU/1b)
99.2	0.6	4.2	21.9	73.3	0.28	7½	15,060

TABLE 2: DATA FOR WASHABILITY CURVE - SKR 46

<u>FRACTION</u>	<u>INDIVIDUAL</u>		<u>CUM. FLOATS</u>		<u>CUM. SINKS</u>		<u>+0.10SG</u>		<u>'D'</u>
	<u>WT. %</u>	<u>ASH%</u>	<u>WT. %</u>	<u>ASH%</u>	<u>WT.%</u>	<u>ASH%</u>	<u>WT.%</u>	<u>ASH%</u>	
F1.30	53.6	2.0	53.6	2.0	100.0	4.4	-	-	26.8
S1.30 - F1.35	34.7	4.9	88.3	3.1	46.4	7.2	-	-	71.0
S1.35 - F1.40	7.2	8.7	95.5	3.6	11.7	14.1	44.6	-	91.9
S1.40 - F1.45	2.0	11.5	97.5	3.7	4.5	22.6	10.5	-	96.5
S1.45 - F1.50	0.7	20.2	98.2	3.8	2.5	31.5	3.7	-	97.9
S1.50 - F1.55	0.6	22.8	98.8	4.0	1.8	36.0	-	-	98.5
S1.55 - F1.60	0.4	29.6	99.2	4.1	1.2	42.5	-	-	99.0
S1.60	0.8	49.0	100.0	4.4	0.8	49.0	-	-	99.6

SYDNEY

26th October, 1971.

K71-1966

COALITION MINING

SUKUNKA C 12. - CHAMBERLAIN SEAM

	PLY	THICK'	WT%	ASH%	COAL%	ASH% Corr
10	SKR-45	0.62	-	43.4	0	9.4
8						
6	SKR-46	9.42	100.0	9.4	7	
4						
2						
0						

STRATIGRAPHIC LOG
SUKUNKA D.D.H. C-12

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft.)</i>
	No core to 15.0 ft.		
	SILTSTONE, MUDSTONE AND SANDSTONE	SUKUNKA MB.	318.0
	MUDSTONE, breccia zones at (550') 1' and 370'-375'.	MOOSEBAR FM.	672.0
	SANDSTONE, glauconitic.	GETHING FM.	672.5
	<u>COAL.</u>	BIRD SEAM	678.5
	MUDSTONE.		681.5
	<u>COAL.</u>		682.0
	SANDSTONE, coarse at top, fine towards base (mottled) worm casts - 688' siltstone interbeds with coaly wisps 704'. Worm casts 717'. Mudstone band, 733' and 735'.		738.0
	SILTSTONE AND MUDSTONE INTERBEDDED, worm casts - granular at base.		748.0
	SANDSTONE.		755.0
	SANDSTONE, carbonaceous.		758.0
	MUDSTONE.		763.0
	LAMINITE, siltstone and mudstone.		768.0
	SANDSTONE, coaly wisps.		783.0

Structure	Description of Strata	Formation or Member	Depth Base of Stratum (ft)
Fault, established	SANDSTONE, mudstone interbeds, mudstone at top and base - shelly fossils at base, sand and blebs above shell fossils.		787.0
Fault, probable	SANDSTONE, coaly wisps.		792.0
	SANDSTONE, mudstone interbeds.		798.0
	SANDSTONE, coaly wisps.		799.5
	SANDSTONE, mudstone interbeds, shelly fossils near base, sandy blebs 807'.		811.0
	CLAYSTONE, carbonaceous, sheared and slickensided.		826.5
	SANDSTONE.		836.0
	SILTSTONE, sandy phases, mudstone at base.		838.5
	<u>COAL.</u>)		842.0
	SILTSTONE AND MUDSTONE INTERBEDDED.)		845.0
	<u>COAL.</u>)		846.0
	SILTSTONE, sandy phases.		852.0
	SANDSTONE, silty interbeds, mudstone blebs at base.		859.0
	LAMINITE, siltstone and mudstone, mudstone at base 769'.		874.0
	<u>COAL.</u>	CHAMB. SM.	883.0

Structure	Description of Strata	Formation or Member	Depth of Base of Stratum (ft)
	SANDSTONE, coarse at top - fine at base.		928.0
	SILTSTONE AND MUDSTONE INTERBEDDED, granules at base.		952.0
	SANDSTONE.		975.5
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		670.00		
MUDSTONE, grey.	0.97	670.97	0.99	
CLAYSTONE, pale grey, bentonitic(?), soft.	0.29	671.26	0.30	
MUDSTONE, grey.	0.53	671.79	0.54	
CLAYSTONE, pale grey, bentonitic(?), soft, darker in colour in lower 0.05'.	0.56	672.35	0.57	
SANDSTONE, dark greenish grey, glauconitic, some pebbles at base and pyrite .	0.53	672.88	0.54	
<u>COAL</u> , dull.	0.23	673.11	0.23	
mainly dull with minor bright bands.	0.11	673.22	0.11	
dull.	1.09	674.31	1.12	
dull and bright.	0.11	674.42	0.11	

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remark</i>
<u>COAL</u> , sheared and fragmented - mostly dull.	1.08	675.50	1.71	
CLAYSTONE, carbonaceous.	0.45	675.95	0.46	
<u>COAL</u> , mainly dull with minor bright bands, pyrite nodule (0.05').	0.75	676.70	0.81)
mainly bright with minor dull bands.	0.54	677.24	0.58)
dull with bright bands.	0.16	677.40	0.17)
bright.	0.13	677.53	0.14)
mainly dull with minor bright bands.	0.39	677.92	0.42)
dull and bright.	0.10	678.02	0.11)
mainly dull with minor bright bands.	0.26	678.28	0.28)
dull and bright.	0.16	678.44	0.17)
CLAYSTONE, grey, a few coaly wisps.	2.95	681.39	2.95	

BIRD
SEAM

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull and bright.	0.16	681.55	0.18	
mainly dull with minor bright bands.	0.22	681.77	0.25	
SANDSTONE, grey, fine grained, quartz-lithic, carbonaceous at top.	2.62	684.39	2.62	
Refer to Stratigraphic Log for particulars from 684.39' to 797.60'.				
SANDSTONE, grey, fine grained, quartz-lithic, mudstone and coaly irregular masses, brecciated and calcite filled fractures, bedding dislocated in places, elsewhere dipping at various steep angles to 0° to core axis, slickensides.	3.59	801.19	3.47	
CLAYSTONE, black, carbonaceous, fine sandy interbeds and calcite along bedding planes. Bedding 30° to core axis.	0.55	801.74	0.53	
SANDSTONE, grey, fine grained, quartz-lithic, claystone and coaly interbeds and wisps, some dislocated bedding and calcite veining. Bedding angle 30° to core axis, slickensides.	2.33	804.07	2.25	

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, black, carbonaceous, fine sandy interbeds, bedding somewhat irregular and suffering minor dislocations, calcite veins.	1.53	805.60	1.48	
SANDSTONE, grey, fine grained, quartz-lithic, coaly and claystone wisps, and interbeds, sandy blebs in lower half. Bedding angle 31° to core axis.	1.79	807.39	1.73	
CLAYSTONE, black, carbonaceous, silty interbeds and irregular masses, shell fossils with thick valves from 1.2' to 3.1' from top, fine shelly fragments at top, silty interbeds increase in bottom 0.4'.	3.87	811.26	3.74	
CLAYSTONE, carbonaceous, to coal stony, coaly wisps and irregular masses in top 0.8', slickensides along fractures or bedding, at 48° to core axis.	4.60	815.86	4.45	
CLAYSTONE, as above, core broken in part, coaly partings and pennybands.	9.17	825.03	8.86	
<u>COAL</u> AND CLAYSTONE, carbonaceous, fragmented and mixed.	0.80	825.83	0.77	

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
MUDSTONE, grey.	0.19	826.02	0.18	
SANDSTONE, grey, medium grained, quartz-lithic, silty phase at top.	5.45	831.47	5.27	
SANDSTONE, as above, but no silty phase.	3.74	835.21	3.61	
SILTSTONE, grey, fine sandy and mudstone interbeds.	2.78	837.99	2.69	
MUDSTONE, dark grey, coaly wisps.	0.42	838.41	0.41	
<u>COAL</u> , mainly dull with minor bright bands.	0.30	838.71	0.27)
dull and bright.	0.10	838.81	0.09)
mainly dull with minor bright bands.	1.13	839.94	1.01)
bright.	0.17	840.11	0.15)
mainly dull with minor bright bands.	0.56	840.67	0.50)
dull and bright.	0.16	840.83	0.14)
				SKEETER SEAM

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , mainly dull with minor bright bands.	0.20	841.03	0.18)	
dull and bright.	0.10	841.13	0.09)	
CLAYSTONE, carbonaceous.	0.08	841.21	0.07)	
<u>COAL</u> , mainly dull with numerous fine carbonaceous claystone bands with listric surfaces.	0.37	841.58	0.33)	
CLAYSTONE, carbonaceous.	0.10	841.68	0.09)	
<u>COAL</u> , mainly dull, with numerous fine carbonaceous claystone bands with listric surfaces.	0.32	842.00	0.29)	SKEETER SEAM
dull and bright.	0.14	842.14	0.12)	
mainly dull with minor bright bands.	0.21	842.35	0.19)	
SILTSTONE, grey, coaly wisps.	2.92	845.27	2.92)	
<u>COAL</u> , mainly dull with minor bright bands.	0.23	845.50	0.21)	
MUDSTONE, pennyband.	0.01	845.51	0.01)	

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , mainly dull with minor bright bands.	0.40	845.91	0.36)	SKEETER SEAM
SILTSTONE, grey, sandy interbeds.	1.30	847.21	1.30	
SILTSTONE, grey, irregular fine sandstone interbeds, and a few small mudstone blebs.	8.74	855.95	8.77	
CLAYSTONE, dark grey.	0.10	856.05	0.10	
SANDSTONE, grey, fine grained, quartz-lithic.	0.08	856.13	0.08	
CLAYSTONE, dark grey, mixed with fine interbeds of siltstone in top 0.5'.	0.28	856.41	0.28	
SANDSTONE, brownish grey, medium grained, quartz-lithic, mudstone blebs in bottom 1.4'.	2.11	858.52	2.12	
LAMINITE, siltstone, pale brownish grey and mudstone, dark grey, interbedded in fine laminae, some fine sandstone interbeds, slickensides at base. Bedding angle 77° to core axis.	6.88	865.40	6.91	

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
LAMINITE, as above, top 0.9' with slickensides and a few thin calcite fillings. Bedding back to sub-horizontal at 3.0' from top. Bedding in disturbed zone 65° to core axis.	3.80	869.20	3.81	
CLAYSTONE, dark grey.	0.78	869.98	0.78	
LAMINITE, siltstone, brownish grey and mudstone. dark grey, interbedded in fine laminae.	2.20	872.18	2.21	
CLAYSTONE, dark grey.	0.40	872.58	0.40	
<u>COAL</u> , stony.	0.62	873.20	0.62)
bright.	0.10	873.30	0.10)
dull and bright.	0.16	873.46	0.16)
core badly broken, sheared, fragments mainly dull with minor bright bands, some dull and bright.	1.77	875.23	1.77)
mainly dull with minor bright bands.	0.52	875.75	0.52)
dull and bright.	0.71	876.46	0.71)
)
)
)
)
)
)
)
)
)

CHAMBERLAIN
SEAM

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , mainly dull with minor bright bands.	0.35	876.81	0.35)	
dull and bright, a few small claystone lenses.	0.65	877.46	0.65)	
mainly dull with minor bright bands.	0.95	878.41	0.95)	
mainly dull with minor bright bands.	0.30	878.71	0.30)	
dull and bright.	0.22	878.93	0.22)	
mainly dull with minor bright bands.	0.32	879.25	0.32)	
dull and bright.	0.28	879.53	0.28)	CHAMBERLAIN
bright and dull.	0.30	879.83	0.30)	SEAM
dull.	0.40	880.23	0.40)	
dull and bright.	0.73	880.96	0.73)	
mainly dull with minor bright bands.	1.66	882.62	1.66)	

SUKUNKA D.D.H. C-12

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous.	0.44	883.06	0.44	
SANDSTONE, grey, medium grained becoming finer towards base, quartz-lithic, coaly wisps near top, core broken in top 0.6'. Bedding angle 80° to core axis.	18.44	901.50	18.44	
SANDSTONE, grey, fine grained, quartz-lithic.	19.17	920.67	19.17	
				<u>BASE OF HOLE</u>

PR-50KUNKA 75(3)
A-3
- COAL SEAM INTERSECT
- STRATIGRAPHIC LOGS
- ELECTRIC LOG.

657

BORE NUMBER C-13

Grid Reference 43499.2N 88474.8E

Exploration Grid Reference F/4

Date Commenced 26th August, 1971 Completed 5th September 1971

Collar R.L. 5281.5 ft Standard Datum

Total Depth 1602 ft Electrically Logged ~~Yes~~/No

Drilled by Canadian Longyear Ltd
For Coalition Mining Limited

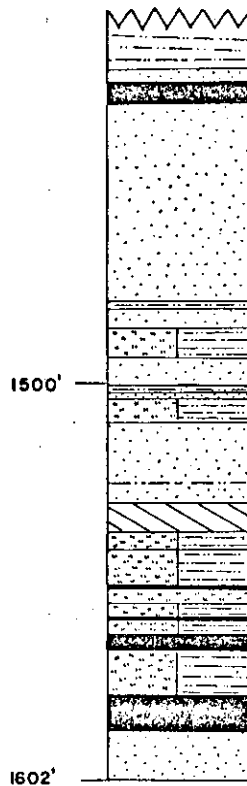
Logged by F. H. S. Tebbutt

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Skeeter	3715.6	5.69	88%	Includes 3.85' siltstone
Chamberlain	3692.8	8.94	77%	

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd JUL 25 1975		

OPEN FILE



MOOSEBAR FORMATION
 GLAUCONITIC SANDSTONE
 BIRD SEAM
 MOTTLED (WORM CASTS)

WORM CASTS

GRANULES
 MUDSTONE INTERBEDS

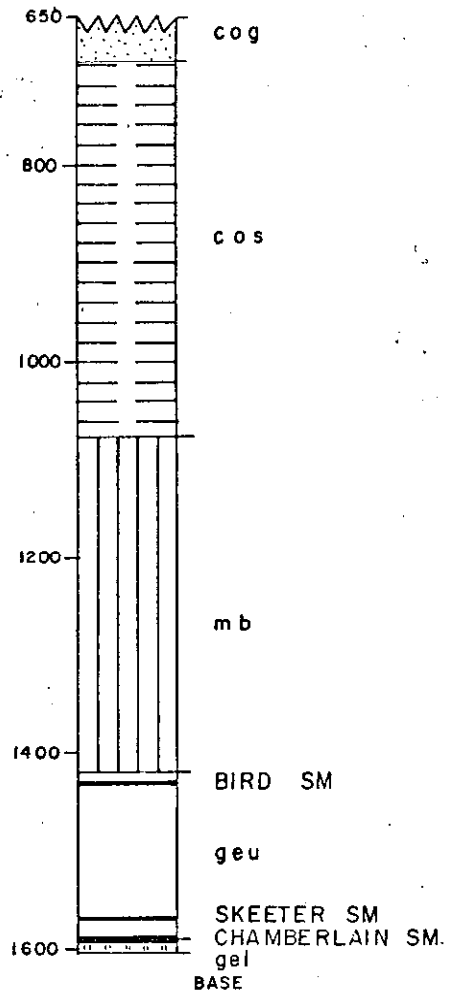
COALY WISPS

SANDY BLEBS

COAL BAND
 MUDSTONE INTERBEDS
 COAL BAND
 SKEETER SEAM

CHAMBERLAIN SEAM

END OF HOLE



DETAIL OF GETHING
 FORMATION
 SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by :
 CLIFFORD McELROY & ASSOCIATES PTY. LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOGS
 DDH. C-13

				ASH % CUMULATIVE FROM FLOOR				
SKEETER SEAM				WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
1560.18								
1560.38		0.20						
			3.85					
1564.23								
		1.64			NOT ANALYSED			
1565.87								

Prepared by:
 CLIFFORD McELROY & ASSOCIATES PTY. LTD.
 for
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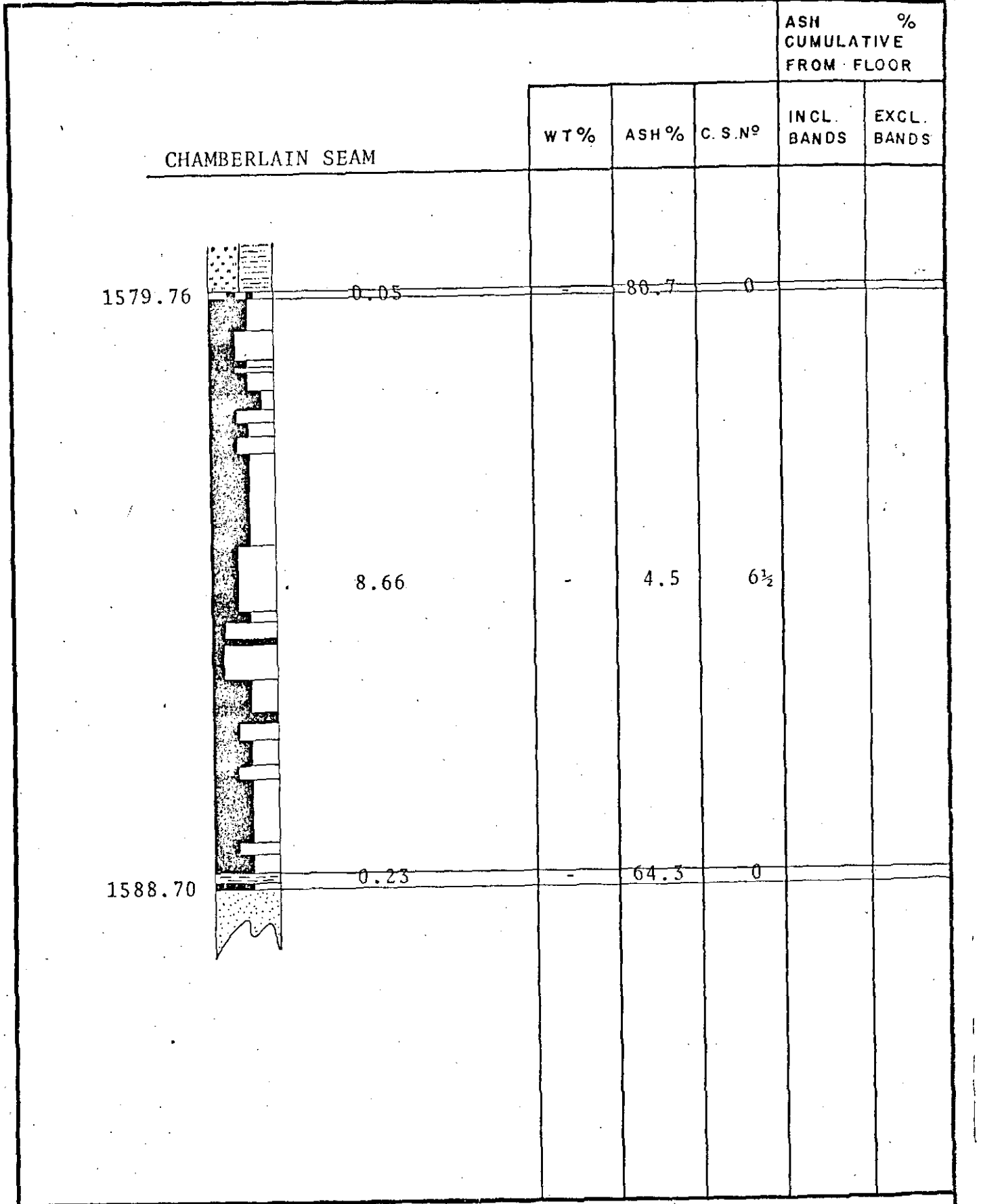
SEAM SECTIONS
 DDH C-13

DRAWN BY nm

DATE Jan. '72

SCALE: 1" to 2'

PAGE 1 of 1



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SEAM SECTIONS
 DDH C-13

SCALE: 1" to 2'

PAGE 1 of 1

Telegrams and Cables:

"Visor", Sydney

CARGO SUPERINTENDENTS

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Telephone: 241 1105

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

Certification

This is to Certify

APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLES NO. 134, 135, 136/137
CORE NO. C13
CHAMBERLAIN SEAM

REPORT NO. K71-1746

RECEIVED: 4. 11. 1971

REPORTED: 26. 11. 1971



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. Bradley
A.R.A.C.I. Chief Chemist.

For

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

[Signature]

INTRODUCTION:

One coal sample and two non coal samples designated CORE NO. C13 CHAMBERLAIN SEAM were received on 4. 11. 1971 from Clifford McElroy & Associates.

METHODS:

1. The non coal samples No. 134 and 136/137 were weighed, prepared and analysed for Ash and true specific gravity.
2. The good quality coal sample No. 135 was hand crushed to $\frac{3}{8}$ " , 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 and 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. 135 and the analysis is given in this report.

NOTE:

Sample weights have not been adjusted to compensate for core loss.

RESULTS:

FIGURE 1 : gives the graphic log of the core

TABLE 1 : gives the sizing, washability and analytical data for the coal sample after hand crushing to $\frac{3}{8}$ " top size.

SAMPLE NO. 134

RAW COAL

Total Weight of Sample = 62 grams
Ash % = 80.7
True Specific Gravity = 2.326

TABLE 1WASHABILITY DATA FOR SAMPLE NO. 135 (after hand crushing to $\frac{3}{8}$ ")

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT.%	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.30 SG	2046	53.3	2.1	8	53.3	2.1	8
S1.30 - F1.35 SG	1225	31.9	4.2	6½	85.2	2.9	7½
S1.35 - F1.40 SG	341	8.9	9.9	1½	94.1	3.5	7
S1.40 - F1.45 SG	180	4.7	14.3	1	98.8	4.1	6½
S1.45 - F1.50 SG	12	0.3	19.6	1	99.1	4.1	6½
S1.50 - F1.55 SG	7	0.2	23.7	1	99.3	4.1	6½
S1.55 - F1.60 SG	2	0.1	28.0	1	99.4	4.2	6½
S1.60 SG	23	0.6	62.8	0	100.0	4.5	6½
-30 Mesh	292	7.1	2.5	8½			

Total Weight of Sample = 4128 grams
True Specific Gravity = 1.275

K71-1746

COALITION MINING

SUKUNKA C13-

CHAMBERLAIN SEAM

	SPL	THICK	ASH%	GAUF
8	131	0.05	80.7	0
6				
4	125	8.66	4.5	6 1/2
2				
0	{136 127	0.23	64.3	0

STRATIGRAPHIC LOG
SUKUNKA D.D.H. C-13

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft.)
Dip = 5°	No core to 650.0 ft.		
	SANDSTONE, mudstone phases.	GATFS MB.	697.0
	SILTSTONES, MUDSTONES AND SANDSTONES INTERBEDDED, worm casts.	SUKUNKA MB.	1077.0
	MUDSTONE, ash beds at base.	MOOSEBAR FM.	1420.0
	SANDSTONE, glauconitic.	GETHING FM.	1424.0
	<u>COAL.</u>	BIRD SEAM	1429.5
	SANDSTONE, worm cast 1468',		
	mottled (worm casts) 1436',		
	mudstone bands 1681, 1480, 1485'.		1487.0
	SILTSTONE, MUDSTONE INTERBEDDED,		
	worm casts, granules at base.		1493.0
	SANDSTONE.		1501.0
	MUDSTONE.		1502.0
SANDSTONE, mudstone interbeds.		1504.0	
LAMINITE, siltstone and mudstone,		1511.0	
mudstone at base.			
SANDSTONE, coaly wisps, mudstone			
band at 1526'.		1531.0	
CLAYSTONE, carbonaceous.		1538.0	

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft)</i>
	SILTSTONE AND MUDSTONE INTERBEDDED, sandy phases.		1543.0
	LAMINITE, siltstone and mudstone, mudstone at base.		1552.0
	<u>COAL.</u>		1553.0
	SILTSTONE, mudstone interbeds.		1557.0
	SILTSTONE AND MUDSTONE INTERBEDDED, coal band 1561'.		1565.0
	<u>COAL.</u>	SKEETER SM.	1568.0
	LAMINITE, siltstone and mudstone, mudstone as base.		1582.0
	<u>COAL.</u>	CHAMB. SM.	1589.0
	SANDSTONE.		1602.0
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-13

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		1512.03		
SANDSTONE, grey, medium to fine grained, quartz-lithic, coaly and silty wisps and pennybands, carbonaceous claystone interbeds in bottom 1', sandy blebs (phase 0.45') 1.9' from top.	13.59	1525.62	13.59	
CLAYSTONE, carbonaceous, sandy interbeds, two pennybands coal. Bedding angle 85° - 90° to core axis.	0.61	1526.23	0.57	
SANDSTONE, grey, fine grained, quartz-lithic, coaly wisps, silty interbeds and irregular masses, carbonaceous claystone interbeds in bottom 1.6' containing sandy blebs.	5.09	1531.32	4.76	
SANDSTONE, grey, fine grained, quartz-lithic, carbonaceous claystone interbeds.	0.33	1531.65	0.31	
CLAYSTONE, carbonaceous, sandy interbed (0.04') 0.97' from top.	1.70	1533.35	1.59	
<u>COAL</u> , mainly dull with minor bright bands.	0.11	1533.46	0.07	

SUKUNKA D.D.H. C-13

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, carbonaceous, silty interbeds.	2.38	1535.84	2.22	
<u>COAL</u> , stony, a few bright bands.	0.43	1536.27	0.27	
SANDSTONE, grey, fine and medium grained, quartz-lithic, silty and muddy interbeds and phases.	6.44	1542.71	6.02	
LAMINITE, siltstone grey, and mudstone dark grey interbedded.	6.35	1549.06	5.93	
CLAYSTONE, carbonaceous.	1.80	1550.86	1.68	
<u>COAL</u> , mainly dull with minor bright bands.	0.85	1551.71	0.54	
<u>COAL</u> , stony, calcite tracteries in bottom 0.2'.	1.18	1552.89	0.75	
SILTSTONE, grey, fine sandy and mudstone interbeds towards base, some worm casts.	5.19	1558.08	4.85	
LAMINITE, siltstone grey and mudstone dark grey.	2.10	1560.18	2.10	
<u>COAL</u> , dull and bright, some calcite.	0.20	1560.38	0.12	) ) SKEETER SEAM

SUKUNKA D.D.H. C-13

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
CLAYSTONE, carbonaceous.	0.58	1560.96	0.58)	
SILTSTONE, grey, mudstone interbeds. Bedding angle 85°-90° to core axis.	3.27	1564.23	3.27)	SKEETER SEAM
<u>COAL</u> , dull, listric surfaces.	1.64	1565.87	1.01)	
SILTSTONE, grey.	0.67	1566.54	0.67	
CLAYSTONE, carbonaceous.	0.35	1566.89	0.32	
SILTSTONE, grey, sandstone and mudstone interbeds, zone of brecciation (0.5') with calcite veining 2.92' from top.	4.99	1571.88	4.58	
SILTSTONE, as above, no brecciation. Bedding angle 85°-90° to core axis.	0.49	1572.37	0.45	
LAMINITE, siltstone grey and mudstone dark grey, mudstone phases.	7.39	1579.76	6.79	
<u>COAL</u> , stony.	0.05	1579.81	0.04)	CHAMBERLAIN SEAM

SUKUNKA D.D.H. C-13

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull and bright.	0.47	1580.28	0.41)	
mainly dull with minor bright bands.	0.51	1580.79	0.45)	
dull and bright.	0.08	1580.87	0.07)	
mainly dull with minor bright bands.	0.08	1580.95	0.07)	
dull and bright.	0.28	1581.23	0.25)	
mainly bright with minor dull bands.	0.27	1581.50	0.24)	CHAMBERLAIN
mainly dull with minor bright bands.	0.19	1581.69	0.17)	SEAM
dull and bright.	0.27	1581.96	0.24)	
mainly dull with minor bright bands.	0.22	1582.18	0.19)	
dull and bright.	1.39	1583.57	1.22)	
mainly dull with minor bright bands, cleat broken down by horizontal shearing.	0.96	1584.53	0.84)	

SUKUNKA D.D.H. C-13

Geological Description of Strata	Estimated Thickness (ft)	Estimated Depth to Stratum Floor(ft)	Footage Recovered (ft)	Remarks
<u>COAL</u> , dull and bright.	0.15	1584.68	0.13)
dull.	0.27	1584.95	0.24)
bright.	0.10	1585.05	0.09)
dull.	0.49	1585.54	0.43)
dull and bright.	0.51	1586.05	0.45)
bright.	0.16	1586.21	0.14)
mainly dull with minor bright bands.	0.24	1586.45	0.21)
dull and bright.	0.41	1586.86	0.36)
mainly dull with minor bright bands.	0.21	1587.07	0.18)
dull and bright, zone of shearing at 35° to core axis.	0.95	1588.02	0.83)
mainly dull with minor bright bands.	0.18	1588.20	0.16)
				) CHAMBERLAIN SEAM

SUKUNKA D.D.H. C-13

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
<u>COAL</u> , dull and bright.	0.27	1588.47	0.24)	
CLAYSTONE, dark grey, coaly bands.	0.15	1588.62	0.13)	CHAMBERLAIN
<u>COAL</u> , dull and bright.	0.08	1588.70	0.07)	SEAM
SANDSTONE, grey, medium grained, quartz-lithic, carbonaceous at top, one calcite vein 1.2' from top. Bedding angle 86° to core axis.	2.02	1590.72	2.26	
SANDSTONE, as above, a few minor calcite veins and mudstone interbeds.	11.01	1601.73	12.25	
				<u>BASE OF HOLE</u>

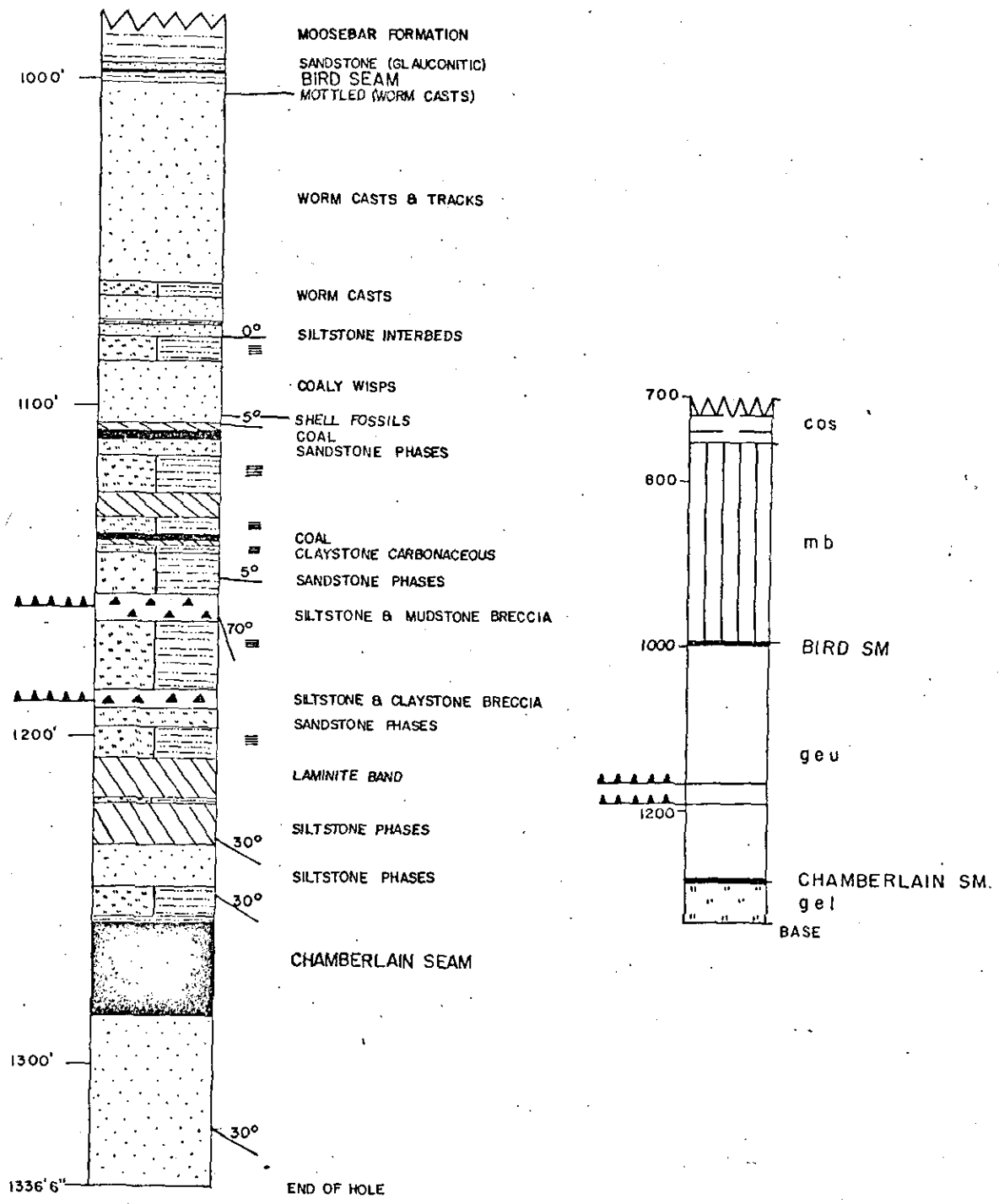
BORE NUMBER C-14

Grid Reference 4140.2N 92028.6 E
Exploration Grid Reference H/5
Date Commenced 27th Aug, 1971 Completed 5th Sept, 1971
Collar R.L. 5058.3 ft Standard Datum
Total Depth 1336.5 ft Electrically Logged ~~Yes~~/No
Drilled by Canadian Longyear Ltd
For Coalition Mining Limited
Logged by F. H. S. Tebbutt and G. R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3773.6	29.35	27%	Seam Faulted

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd JUL 25 1975		



DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-14

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

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

Certification

This is to Certify

APPLICANT: COALITION MINING

SUBJECT: SUKUNKA SAMPLES NOS. 69, 70, 71
CORE NO. C14
CHAMBERLAIN SEAM

REPORT NO. K71- 1634

DATE RECEIVED: 12. 10. 71

DATE REPORTED: 23. 11. 71



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.

M. Bradley
A.R.A.C.S.T. Chemist

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

D. W. [Signature]

INTRODUCTION: Three (3) coal samples designated CORE NO. C14 CHAMBERLAIN SEAM were received on 12.10.71 from CLIFFORD MCELROY & ASSOCIATES.

METHODS: 1. The visibly inferior coal samples, nos. 69,70, were hand crushed to $\frac{3}{4}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 S.G.

The float and sink fractions and raw -30 mesh coal fractions were weighed, prepared and analysed for ash and crucible swelling number and the composite raw coal sample reconstituted and the true S.G. of the sample determined.

2. The good quality coal sample, no. 71, was hand crushed to $\frac{3}{4}$ " , sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.30 - 1.60 S.G. in 0.05 steps.

The float and sink fraction, 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 S.G. of the sample determined.

The cumulative floats 1.60 specific gravity was prepared for sample no. 71 and the analysis are also given in this report.

COMMENTS: Due to the relatively high core losses on drilling no allowance has been made for core losses i.e. sample weights have not been adjusted.

These losses also exclude further calculations and the construction of washability tables and graphs.

RESULTS: FIGURE 1: gives the graphic log of the core.

TABLES 1 - 3: gives the sizing, washability and analytical data for each coal sample after hand crushing to $\frac{3}{4}$ " .

SHEET THREE ATTACHED:

TABLE 1: WASHABILITY DATA FOR SAMPLE NO. 69 (after hand crushing to - $\frac{3}{4}$ ")

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60 SG	43	97.7	3.9	5 $\frac{1}{2}$	97.7	3.9	5 $\frac{1}{2}$
S1.60 SG	1	2.3	40.8	0	100.0	4.7	5 $\frac{1}{2}$
-30 Mesh RC	3	6.4	13.7	3			

TOTAL WEIGHT OF SAMPLE = 47 gms

TRUE S.G. = 1.330

TABLE 2: WASHABILITY DATA FOR SAMPLE NO. 70 (after hand crushing to - $\frac{3}{4}$ ")

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.60 SG	NIL	--	--	--	--	--	--
S1.60 SG	74	100.0	94.7	0	100.0	94.7	0
-30 Mesh RC	1	1.3	47.3	1			

TOTAL WEIGHT OF SAMPLE = 75 gms

TRUE S.G. = 2.581

TABLE 3: WASHABILITY DATA FOR SAMPLE NO. 71 (after hand crushing to - $\frac{3}{4}$ ")

FRACTION	INDIVIDUAL ANALYSIS				CUMULATIVE ANALYSIS		
	WT. GM.	WT. %	ASH%	C.S.NO.	WT. %	ASH%	C.S.NO.
F1.30	2278	44.1	2.9	9	44.1	2.9	9
S1.30 - F1.30	1646	31.8	5.5	6	75.9	4.0	8
S1.35 - F1.40	562	10.9	9.0	1 $\frac{1}{2}$	86.8	4.6	7
S1.40 - F1.45	323	6.2	12.7	1	93.0	5.2	6 $\frac{1}{2}$
S1.45 - F1.50	131	2.5	16.7	1	95.5	5.5	6 $\frac{1}{2}$
S1.50 - F1.55	79	1.5	19.7	1	97.0	5.7	6 $\frac{1}{2}$
S1.55 - F1.60	54	1.0	20.4	1	98.0	5.8	6 $\frac{1}{2}$
S1.60	98	2.0	62.0	0	100.0	7.0	6
-30 Mesh RC	952	15.5	6.3	9			

TOTAL WEIGHT OF SAMPLE = 5,123 gms

TRUE S.G. = 1,353

ANALYSIS OF CUMULATIVE FLOATS 1.60 S.G. FRACTION OF SAMPLE NO. 71

YIELD %	ADM%	ASH%	V.M.%	F.C.%	S. %	C.S.NO.	CV(BTU/lb)
98.0	1.0	5.7	20.8	72.5	0.47	6 $\frac{1}{2}$	14,720

SYDNEY
24th November, 1971.

K71-1634

COALITION MINING

SUKUNKA C14

(CHAMBERLAIN SEAM)

	SPL	THICK	ASH	GEN
28'	69 70	0.19 0.18	447 447	5 1/2 0
24'				
20'				
16'	71	29.01	70	6
12'				
8'				
4'				

STRATIGRAPHIC LOG
SUKUNKA D.D.H. C-14

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft.)</i>
	No core to 700.0 ft.		
	SILTSTONE, SANDSTONE, MUDSTONE, undisturbed - worm casts.	SUKUNKA MB.	754.0
	MUDSTONE.	MOOSEBAR FM.	994.5
	SANDSTONE, glauconitic.	GETHING FM.	996.0
	<u>COAL.</u>	BIRD SEAM	996.5
	MUDSTONE, carbonaceous at top.		998.5
	SANDSTONE, coarse at top, fine towards base, mottled (worm casts) 1004'. Worm casts 1015' to base.		1061.0
	SILTSTONE AND MUDSTONE INTERBEDDED, worm casts.		1067.0
	SANDSTONE.		1074.0
	SANDSTONE, silty interbeds, mudstone at top.		1079.0
	LAMINITE, siltstone and mudstone, mudstone at base.		1086.0
	SANDSTONE, coaly wisps, shelly fossils 1102'-1103'.		1105.0
	CLAYSTONE, carbonaceous, shelly fossils at base.		1107.5

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft)</i>
	<u>COAL.</u>		1109.7
	SILTSTONE, sandy phases.		1115.0
	LAMINITE, siltstone and mudstone.		1127.0
	CLAYSTONE, carbonaceous.		1134.5
	LAMINITE, siltstone and mudstone.		1140.0
	<u>COAL.</u>		1141.0
	CLAYSTONE, carbonaceous.		1142.0
	LAMINITE, siltstone and mudstone interbedded, sandy phases.		1145.0
	SILTSTONE AND MUDSTONE, brecciated.		1165.0
	LAMINITE, siltstone and mudstone.		1186.0
	SILTSTONE AND CLAYSTONE, brecciated.		1192.0
	SILTSTONE, sandy phases.		1197.0
	LAMINITE, silty phases.		1206.0
	CLAYSTONE, carbonaceous, laminite bands at 1210.		1220.0
	LAMINITE, siltstone and mudstone.		1221.0
	CLAYSTONE, carbonaceous, silty phases.		1234.0
	SANDSTONE, silty phases.		1247.0

Structure	Description of Strata	Formation or Member	Depth to Base of Stratum (ft)
	SILTSTONE AND MUDSTONE INTERBEDDED.		1255.0
	MUDSTONE.		1257.0
	<u>COAL.</u>	CHAMB. SM.	1285.0
	SANDSTONE, coarse at top, fine towards base.		1336.5
			<u>Base of Hole</u>

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		1109.64		
SANDSTONE, brownish grey, fine grained, quartz-lithic, coaly wisps, silty and claystone interbeds and wisps, some current bedding and other minor sedimentary structures.	5.53	1115.17	5.44	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey, interbedded; becoming laminite in basal 2.9'. Two calcite veins parallel to bedding (85°-90° to core axis) near top.	8.67	1123.84	8.52	
CLAYSTONE, carbonaceous.	4.45	1128.29	4.37	
CLAYSTONE, carbonaceous, as above, some bright bands in phase (0.35') 0.2' from base.	6.02	1134.31	5.92	
LAMINITE, siltstone grey and mudstone dark grey, mudstone phase at top, and 0.04' band mudstone at base.	4.78	1139.09	4.70	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
COAL, mainly dull with minor bright bands, but core badly broken in part, and coal type not everywhere distinguishable.	1.58	1140.67	0.86	
CLAYSTONE, dark grey, one coaly pennyband.	0.66	1141.33	0.63	
SILTSTONE, grey, mudstone interbeds and phases, mudstone increases in basal 1.6'.	4.49	1145.82	4.31	
SANDSTONE, grey, very fine grained, quartz-lithic, fine silty interbeds.	1.52	1147.34	1.46	
SANDSTONE, as above, with claystone carbonaceous interbeds from 2.3' from top, to base. Bedding angle 85°-90° to core axis.	6.59	1153.93	6.32	
SILTSTONE, brownish grey, carbonaceous claystone interbeds.	2.01	1155.94	1.93	
CLAYSTONE, carbonaceous.	0.22	1156.16	0.21	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SILTSTONE, brownish grey, interbeds of very fine sandstone and claystone, small dislocation of bedding 1.0' from base, calcite vein parallel to bedding and containing brecciated fragments of siltstone 0.92' from base.	2.62	1158.78	2.51	
SILTSTONE, as above, brecciated, fractures filled with calcite.	0.50	1159.28	0.48	
LAMINITE, siltstone brownish grey and mudstone dark grey, interbedded. Bedding angle 85° - 90° to core axis, beds inverted. Becomes carbonaceous to base.	1.16	1160.44	1.11	
CLAYSTONE, carbonaceous, slickensided surfaces 60° to core axis, core broken.	1.04	1161.48	1.00	
MUDSTONE, dark grey, some silty interbeds, calcite veins and irregular masses.	0.87	1162.35	0.83	
LAMINITE, siltstone brownish grey and mudstone dark grey, Bedding angle 70° to core axis, beds inverted. Some slickensides, core broken at base.	1.13	1163.48	1.08	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, carbonaceous, fine calcite fillings of tension cracks, slickensided surfaces 35° to core axis.	0.36	1163.84	0.35	
LAMINITE, siltstone brownish grey, mudstone dark grey, brecciated, calcite filling tension cracks, slickensided surfaces 35° to core axis.	0.70	1164.54	0.67	
CLAYSTONE, carbonaceous, meets unit beneath on listric surface at 15° to core axis.	0.60	1165.14	0.58	
LAMINITE, siltstone grey, mudstone dark grey, interbedded. Bedding angle 15° to core axis with bedding in the inverted position.	0.20	1165.34	0.19	
LAMINITE, siltstone grey and mudstone dark grey. Bedding from 0° to core axis varying to 20° in gentle curves, beds with listric surfaces.	21.60	1186.94	20.50	
LAMINITE, siltstone and mudstone, brecciated with irregular calcite infillings and heavy veining.	0.45	1187.39	0.40	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, fine grained to very fine grained, highly brecciated and with numerous fine calcite fillings.	0.30	1187.69	0.27	
CLAYSTONE, carbonaceous, core broken, listric surfaces, some coaly bands.	2.38	1190.07	2.11	
SILTSTONE, brownish grey, sandy interbeds, calcite veins sub-vertical, zone (0.85') of more intense calcite veining and some brecciation 1.65' from top.	5.73	1195.80	5.09	
SANDSTONE, brownish grey, fine and medium grained, quartz-lithic, siltstone interbeds and phases, calcite veins along irregular fractures at approximately 15° to core axis. Bedding correct way up, Bedding angle 67° to core axis.	2.82	1198.62	2.69	
CLAYSTONE, brown, quartz vein near base. Bedding angle 67° to core axis.	0.18	1198.80	0.17	
LAMINITE, siltstone and claystone brownish grey. Sub-vertical calcite vein, centre of overfold 4.41' from top, beds at base upside down, immediately about the axis of folding laminite becomes siltstone and claystone phases.	6.46	1205.26	6.16	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
LAMINITE, siltstone and claystone brownish grey, beds upside down. Bedding angle 70° to core axis.	4.89	1210.15	4.66	
CLAYSTONE, carbonaceous.	2.29	1212.44	2.18	
MUDSTONE, brownish grey, silty interbeds, slickensides on some fracture planes and at 80° to core axis.	2.17	1214.61	2.07	
CLAYSTONE, carbonaceous, core broken, slickensides.	8.96	1223.57	8.54	
CLAYSTONE, carbonaceous, core broken in top 1', slickensides throughout.	8.76	1232.33	8.35	
LAMINITE, siltstone grey and mudstone dark grey, interbedded. Bedding angle 75° to core axis. Bedding inverted.	0.83	1233.16	0.79	
CLAYSTONE, dark grey.	0.20	1233.36	0.19	
SILTSTONE AND MUDSTONE INTERBEDDED, siltstone grey and mudstone dark grey, interbedded. Beds inverted.	0.31	1233.67	0.30	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
COAL, core broken and sheared, most fragments dull or dull with minor bright bands.	0.54	1234.21	0.33	
CLAYSTONE, carbonaceous.	0.18	1234.39	0.19	
SANDSTONE, brownish grey, fine grained, quartz-lithic, silty interbeds numerous. Bedding correct way up. Bedding angle 75° to core axis.	5.40	1239.79	5.79	
SANDSTONE, brownish grey, medium and fine grained, quartz-lithic, some silty interbeds towards base.	2.53	1242.32	2.71	
SANDSTONE, brownish grey, fine grained, quartz-lithic, grainsize of components becoming finer towards base. carbonaceous phase(0.23') 0.4' from top, some coaly wisps and silty phases.	11.31	1253.63	14.83	
LAMINITE, siltstone grey and mudstone dark grey interbedded, some brecciation 0.55' and 1.5' from top, and minor dislocation, slickensides, core broken at base (0.15').	1.77	1255.40	1.90	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
COAL, core shattered, fragments mostly dull with minor bright bands.	0.19	1255.59	0.10)	
CLAYSTONE, carbonaceous.	0.13	1255.72	0.07)	
COAL, core badly broken, most fragments dull or dull with minor bright bands, some slickensides on shear (or bedding?) surfaces, angle of shear planes 47° 2.8' from top, 40° 4.1' from top, 23° from core axis 8.4' from top.	29.03	1284.75	15.31)	CHAMBERLAI SEAM
SANDSTONE, grey, medium grained, quartz-lithic, coaly wisps and becoming carbonaceous in top 1', calcite vein 0.10' from top.	4.32	1289.07	4.21	
SANDSTONE, grey, medium grained, becoming fine towards base, quartz-lithic, calcite veins mainly opposed to bedding at 42° to core axis. Bedding 73° to core axis.	18.93	1308.00	18.45	
SANDSTONE, grey, fine grained, quartz-lithic, a few calcite veins as above.	19.11	1327.11	18.63	

SUKUNKA D.D.H. C-14

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, as above. Bedding angle 73° to core axis.	9.39	1336.50	9.15	<u>BASE OF HOLE</u>

BORE NUMBER C-24

Grid Reference 32803.1N 89831.7E

Exploration Grid Reference K/1+1000'E

Date Commenced 20th Sept, 1971 Completed 29th Sept, 1971

Collar R.L. 4835.5 ft Standard Datum

Total Depth 1387.0 ft Electrically Logged ~~Yes~~/No

Drilled by Canadian Longyear Ltd

For Coalition Mining Limited

Logged by F. H. S. Tebbutt

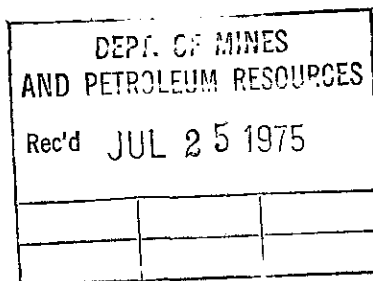
Angled Hole

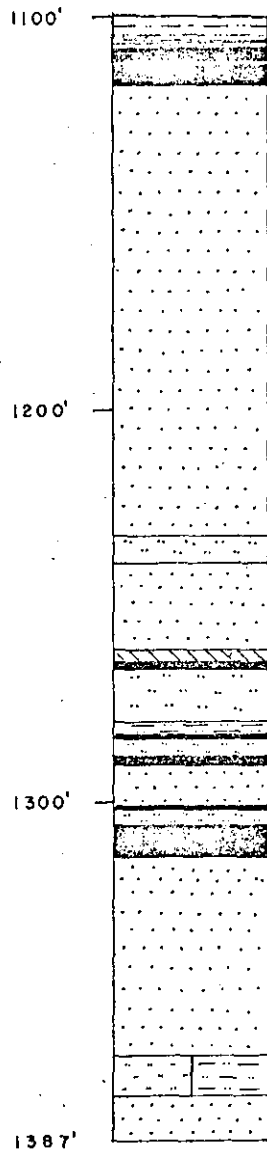
Declination 60°

Azimuth 157°

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain upper split	3717.2	2.82	30%	
Chamberlain lower split	3697.9	8.15	68%	





MOOSEBAR FORMATION
GLAUCONITIC SANDSTONE
BIRD SEAM

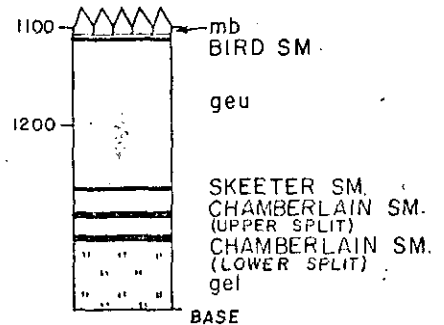
SILTSTONE PHASES
CARBONACEOUS CLAYSTONE INTERBEDS
COALY & SILTSTONE WISPS
SANDSTONE INTERBEDS, SHELL FOSSILS?
SKEETER SEAM
SANDSTONE INTERBEDS

CHAMBERLAIN SEAM - UPPER SPLIT
SILTSTONE INTERBEDS

CHAMBERLAIN SEAM - LOWER SPLIT

WORM CASTS

END OF HOLE



DETAIL OF GETHING
FORMATION
SCALE: 1" to 50'

SCALE: 1" to 200'

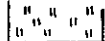
Prepared by :
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
COALITION MINING LIMITED

STRATIGRAPHIC LOGS
DDH C-24

CHAMBERLAIN SEAM
UPPER SPLIT

ASH %
CUMULATIVE
FROM FLOOR

1288.53



2.82

WT%

ASH%

C. S. N°

INCL.
BANDS

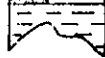
EXCL.
BANDS

11.6

11.6

4½

1291.35



Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for

SEAM SECTIONS

DDH C-24

COALITION MINING LIMITED

DRAWN BY pm


DATE Jan '72

SCALE: 1' to 2'

PAGE 1 of 1

CHAMBERLAIN SEAM
LOWER SPLIT

ASH %
CUMULATIVE
FROM FLOOR

		WT%	ASH%	C. S. N ^o	INCL. BANDS	EXCL. BANDS
1305.43					5.5	
		8.15	-	5.5	7	
1313.58						

Prepared by:
CLIFFORD McELROY & ASSOCIATES PTY. LTD.
for
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SEAM SECTIONS
DDH C-24

DRAWN BY pm

DATE Jan '72

SCALE: 1"to 2'

PAGE 1 of 1

Telegrams and Cables:
"Visor", Sydney

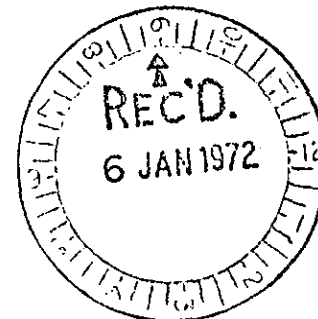
CARGO SUPERINTENDENTS

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

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

Certification

This is to Certify



APPLICANT: COALITION MINING

REPORT ON: SUKUNKA SAMPLE NO. 192
CORE NO. C24
~~SKETTER SEAM~~ CHAMBERLAIN SEAM (UPPER SPLIT)

REPORT NO. K71-1846

RECEIVED: 17. 11. 1971

REPORTED: 31. 12. 1971



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.

M. Bralley
A.R.A.C.I. Chief Chemist.

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

L. W. ...

INTRODUCTION: One (1) Coal Sample designated CORE NO. C24 SKEETER SEAM was received on 17. 11. 1971 from Clifford McElroy & Associates.

METHOD: The Coal Sample No. 192 was hand crushed to $\frac{3}{4}$ " size, sized at 30 mesh BSS and the +30 mesh BSS fraction washed in organic liquids at 1.60 specific gravity.

The float and sink fractions and 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.

The analysis of Fl.60 SG fraction of Sample No. 192 is also given in this report.

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

RESULTS: TABLE 1 : gives the sizing, washability and analytical data for the coal sample after hand crushing to $\frac{3}{4}$ " top size.

TABLE 1 WASHABILITY DATA FOR SAMPLE NO. 192 (after hand crushing to $\frac{3}{4}$ " top size)

<u>FRACTION</u>	<u>INDIVIDUAL</u>				<u>CUMULATIVE</u>		
	<u>WEIGHT</u>	<u>WT.%</u>	<u>ASH%</u>	<u>C.S.NO.</u>	<u>WT. %</u>	<u>ASH%</u>	<u>C.S.NO.</u>
Fl.60 SG	482	91.8	7.1	5	91.8	7.1	5
S1.60 SG	43	8.2	63.0	1	100.0	11.7	4½
-30 Mesh RC	37	6.5	9.7	8			

Total Weight of Sample = 562 grams
True Specific Gravity = 1.361
Thickness = 2.82'

ANALYSIS OF Fl.60 SG FRACTION OF SAMPLE NO. 192

Yield %	91.8
Air Dried Moisture %	1.0
Ash %	7.1
Volatile Matter %	19.6
Fixed Carbon %	72.3
Total Sulphur %	0.54
C.S.NO.	5
Calorific Value	14170 BTU/LB
Phosphorus %	0.020

SYDNEY
31st December 1971

Telegrams and Cables:
"Visor", Sydney

Telephone: 241 1105

CARGO SUPERINTENDENTS

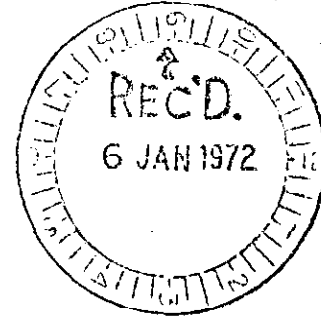
CO. (A/SIA.) PTY. LTD.

Scottish House,
19 BRIDGE ST.,
SYDNEY, 2000

Certification

This is to Certify

APPLICANT: COALITION MINING



REPORT ON: SUKUNKA SAMPLE NO. 193
CORE NO. C24
CHAMBERLAIN SEAM (LOWER SPLIT)

REPORT NO. K71-1847

RECEIVED: 17. 11. 1971

REPORTED: 31. 12. 1971



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

M. W. Bradley
A.R.A.C.I. Chief Chemist

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

L. W. Campbell

INTRODUCTION:

One (1) Coal Sample designated CORE NO. C24 CHAMBERLAIN SEAM was received on 17. 11. 1971 from Clifford McElroy & Associates.

METHOD:

The Coal Sample No. 193 was hand crushed to $\frac{3}{4}$ " , 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. 193 and the analysis are given in this report.

NOTE:

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

RESULTS:

TABLE 1 : gives the sizing, washability and analytical data for the sample after hand crushing to $\frac{3}{4}$ " top size.

TABLE 1

WASHABILITY DATA FOR SAMPLE NO. 193 (after hand crushing to $\frac{3}{4}$ ")

FRACTION	INDIVIDUAL				CUMULATIVE		
	WEIGHT	WT. %	ASH %	C.S.NO.	WT. %	ASH %	C.S.NO.
F1.30 SG	1468	45.3	2.4	9	45.3	2.4	9
S1.30 - F1.35 SG	1071	33.0	4.8	7½	78.3	3.4	8½
S1.35 - F1.40 SG	433	13.4	10.1	2	91.7	4.4	7½
S1.40 - F1.45 SG	130	4.0	13.3	1	95.7	4.8	7
S1.45 - F1.50 SG	88	2.7	14.6	1	98.4	5.0	7
S1.50 - F1.55 SG	14	0.4	17.1	1	98.8	5.1	7
S1.55 - F1.60 SG	16	0.4	24.2	1	99.2	5.2	7
S1.60 SG	21	0.8	46.3	0	100.0	5.5	7
-30 Mesh RC	276	7.8	5.1	8½			

Total Weight of Sample = 3517 grams

True Specific Gravity = 1.310

Thickness = 8.15'

ANALYSIS OF F1.60 SG FRACTION OF SAMPLE NO. 193

Yield %	99.2
Air Dried Moisture %	1.0
Ash %	5.3
Volatile Matter %	21.9
Fixed Carbon %	71.8
Total Sulphur %	0.39
C.S.NO.	7½
Calorific Value	14300 BTU/LB
Phosphorus %	0.011

SYDNEY

31st December 1971

STRATIGRAPHIC LOG
SUKUNKA D.D.H. C-24

<i>Structure</i>	<i>Description of Strata</i>	<i>Formation or Member</i>	<i>Depth to Base of Stratum (ft.)</i>
	No core to 1105.0 ft.		
	MUDSTONE, dark grey, claystone (white) .5' above base.	MOOSEBAR FM.	1106.0
	SANDSTONE, glauconitic.	GETHING FM.	1108.5
	<u>COAL</u> , mudstone split (1.5') top 1111.0'.	BIRD SEAM	1117.9
	SANDSTONE, grey, fine grained, quartz lithic.		1232.0
	SILTSTONE, grey.		1239.0
	SANDSTONE, grey, fine grained, quartz lithic, silty phases at top, clay- stone carbonaceous interbeds 1247'- 1252' followed by silty and coaly wisps.		1262.0
	CLAYSTONE, carbonaceous, sandy interbeds, some evidence of possible shell fossils.		1264.0
	<u>COAL</u> , (0.1') siltstone band 0.6'? from top, below which core missing to 1265.5'.	SKEETER SM.	1265.5
	SILTSTONE, grey, sandy interbeds.		1280.0

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Core not logged in detail - refer to Stratigraphic Log for particulars.		1226.24		
SANDSTONE, grey, fine grained, quartz-lithic, silty interbeds and phases, some coaly wisps and calcite veins parallel with bedding, bedding angle 80° to core axis.	19.20	1245.44	19.22	
SANDSTONE, as above.	1.60	1247.04	1.60	
SILTSTONE, grey, grading to mudstone dark grey at base.	3.75	1250.79	3.76	
SANDSTONE, grey, medium grained at top, becoming fine grained 2.80' from top, quartz-lithic, claystone carbonaceous interbeds and coaly wisps in fine grained section, the claystone carbonaceous interbeds concentrating to a phase (0.75') 1.08' from base.	12.65	1263.44	12.66	
<u>COAL</u> , mainly dull with minor bright bands.	2.19	1265.63	0.25	
CLAYSTONE, brown, carbonaceous.	0.14	1265.77	0.14	
SILTSTONE, grey, sandy interbeds, current bedding and slumping	8.56	1274.33	8.77	

SUKUNKA D.D.H. C-24

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SILTSTONE, grey, with mudstone dark grey interbeds, becoming phases towards base. Bedding angle 84° from core axis.	8.47	1282.80	8.67	
<u>COAL</u> , dull and bright, core broken.	1.45	1284.25	0.59	
MUDSTONE, dark grey.	1.19	1285.44	1.19	
SILTSTONE, grey, mudstone darker grey interbeds.	3.09	1288.53	3.09	
<u>COAL</u> , mainly dull with minor bright bands, core broken.	1.59	1290.12	0.53)
dull and bright, core broken.	0.42	1290.54	0.14	) CHAMBERLAIN SEAM
core broken and mixed. Most fragments dull with bright bands.	0.81	1291.35	0.27	) upper split
CLAYSTONE, brown, carbonaceous, some calcite veins, coaly wisps, listric surfaces.	0.85	1292.20	0.85	
SANDSTONE, grey, fine grained, quartz-lithic, claystone carbonaceous interbeds and coaly wisps.	9.17	1301.37	9.17	

SUKUNKA D.D.H. C-24

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
CLAYSTONE, brownish grey, some silty interbeds.	3.67	1305.04	3.67	
CLAYSTONE, brown, carbonaceous, fine calcite veins at top and bottom.	0.39	1305.43	0.39	
<u>COAL</u> , dull and bright, fracture plane 34° to core axis.	1.71	1307.14	1.36)
bright.	0.09	1307.23	0.07)
mainly dull with minor bright bands, fracture plane 15° to core axis.	0.28	1307.51	0.22)
dull and bright.	0.56	1308.07	0.44	) CHAMBERLA SEAM
mainly dull with minor bright bands, fracture plane 15° to core axis.	0.51	1308.58	0.40	) lower spl
dull and bright, fracture planes at 15° to core axis.	1.19	1309.77	0.94)
dull.	0.16	1309.93	0.13)

SUKUNKA D.D.H. C-24

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
COAL, dull and bright.	0.92	1310.85	0.73)	
)	
mainly dull with minor bright bands.	0.34	1311.19	0.27)	
)	
bright.	0.49	1311.68	0.39)	
)	
mainly bright with minor bands, fracture at 12° to core axis.	0.30	1311.98	0.24)	
)	
dull.	0.24	1312.22	0.19)	CHAMBERLAIN SEAM
)	
dull and bright.	0.47	1312.69	0.37)	
)	
mainly dull with minor bright bands, fracture at 12° to core axis.	0.33	1313.02	0.26)	
)	
dull and bright.	0.32	1313.34	0.25)	
)	
core broken to small fragments, mostly bright.	0.24	1313.58	0.19)	
)	
SANDSTONE, grey, medium grained, quartz-lithic, tending carbonaceous at top and with coaly wisps near top. Bedding angle 83° to core axis.	11.95	1325.53	11.80	

SUKUNKA D.D.H. C-24

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor(ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
SANDSTONE, grey, becoming brownish grey, medium grained becoming fine grained, quartz-lithic. Worm casts from 5.4' to 8.8' from top. Bedding angle 76 ^o to core axis. Current bedded.	19.32	1344.85	19.08	
SANDSTONE, grey, fine grained, quartz-lithic, current bedded.	19.32	1364.17	19.08	
SANDSTONE, as above.	0.71	1364.88	0.70	
SILTSTONE AND MUDSTONE INTERBEDS, siltstone grey and mudstone dark grey interbedded. Sandy interbeds and phases, mud blebs at base. Bedding angle 80 ^o to core axis.	10.39	1375.27	10.26	
SANDSTONE, grey, fine grained, quartz lithic, some thin silty interbeds..	8.31	1383.58	8.21	
SANDSTONE, grey, fine grained, quartz-lithic. Bedding angle 80 ^o to core axis.	3.42	1387.00	3.38	
				<u>Base of Hole</u>

657

R - Series

R-1 to R-15

lacks R-7
(Abandoned in Overburden)

OPEN FILE

DEPT. OF MINES
AND PETROLEUM RESOURCES
Rec'd JUL 25 1975

BORE NUMBER R-1

Grid Reference 38404N 86877E

Exploration Grid Reference H+1100'/2

Date Commenced 4th August, 1971 Completed 6th August, 1971

Collar R.L. 3868

Standard Datum

Total Depth 310

Electrically Logged ~~Yes~~/No

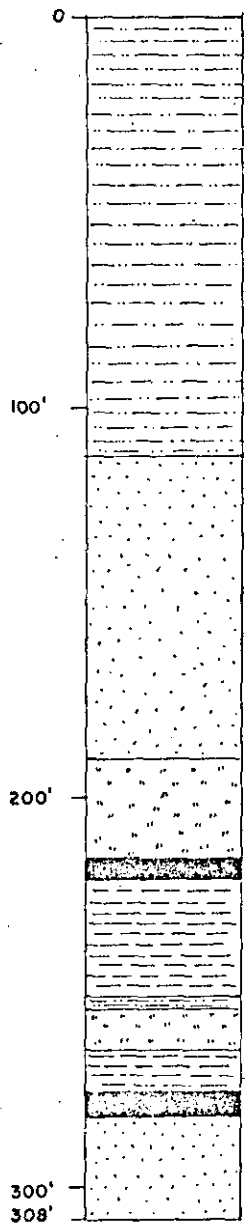
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	2586	Not determinable		



MOOSEBAR FORMATION

MEDIUM GRAINED QUARTZ-LITHIC SANDSTONE

SILTSTONE

COAL

MUDSTONE

SILTSTONE

MUDSTONE

CHAMBERLAIN SEAM

END OF HOLE

SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R 1

DRAWN BY S A

DATE February '72

PAGE 1 of 1

BORE NUMBER R-2

Grid Reference 38660N 87273E

Exploration Grid Reference H+900'/2+200'

Date Commenced 6th August, 1971 Completed 7th August, 1971

Collar R.L. 3826 Standard Datum

Total Depth 302 Electrically Logged Yes/No

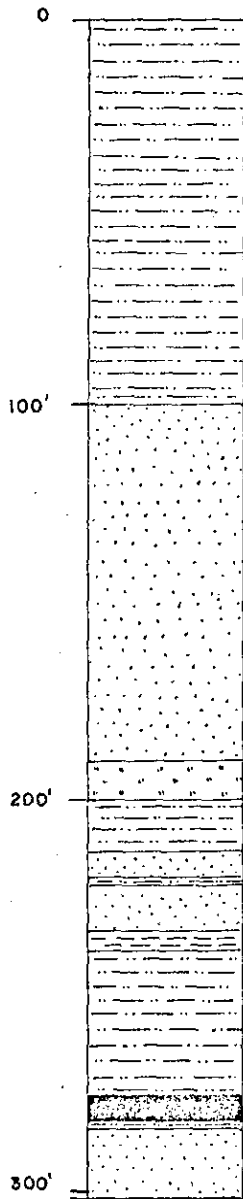
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G. R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	2542	Not determinable		



MOOSEBAR FORMATION

MEDIUM GRAINED QUARTZ-LITHIC SANDSTONE

SILTSTONE

CARBONACEOUS CLAYSTONE

CARBONACEOUS CLAYSTONE

MUDSTONE

CLAYSTONE

CHAMBERLAIN SEAM

END OF HOLE

SCALE 1" to 50'

Prepared by
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for
COALITION MINING LIMITED

STRATIGRAPHIC LOG

REVERSE CIRCULATION D.H R2

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DATE February '72

PAGE 1 of 1

BORE NUMBER R-3

Grid Reference 37404N 87584E

Exploration Grid Reference H/2

Date Commenced 8th August, 1971 Completed 10th August, 1971

Collar R.L. 3949

Standard Datum

Total Depth 350

Electrically Logged ~~Y/ES~~/No

Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3619	Not determinable		

BORE NUMBER R-4

Grid Reference 38460N 87793E

Exploration Grid Reference H+200'/2+1000'

Date Commenced 10th August, 1971 Completed 11th August, 1971

Collar R.L. 3894 Standard Datum

Total Depth 327 Electrically Logged Yes/No

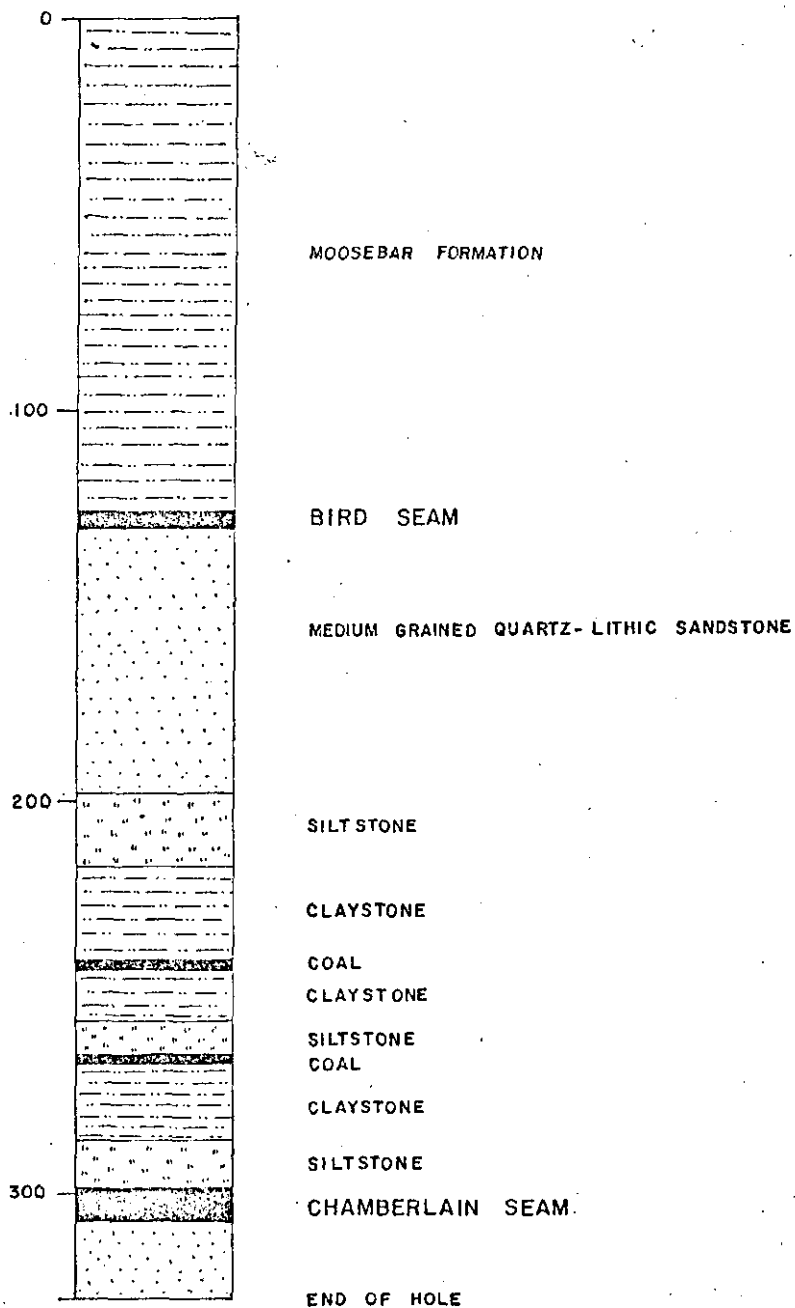
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3579	Not determinable		



SCALE 1" to 50'

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 for
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STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R4

BORE NUMBER R-5

Grid Reference 38395N 88278E

Exploration Grid Reference H/2+1200'

Date Commenced 12th August, 1971 Completed 13th August, 1971

Collar R.L. 3916

Standard Datum

Total Depth 310

Electrically Logged *Yes/No*

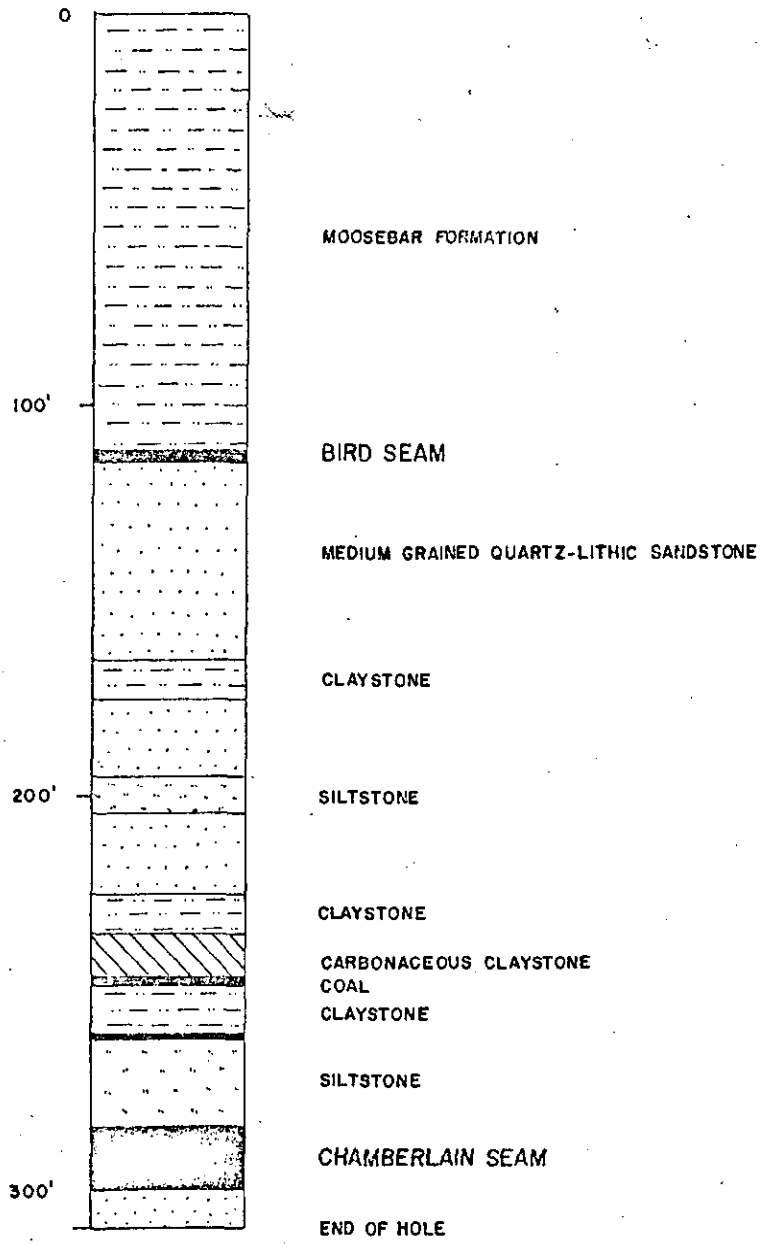
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3549	Not determinable		



SCALE 1" to 50'

Prepared by
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 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R5

BORE NUMBER R-6

Grid Reference 38662N 88682E

Exploration Grid Reference H/2+1700'

Date Commenced 14th August, 1971 Completed 15th August, 1971

Collar R.L. 3900 Standard Datum

Total Depth 350 Electrically Logged Yes/No

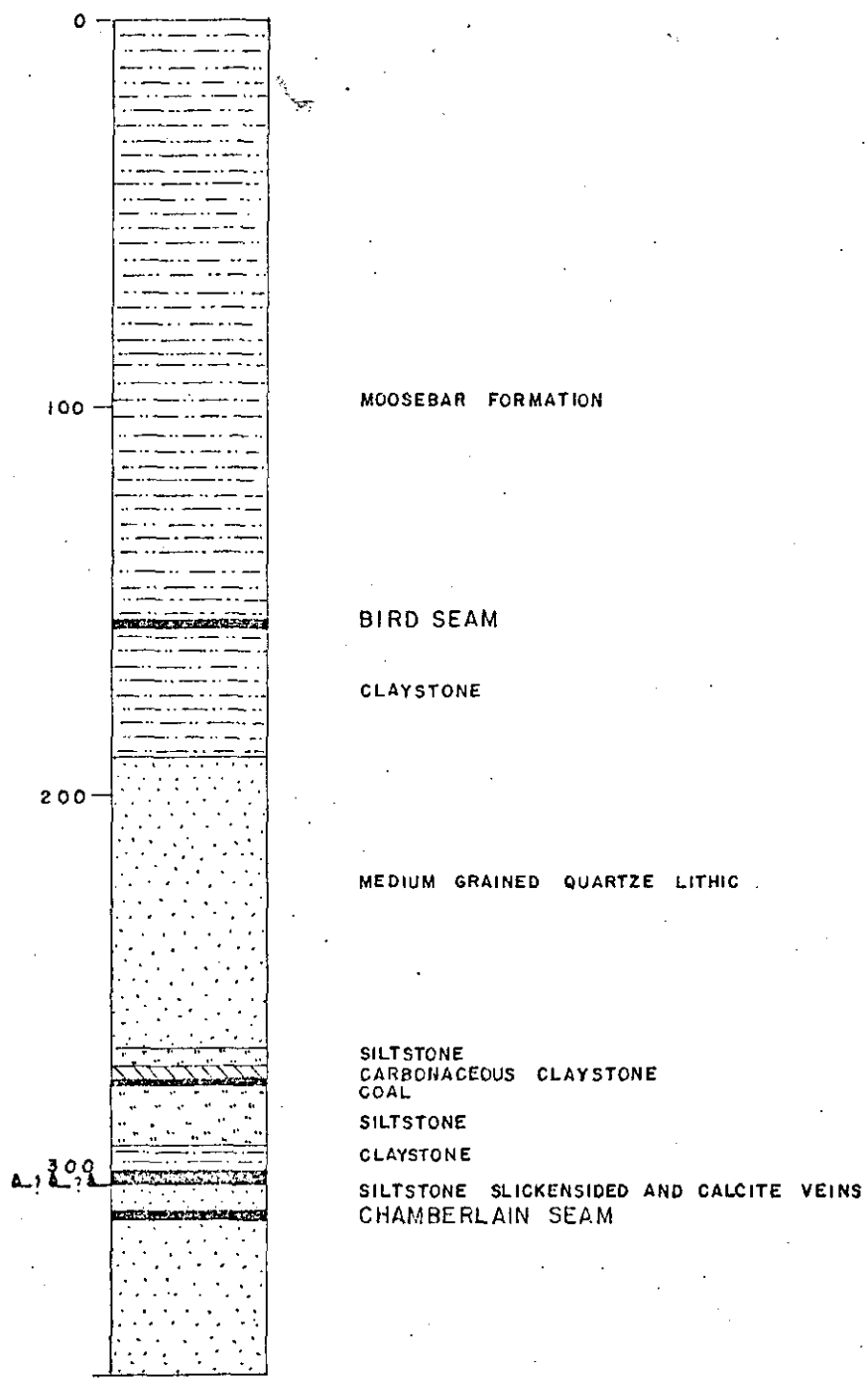
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3582	Not determinable		



SCALE 1" to 50'

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 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG

REVERSE CIRCULATION D.H. R6

DRAWN BY S.A.

DATE February '72

PAGE 1 of 1

BORE NUMBER R-8

Grid Reference 38615N 89100E

Exploration Grid Reference I+1500'/3+500'

Date Commenced 15th August, 1971 Completed 17th August, 1971

Collar R.L. 3999 Standard Datum

Total Depth 465 Electrically Logged Yds/No

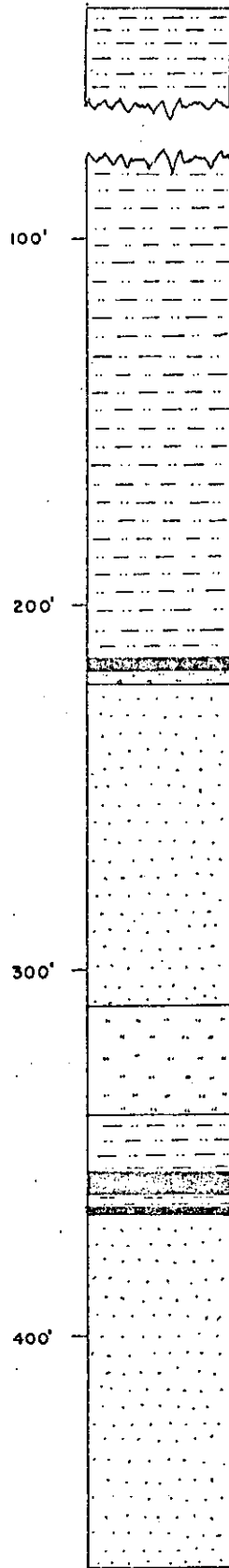
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3631	Not determinable		



MOOSEBAR FORMATION

BIRD SEAM

MEDIUM GRAINED QUARTZ-LITHIC SANDSTONE

SILTSTONE

CLAYSTONE

CHAMBERLAIN SEAM

END OF HOLE

SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R 8

DRAWN BY S.A.

DATE February '72

PAGE 1 of 1

BORE NUMBER R-9

Grid Reference 38930N 89960E

Exploration Grid Reference I+1500'/3+1000'

Date Commenced 17th August, 1971 Completed 18th August, 1971

Collar R.L. 4036.5

Standard Datum

Total Depth 350

Electrically Logged Yes/No

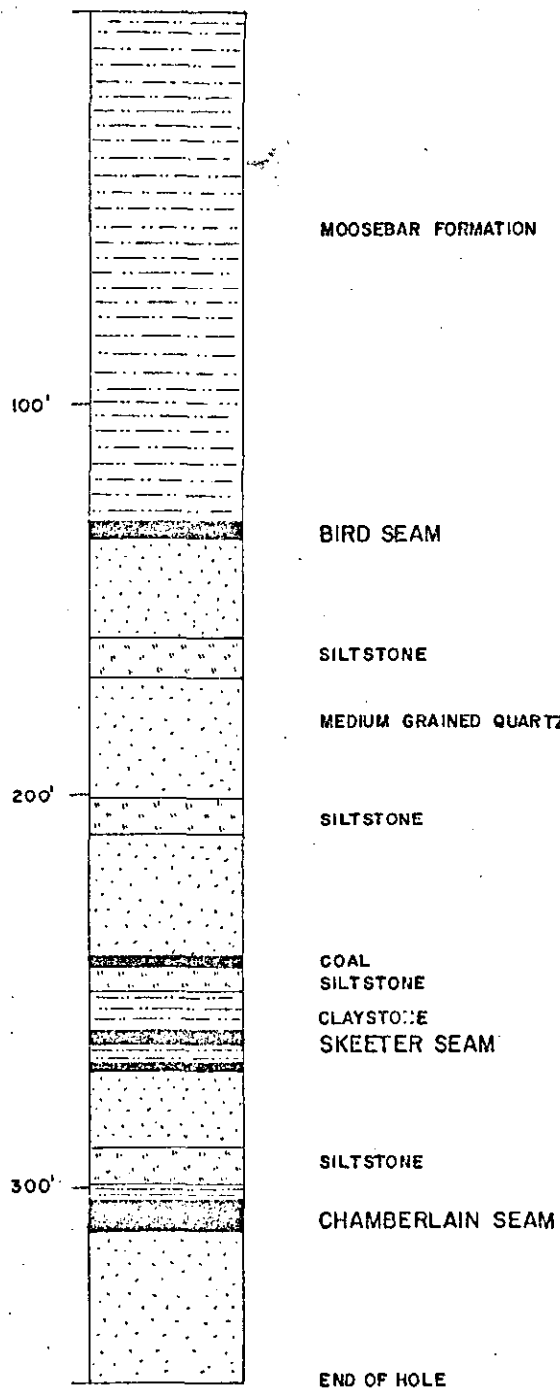
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3724.5	Not determinable		



SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R 9

DRAWN BY S.A

DATE February '72

PAGE 1 of 1

BORE NUMBER - R-10

Grid Reference 38492.5N 88510.8E

Exploration Grid Reference H/2+1600'

Date Commenced 19th August, 1971 Completed 22nd August, 1971

Collar R.L. 3901.4 Standard Datum

Total Depth 500 Electrically Logged Yes/No

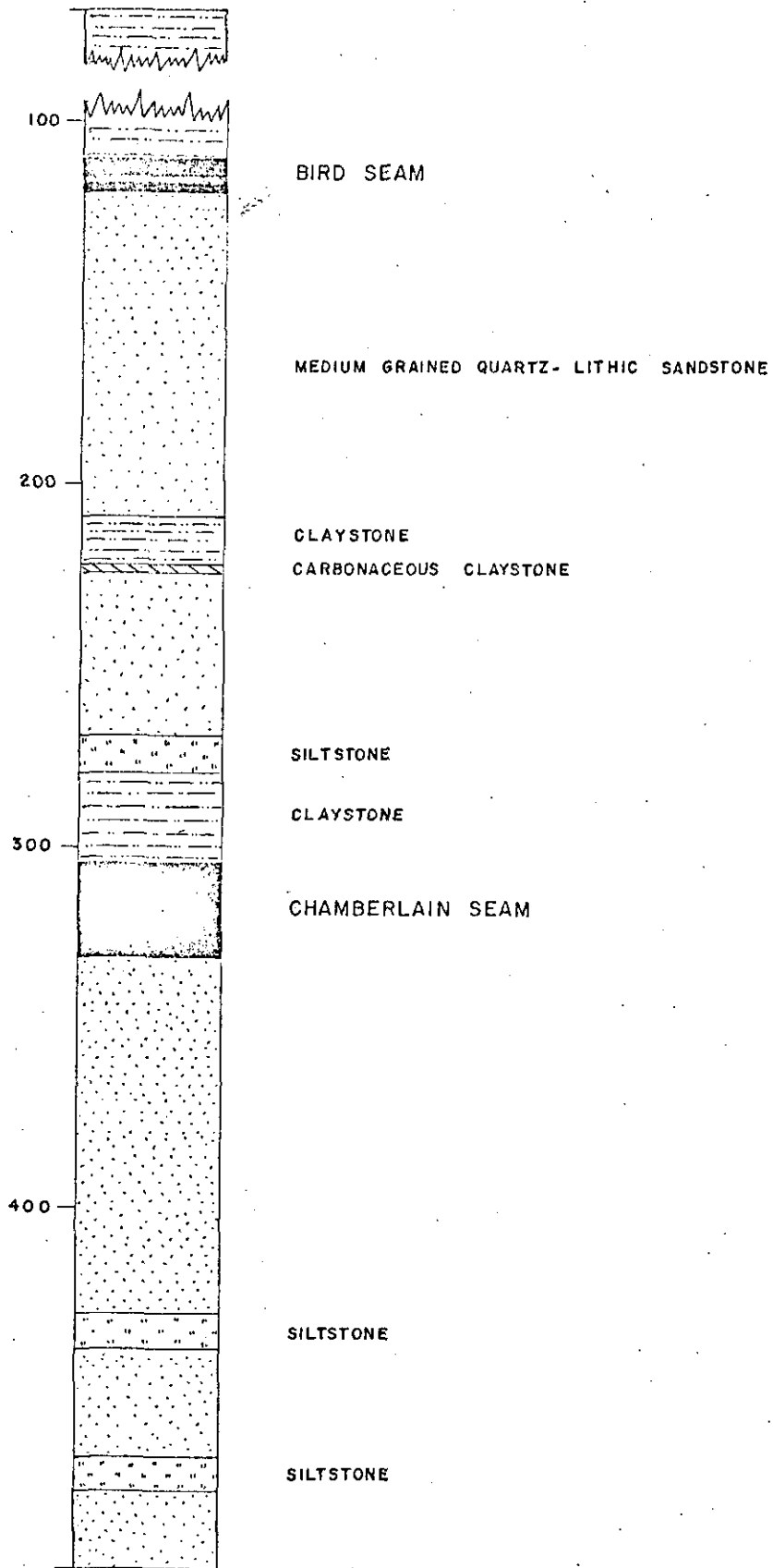
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3569.4	Not determinable		



SCALE 1" to 50'

BORE NUMBER R-11

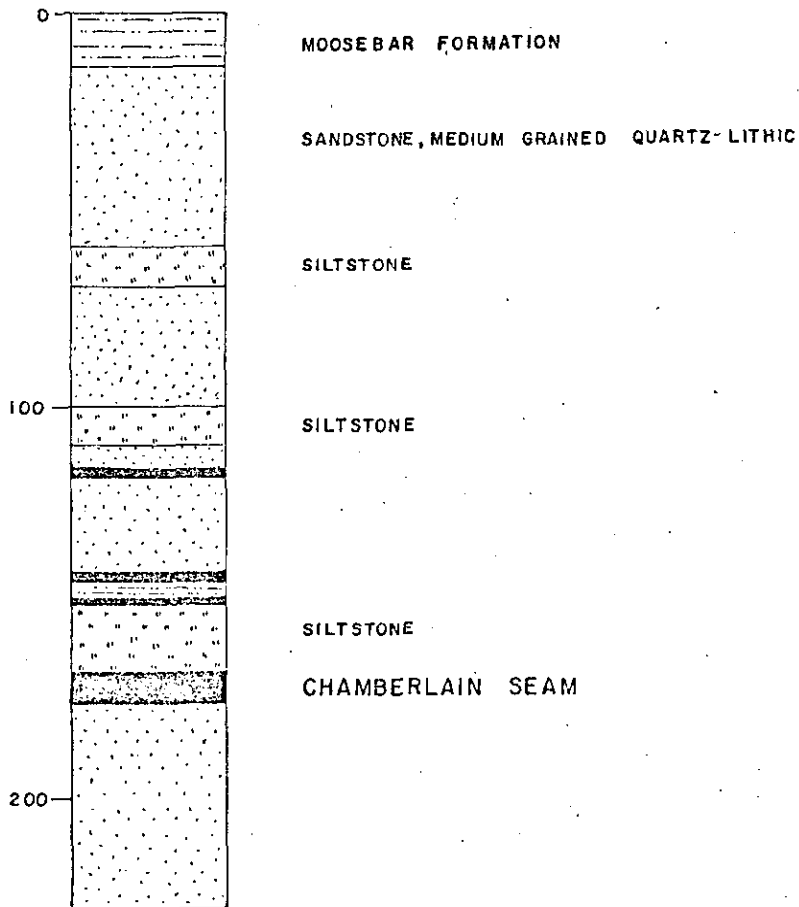
Grid Reference 38787.9N 86038.5E
Exploration Grid Reference H+1500'/1+1700'

Date Commenced 23rd August, 1971 Completed 24th August, 1971

Collar R.L. 3759.8 Standard Datum
Total Depth 228 Electrically Logged Yes/No
Drilled by Big Indian Drilling
For Coalition Mining Limited
Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3583.8	Not determinable		



SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY. LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R II

DRAWN BY S A

DATE January, '72

PAGE 1 of 1

BORE NUMBER R-12

Grid Reference 39502.9N 90823.0E

Exploration Grid Reference I+1500'/3+1900'

Date Commenced 25th August, 1971 Completed 26th August, 1971

Collar R.L. 4084.3 Standard Datum

Total Depth 456 Electrically Logged Yes/No

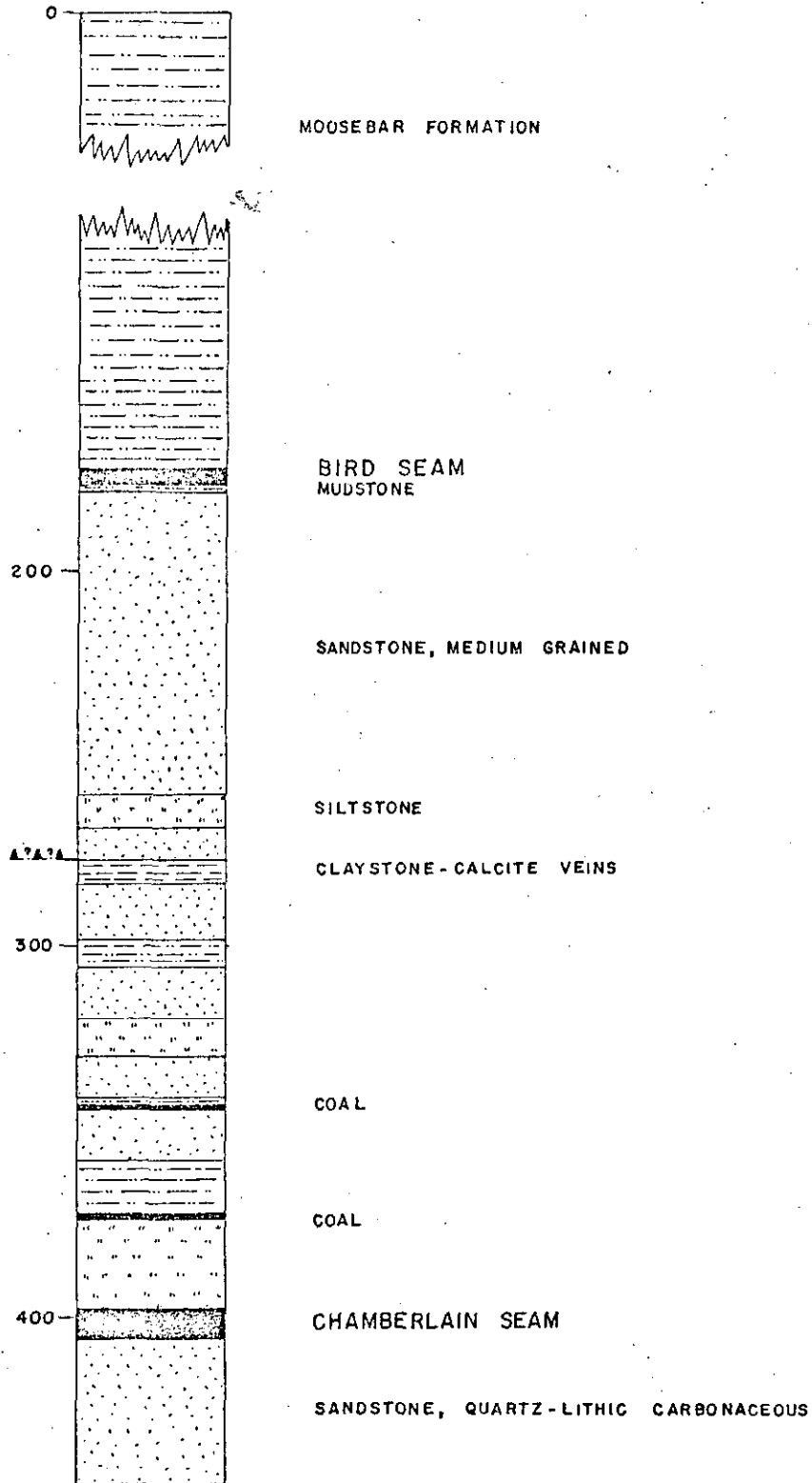
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3678.3	Not determinable		



SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R 12

BORE NUMBER R-13

Grid Reference 40068.0N 91558.1E

Exploration Grid Reference I+1500'/4+300'

Date Commenced 27th August, 1971 Completed 29th August, 1971

Collar R.L. 4172.1 Standard Datum

Total Depth 430 Electrically Logged Yes/No

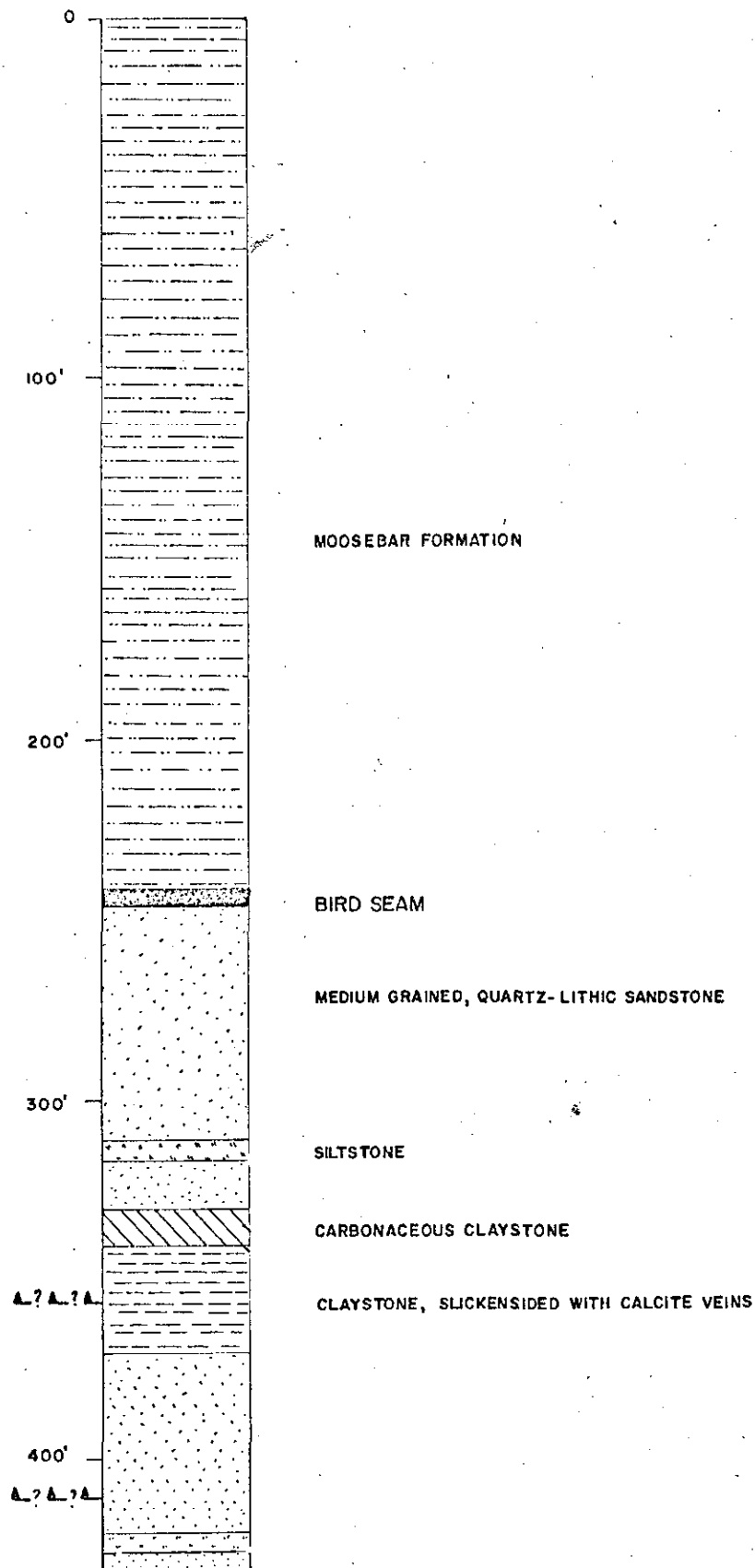
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
------	---------------	--------------------	----------	---------



SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG

REVERSE CIRCULATION D.H. R 13

DRAWN BY S.A.

DATE February '72

PAGE 1 of 1

BORE NUMBER R-14

Grid Reference 39847.0N 91213.2E

Exploration Grid Reference I+1500'/4+100'

Date Commenced 29th August, 1971 Completed 30th August, 1971

Collar R.L. 4127.4 Standard Datum

Total Depth 460 Electrically Logged Yes/No

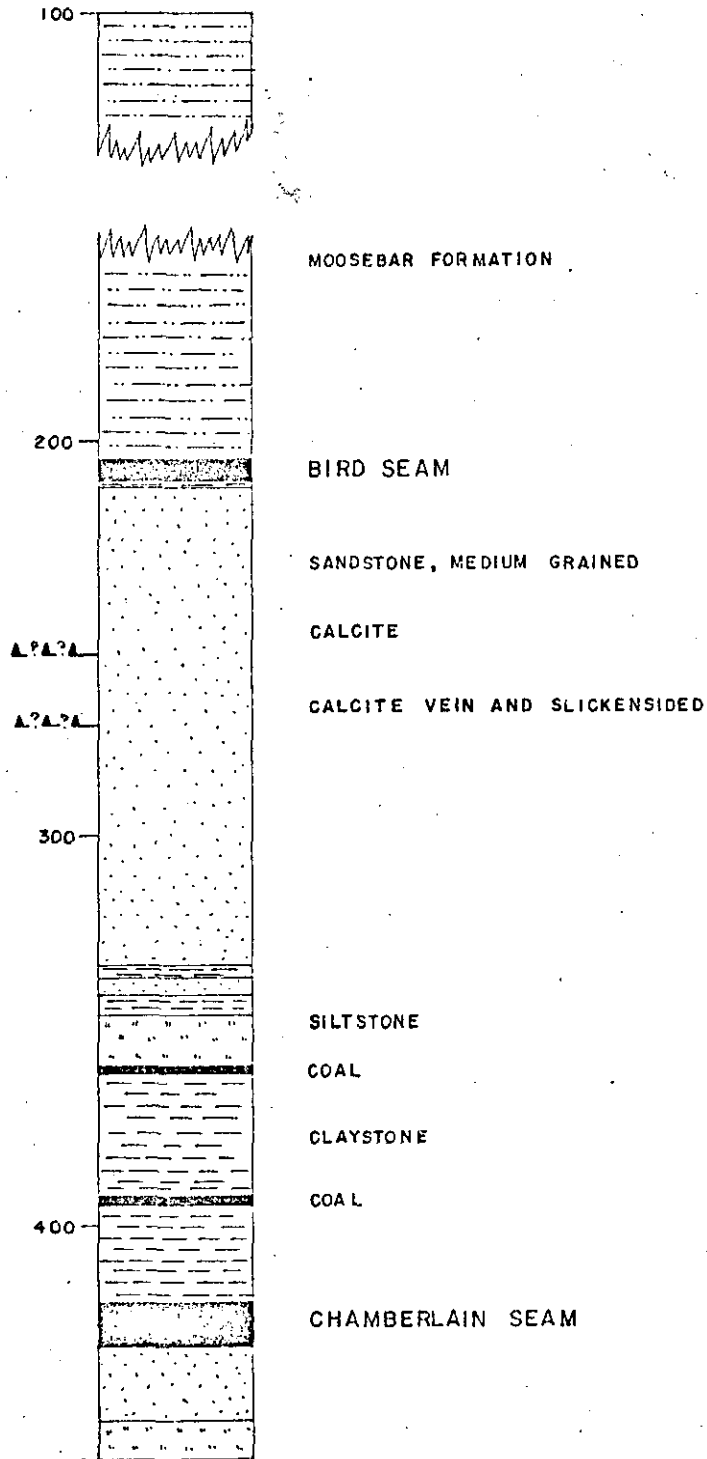
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3697.1	Not determinable		



SCALE 1" to 50'

Prepared by
 CLIFFORD McELROY & ASSOCIATES PTY LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R14

BORE NUMBER R-15

Grid Reference 50052.9N 77538.3E

Exploration Grid Reference A+2000'/1+700'

Date Commenced 31st August, 1971 Completed 1st September, 1971

Collar R.L. 3966.6 Standard Datum

Total Depth 148 Electrically Logged Yes/No

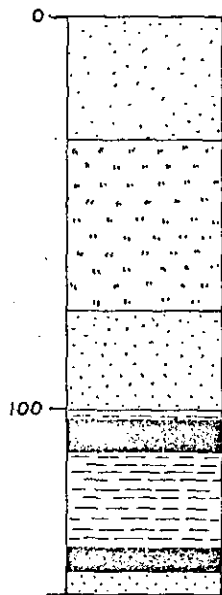
Drilled by Big Indian Drilling

For Coalition Mining Limited

Logged by F.H.S. Tebbutt and G.R. Jordan

COAL SEAM INTERSECTIONS

Seam	Floor R.L.	Thickness (ft.)	Recovery	Comment
Chamberlain	3824.6		Not determinable	



SILSTONE

COAL

SANDSTONE, MEDIUM GRAINED

SKEETER SEAM

CLAYSTONE

CHAMBERLAIN SEAM

SCALE 1" to 50'

Prepared by :
 CLIFFORD McELROY & ASSOCIATES PTY. LTD.
 for
 COALITION MINING LIMITED

STRATIGRAPHIC LOG
 REVERSE CIRCULATION D.H. R15

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C - Series

Electric Logs

for

C-17, C-18, C-19,

C-20, and C-21.

OPEN FILE
MINERAL

DEPARTMENT OF
AND PETROLEUM RESOURCES

Rec'd JUL 25 1975

ROKKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

COMPANY: COALITION MINING LIMITED

WELL: C - 21

LOCATION: SIKOYKA PROJECT

FIELD: BRITISH COLUMBIA

PROVINCE: BRITISH COLUMBIA

PROFESSOR: GEORGE LEVY

LOG REVISION: 1.5

LOG DATE: 10 OCTOBER 71

LOG DEPTH: 0

LOG TYPE: 0

LOG SCALE: 0

LOG UNIT: 0

LOG CORRECTION: 0

LOG METHOD: 0

LOG NO: 0

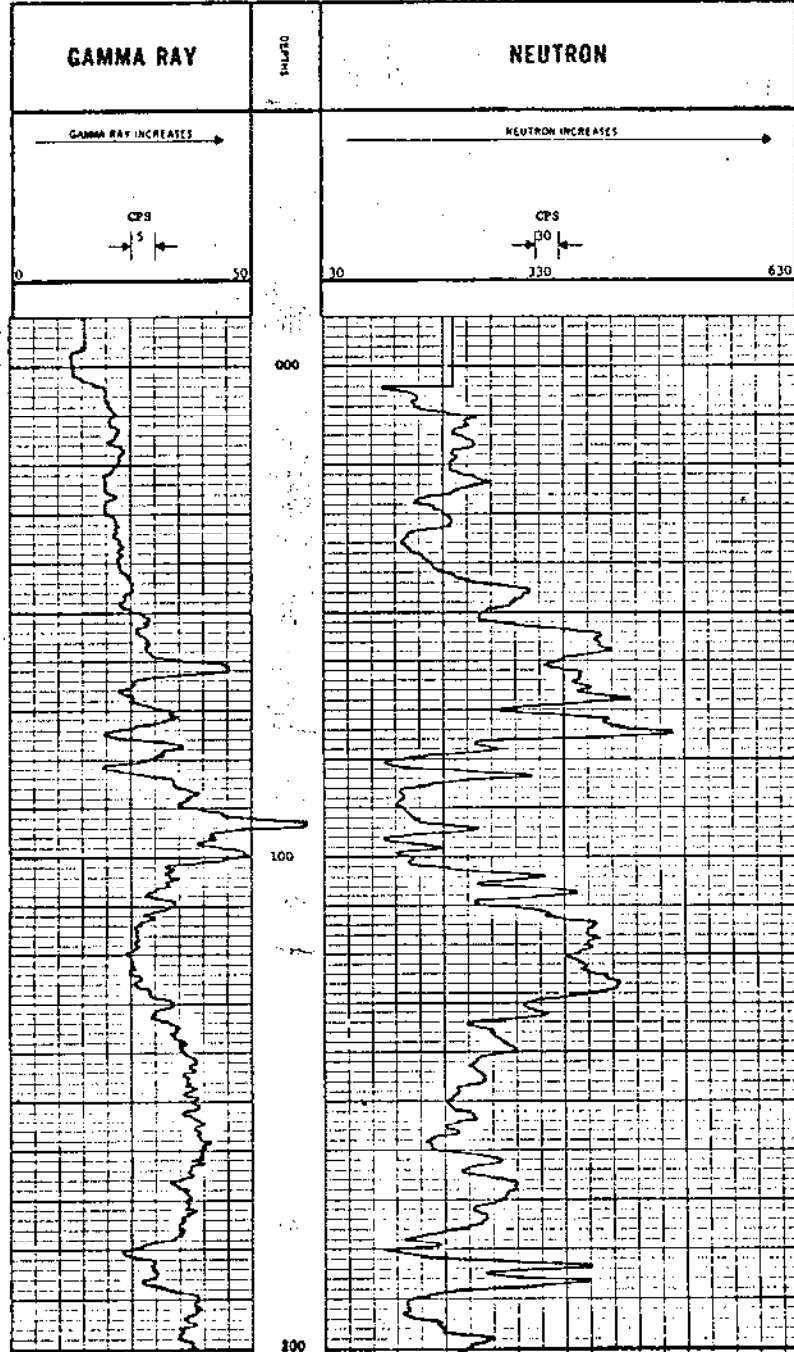
LOG NO: 657

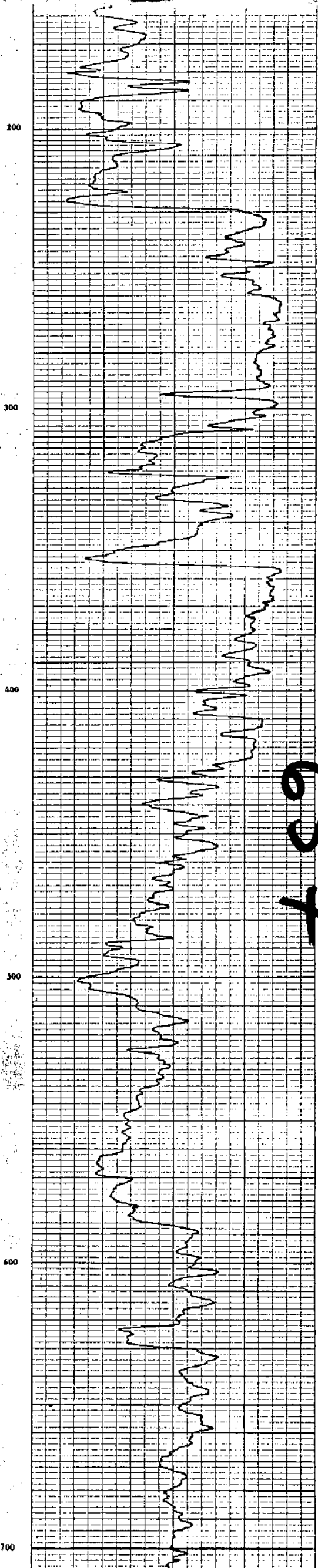
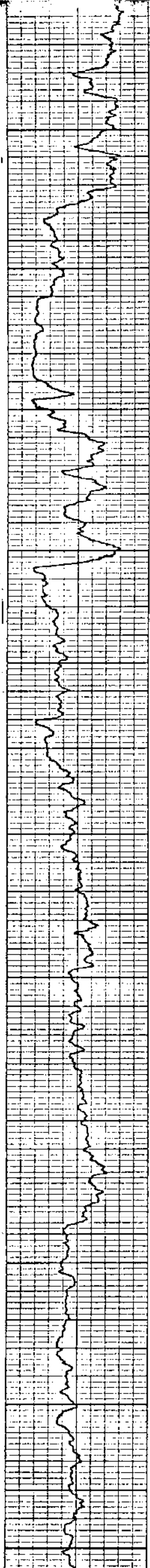
FILE NO	LOG NO	LOG DATE	LOG DEPTH	LOG TYPE	LOG SCALE	LOG UNIT	LOG CORRECTION	LOG METHOD	LOG NO
COMPANY	WELL	LOCATION	FIELD	PROVINCE	PROFESSOR	LOG REVISION	LOG DATE	LOG DEPTH	LOG TYPE
COALITION MINING LIMITED	C - 21	SIKOYKA PROJECT	BRITISH COLUMBIA	BRITISH COLUMBIA	GEORGE LEVY	1.5	10 OCTOBER 71	0	0
OPERATING TIME	TRUCK NO	ASTROMINI TRUCK NO	LOG SERIAL NO	TYPE	LENGTH	DISTANCE TO SOURCE	DIAMETER	DETECTOR MODEL NO	EGUL MODEL NO
4 HOURS	20		CG27U4A65	AMBe	18 INCH	0.55 FT	2 IN	GEIGER	
PERMISSION	WITNESSED BY	WALLIS							

EQUIPMENT DATA			
GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
EGUL MODEL NO		EGUL MODEL NO	NEUTRON/NEUTRON
DIAMETER	2 IN	DIAMETER	1 IN
DETECTOR MODEL NO		DETECTOR MODEL NO	
TYPE	GEIGER	TYPE	PROPORTIONAL
LENGTH	18 INCH	TYPE	6 INCH
DISTANCE TO SOURCE	0.55 FT	TYPE	MRC-N55-W
		TYPE	598
		TYPE	19 INCH
		TYPE	AmBe
		TYPE	0.94 x 10 ⁶ N/S

LOGGING DATA											
GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTH FROM	DEPTH TO	SPEED FT/MIN	TC SEC	SENS SETTINGS	ZERO DIV L ORR	APCR UNITS PER LOG DIV	TC SEC	SENS SETTINGS	ZERO DIV L ORR	APCR UNITS PER LOG DIV
1	0	1434	12	5	17	0L	5 CPS	2.5	0.23	1L	30 CPS

REMARKS: LOGGED THRU DRILLROD





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ROKKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.

COMPANY: COALITION MINING LIMITED

LSO
SEC
TWP
RGE
M

WELL: C-11

LOCATION: SASKURNA PROJECT

FIELD:

PROVINCE: BRITISH COLUMBIA

Personnel: Operator: J. BROWN, D. LEVY, L. ...
Log: ...
Well: ...

Run No: 23
Date: 23 SEPTEMBER 71
Time: 2:30
Last Reading: 0
Factor Logged: 2496
Direct Reading: 2497
Count Rate: ...
Count Depth: ...
Type of Log: MATRA
Type of Paper: ...
M. & O. Diagram: 3 INCH
Coreing Line: 5 1/2 HOURS
Log No: 20
Field No: ...
Witnessed By: VALLIS

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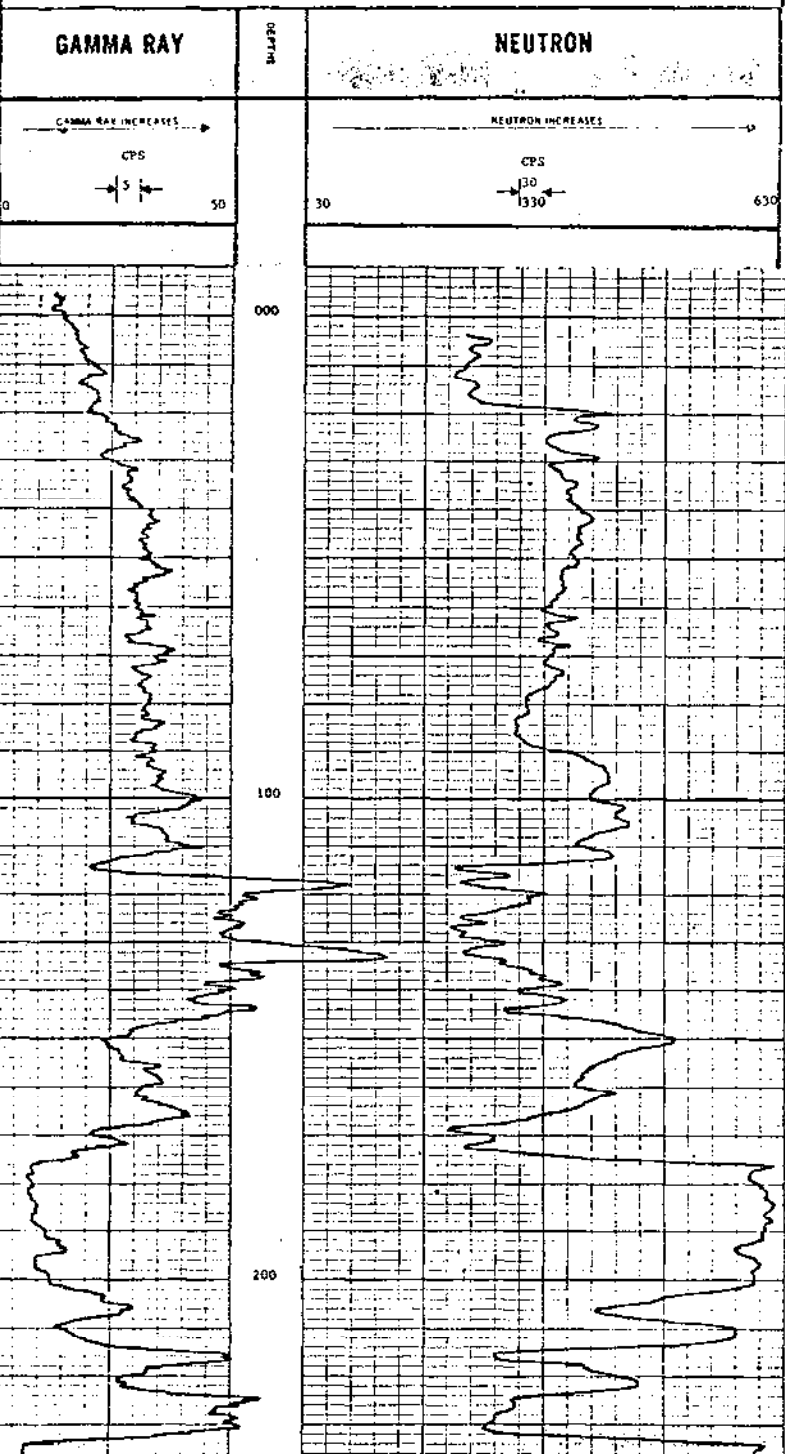
EQUIPMENT DATA

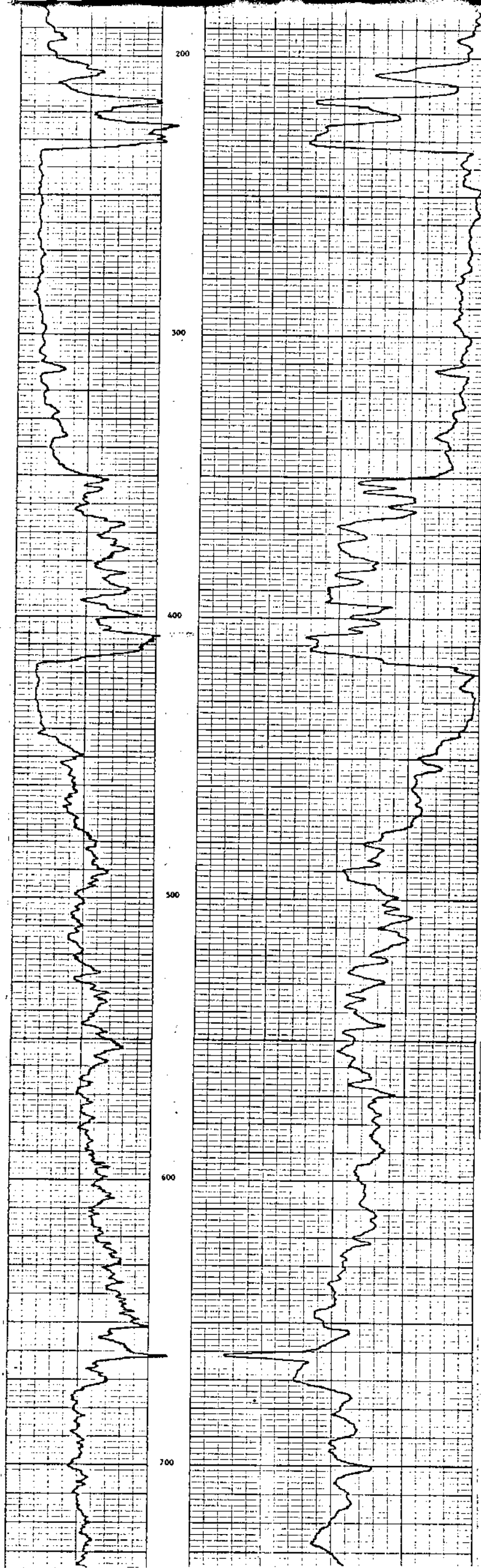
GAMMA RAY		NEUTRON	
RUN NO	DNK	RUN NO	TYPE
TOOL MODEL NO		TOOL MODEL NO	NEUTRON/NEUTRON
DIAMETER	1 1/2	DIAMETER	1 1/2
DETECTOR MODEL NO		DETECTOR MODEL NO	
TYPE	GEIGER	TYPE	PROPORTIONAL
LENGTH	38 INCH	LENGTH	8 INCH
DISTANCE TO SOURCE	6.35 FT	SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	398
HOST TRUCK NO	20	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CG:27UGA65	STRENGTH	6.94 x 10 ⁶ N/S

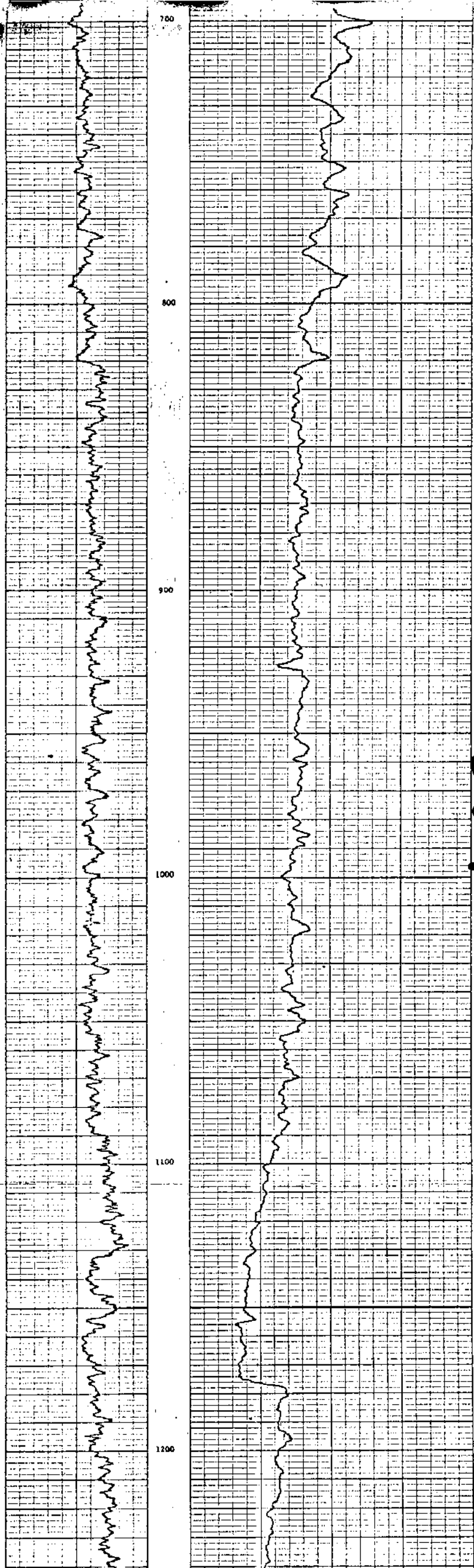
LOGGING DATA

RUN NO	GENERAL		GAMMA RAY				NEUTRON						
	DEPTH	SPEED	T.C.	SENS.	ZERO	APR. UNITS	T.C.	SENS.	ZERO	APR. UNITS			
	FROM	TO	SEC	SE/FINCS	DIV. L OR R	PER LOG DIV	SEC	SETTINGS	DIV. L OR R	PER LOG DIV			
1	0	1296	11	4	17	OL	5	CPS	4	D-22	1L	30	CPS

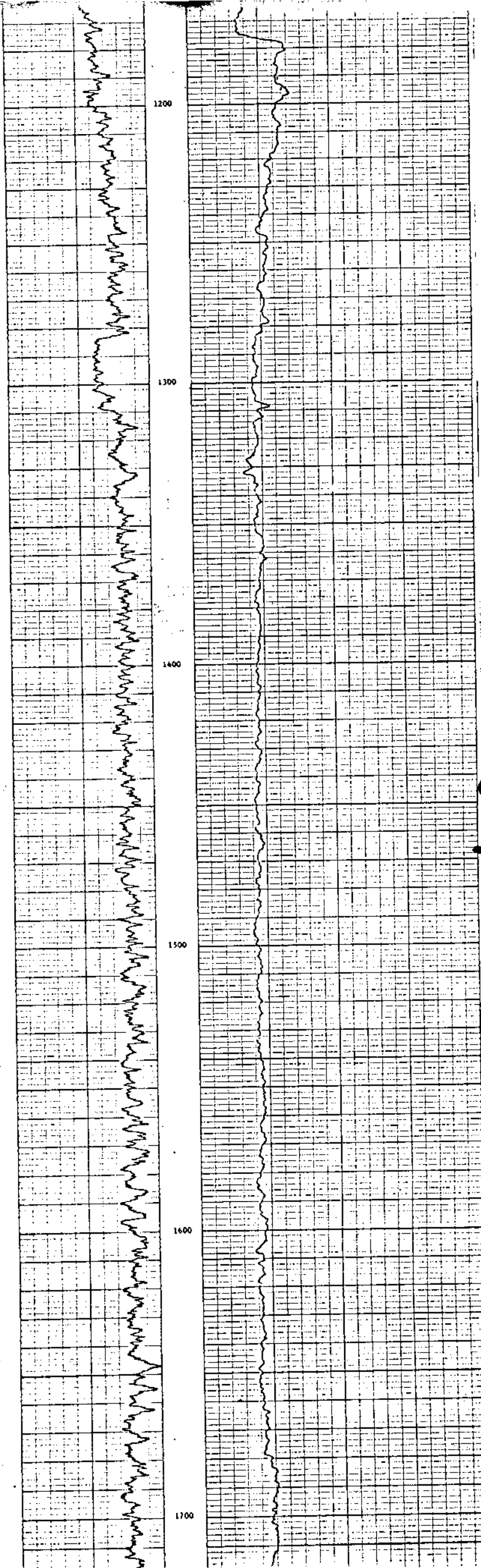
REMARKS:



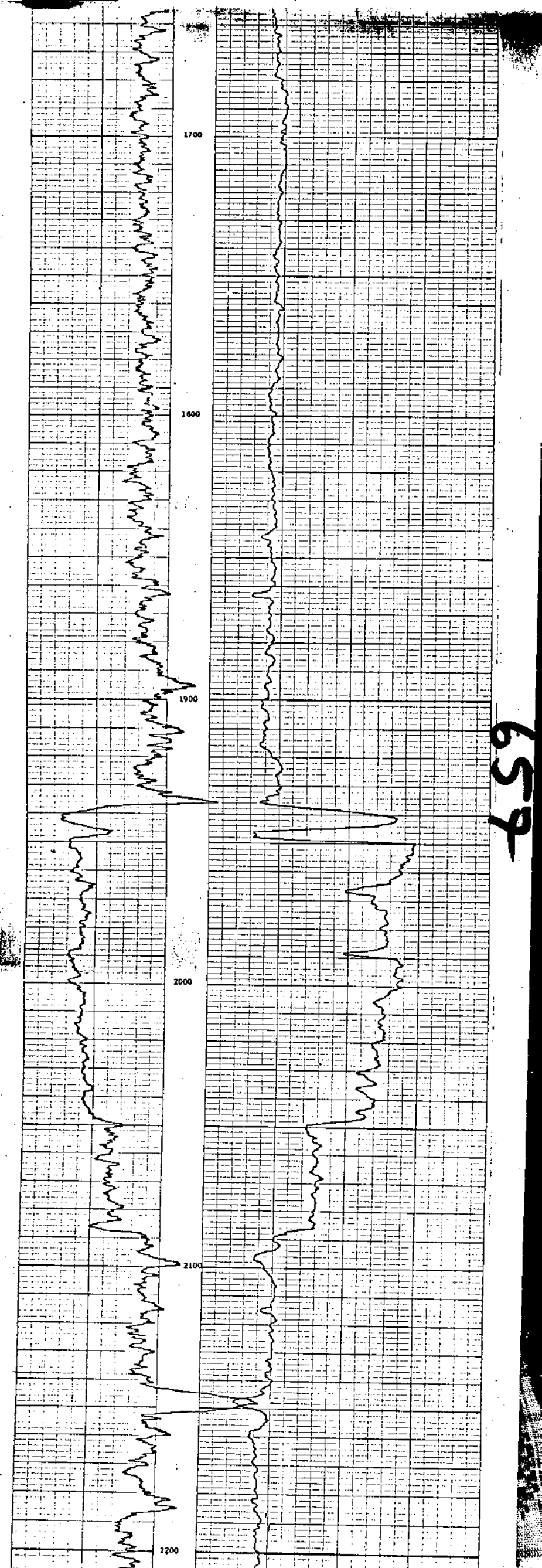


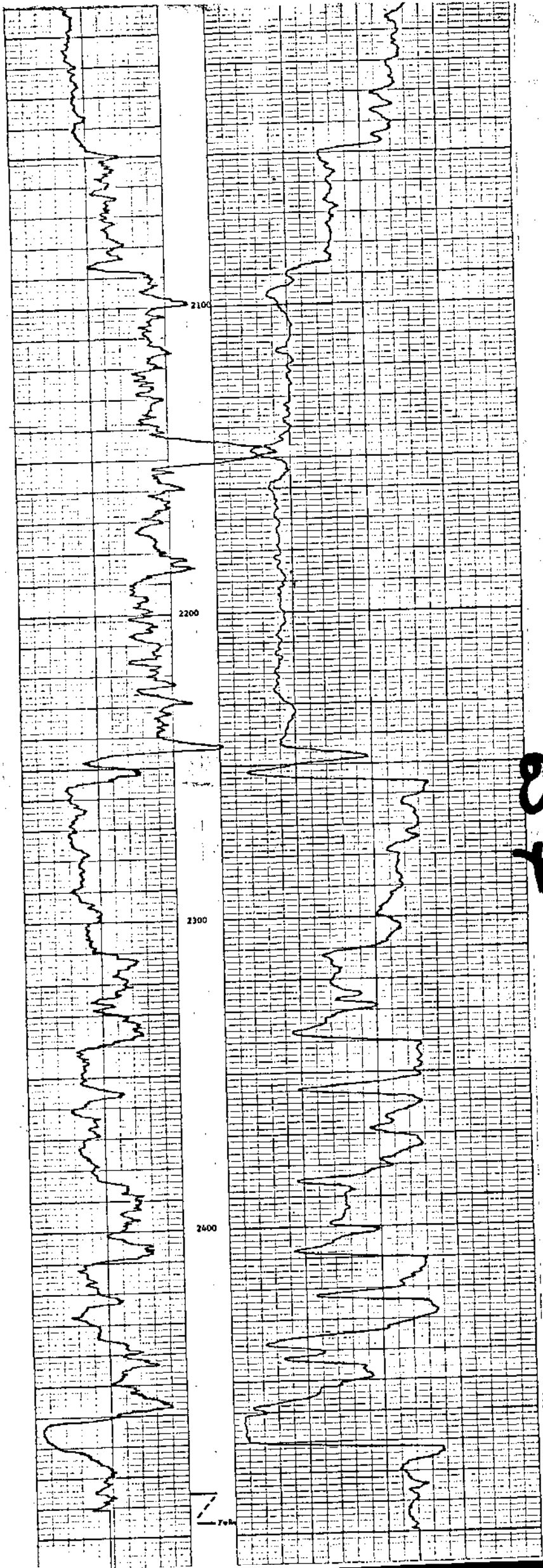


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ROKKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. COMPANY: COLLATION MINING LIMITED

WELL: C-18

LOCATION: SUDOKA PROJECT

FIELD: _____

PROVINCE: BRITISH COLUMBIA

Present from: GEORGE LEVIT, Station: _____

Log prepared from: GEORGE LEVIT, Station: _____

Well Depth: _____

Run No: ONE

Date: 15 SEPTEMBER 71

First Reading: 892

1st Reading: 0

1st Reading Logged: 892

Depth Reached: 893

Casing Size: _____

Casing Drive: WATER

Fluid Type: _____

Fluid Level: 3 INCH

Well Depth: _____

Operating Time: 3 HOURS

Truck No: 20

Recorded by: SMH

Witnessed by: WATLIS

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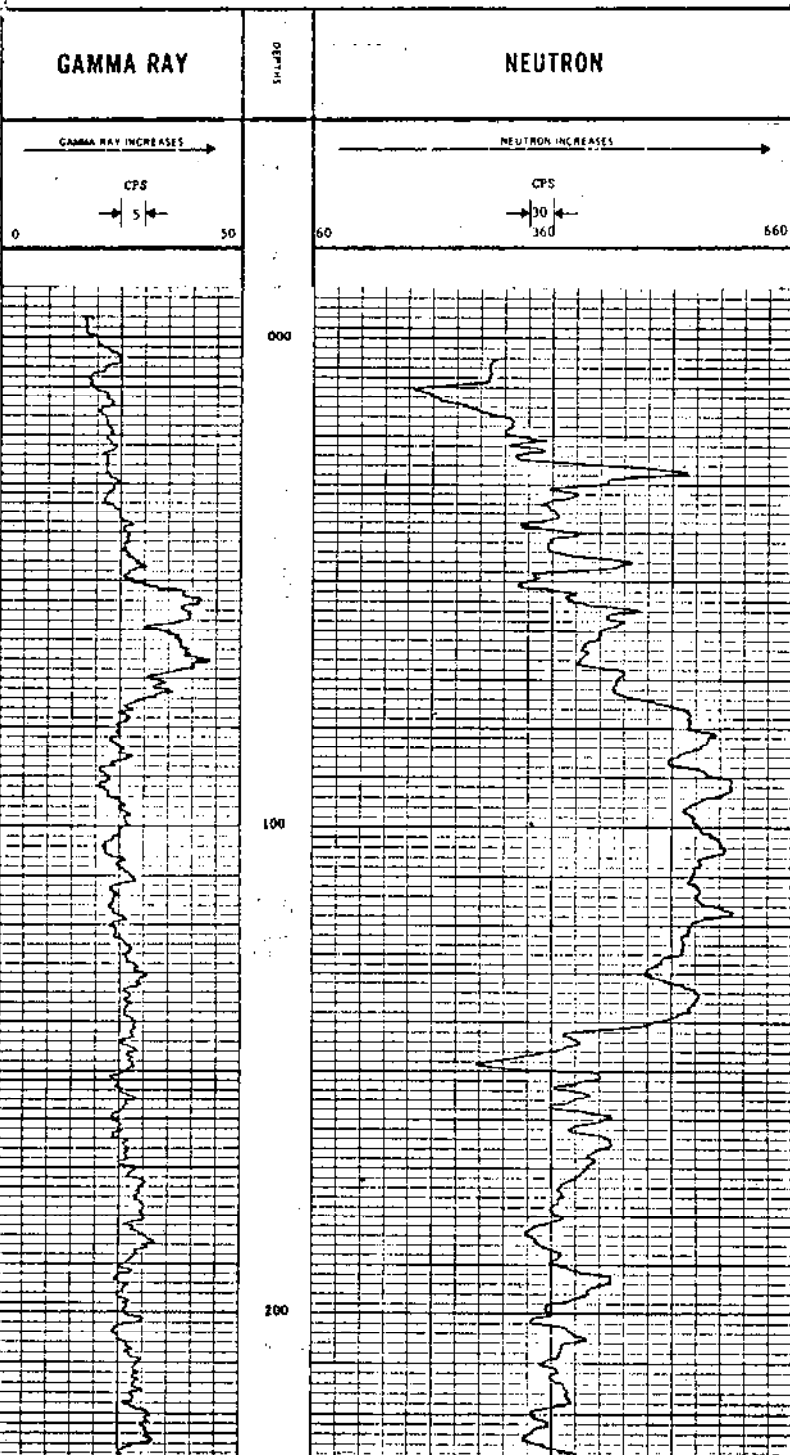
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 1/2"	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 1/2"
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	8.55 FT	LENGTH	9 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	598
HOIST TRUCK NO	20	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CC22704A65	STRENGTH	6.94 x 10 ⁶ N/S

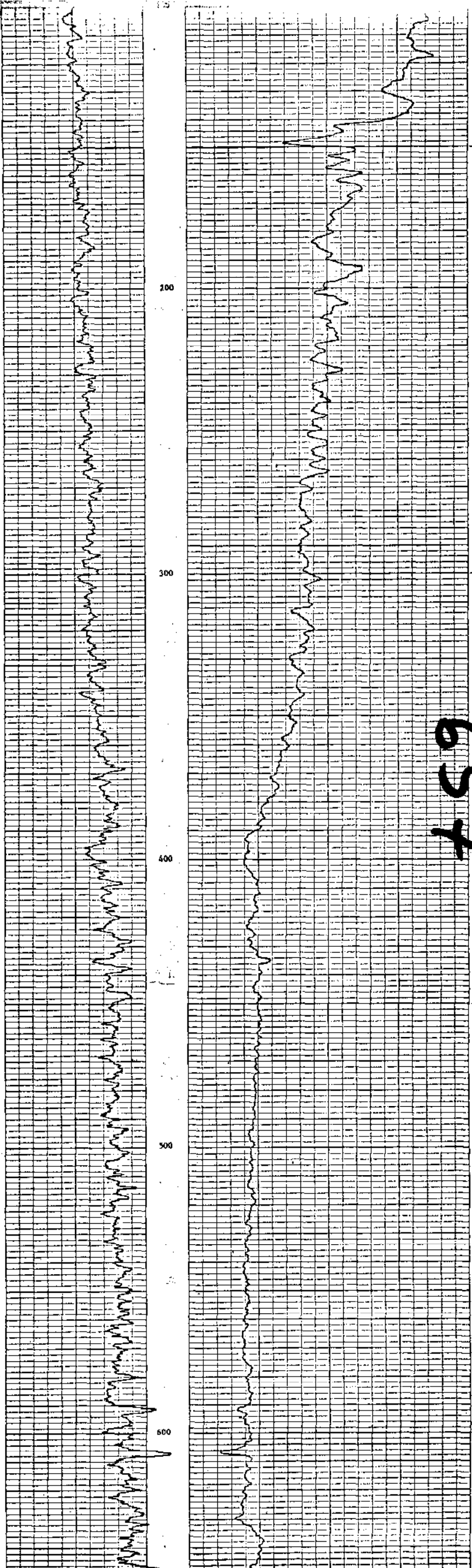
LOGGING DATA

RUN NO	GENERAL		GAMMA RAY				NEUTRON				
	FROM	TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. LOW R	APR R UNITS PER LOG DIV	T.C. SEC	SENS SETTINGS	ZERO DIV. LOW R	APR R UNITS PER LOG DIV
1	0	892	11	4	17	0L	5 CPS	4	0 - 22	2L	30 CPS

REMARKS



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100

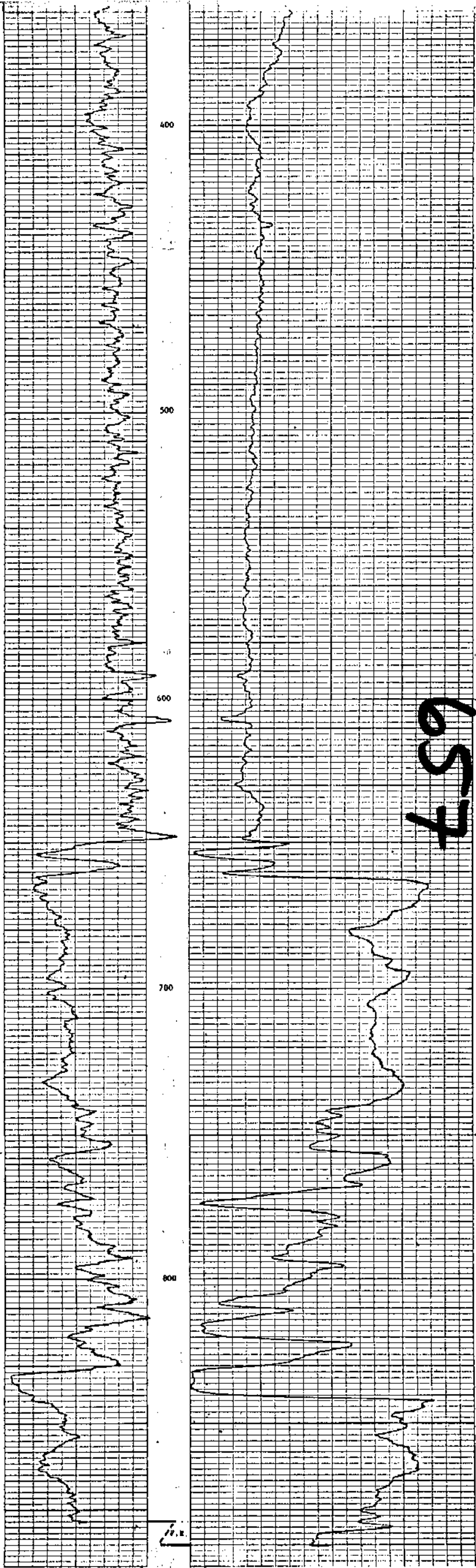
300

400

500

600

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ROKKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

WELL NO: C-19
 COMPANY: COALITION MINING LIMITED
 LOCATION: SIKURKA PROJECT
 FIELD: BRITISH COLUMBIA

PROVINCE: BRITISH COLUMBIA
 PRODUCTION: GROUND LEVEL
 LOG MEASUREMENT: B.C. FLOOR: 3
 LOG MEASUREMENT: FT. FROM PEN. DOWN: 0
 LOG MEASUREMENT: FEET DEPTHS MEASUREMENT: 0

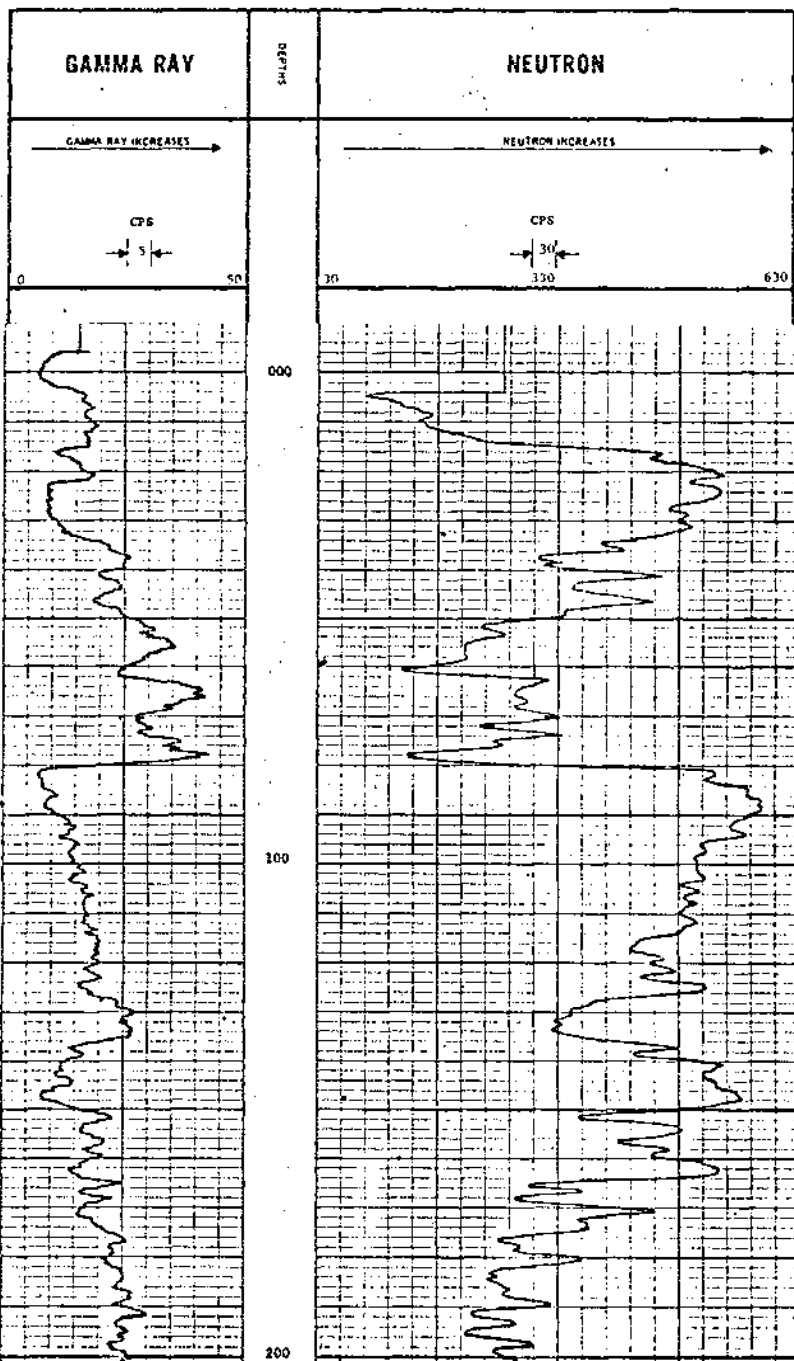
Run No: ONE
 Date: 7 OCTOBER 71
 1st Reading: 1297
 2nd Reading: 0
 Counter Logged: 1297
 Down Drives: 1298
 Logging Date: 1298

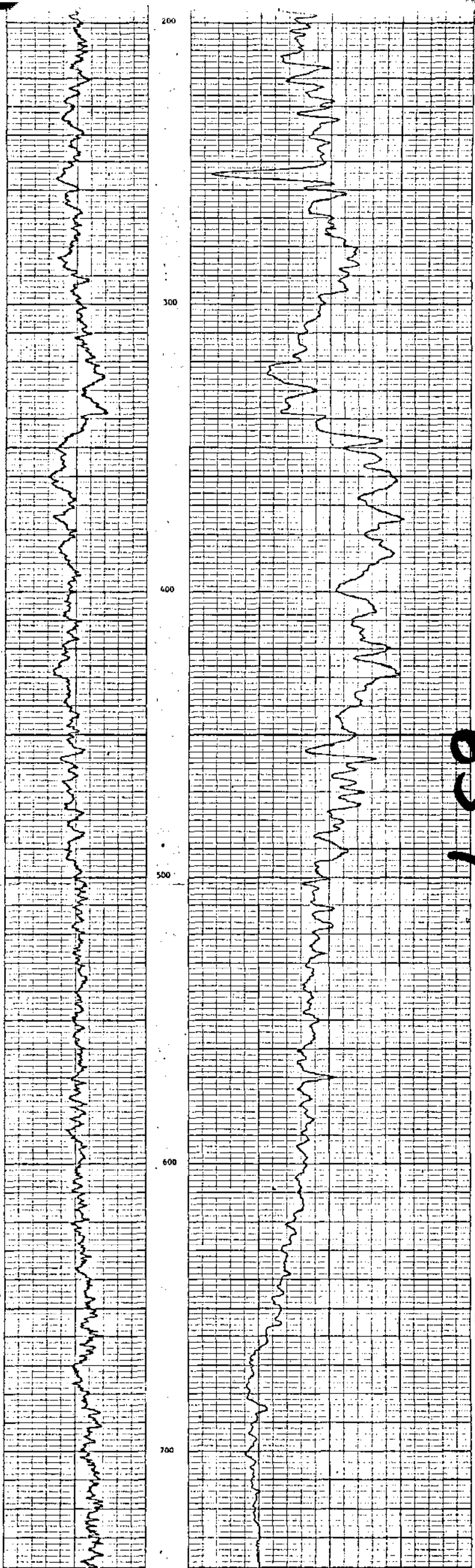
Fluid Type: WATER
 Mud Type: FULL
 Mud Weight: 5 INCR
 Mud Quantity: 3 INCR

Operating Time: 4 HOURS
 Type No: 20
 Recorder By: ELLIOTT
 Wireman By: WATLIS

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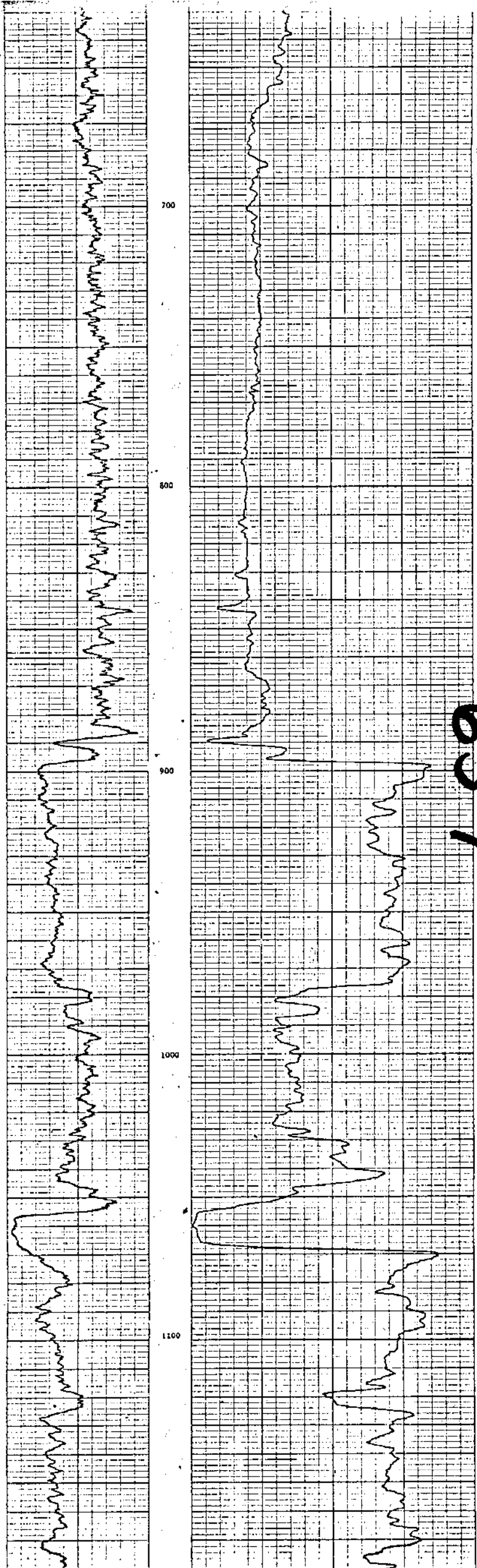
EQUIPMENT DATA					
GAMMA RAY		NEUTRON			
Run No	ONE	Run No	ONE		
Tool Model No		Tool Model No	NEUTRON/NEUTRON		
Diameter	1 1/2	Diameter	1 1/2		
Detector Model No		Detector Model No			
Type	GEIGER	Type	PROPORTIONAL		
Length	18 INCH	Length	6 INCH		
Distance from Source	8.55 FT	Source Model No	MRC-N-SS-W		
		Serial No	598		
		Spacing	19 INCH		
		Type	AmBp		
		Strength	0.94 x 10 ⁶ N/S		
LOGGING DATA					
GENERAL		GAMMA RAY		NEUTRON	
Run No		TC	ZERO	TC	ZERO
From	0	Settings	Div L URK	Settings	Div L ORR
To	1297	APGR Units	PER LOG DIV	APGR Units	PER LOG DIV
Speed	11		5 CPS		30 CPS
Remarks	LOGGED THRU DRILLROD				

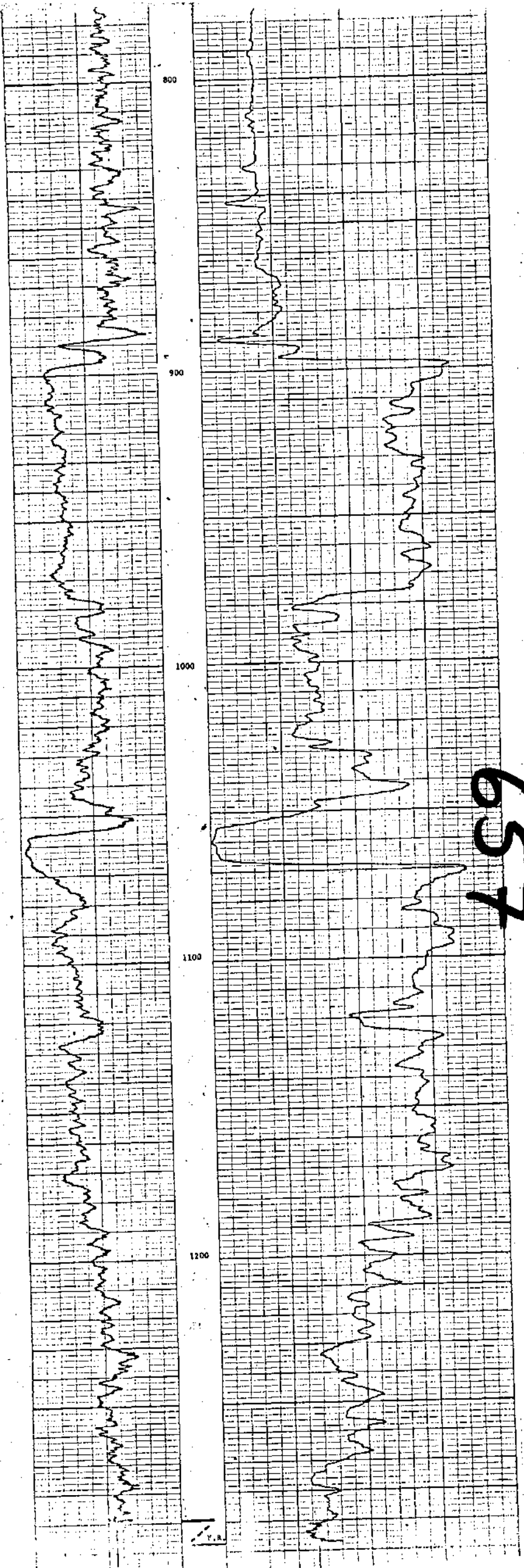




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ROKKE

OIL ENTERPRISES LTD. CALABARI, ALBERTA

FILE NO.

COMPANY: COLLIFTON MINING LIMITED

WELL: C-20

LOCATION: SIMONICA PROJECT

FIELD: _____

PROVINC: BRITISH COLUMBIA

As reported by: GEORGE J. LEWIS

Log recorded from: GEORGE J. LEWIS

Log Date: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Log No: _____

Recorded By: SJR

Witnessed By: MALLIS

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EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		TOOL TYPE	NEUTRON/NEUTRON
DIAMETER	1 1/2	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 1/2
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE ION SOURCE	8.33 FT	LENGTH	4 INCH
		SOURCE MODEL NO	MRC-N-SS-W
		SERIAL NO	598
		SPACING	10 INCH
		TYPE	AmBe
		STRENGTH	6.99 x 10 ⁶ B/S

LOGGING DATA

RUN NO	CENTRAL				GAMMA RAY				NEUTRON			
	FROM	TO	SPEED FT/HR	T.C. SEC	SENS SETTINGS	ZERO DIV	API GR UNITS PER LOG DIV	T.C. SEC	SENS SETTINGS	ZERO DIV	API GR UNITS PER LOG DIV	
1	0	918	11	4	17	0L	5 CPS	4	0-22	1L	30 CPS	

REMARKS

GAMMA RAY

NEUTRON

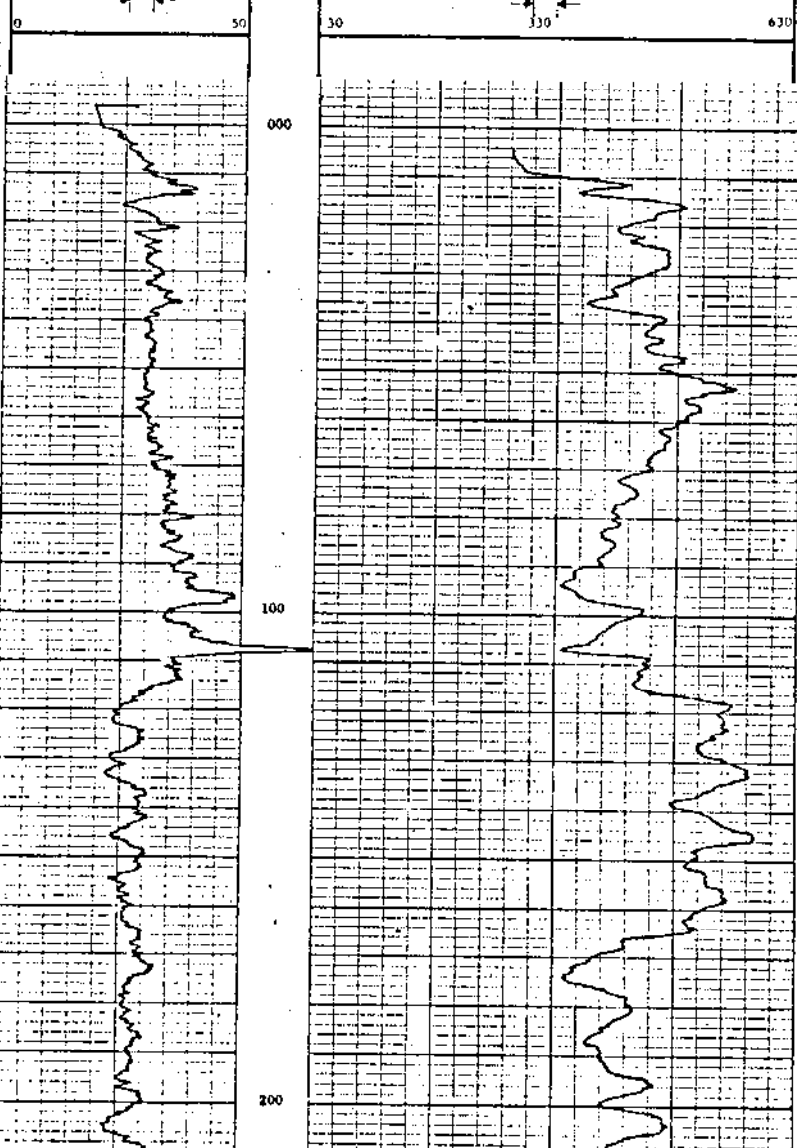
DEPTH

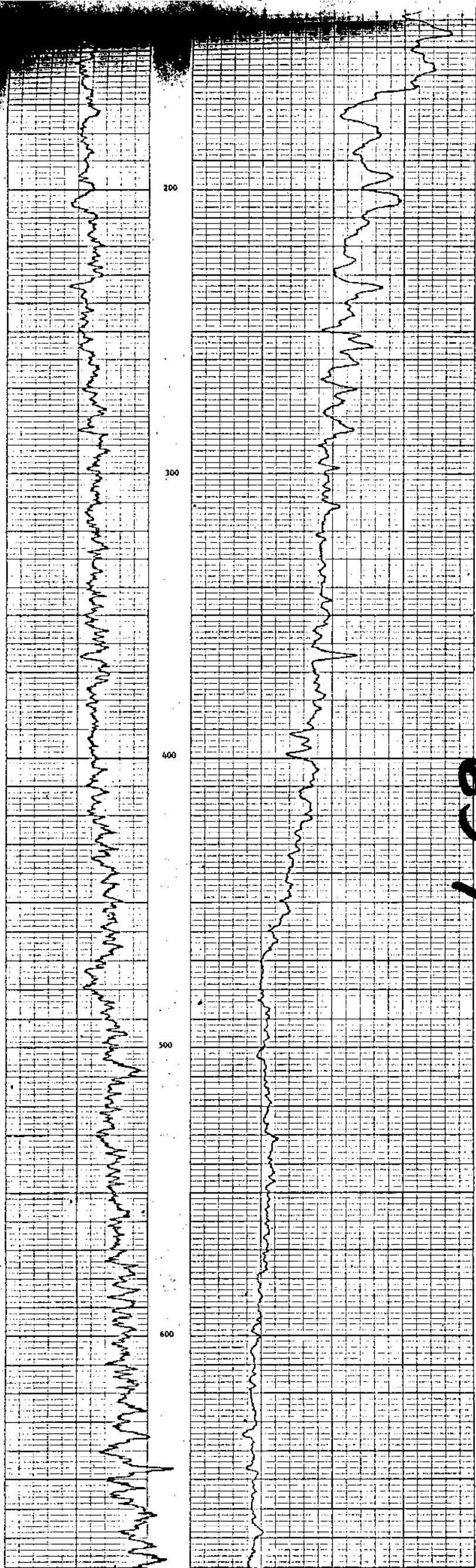
GAMMA RAY INCREASES →

NEUTRON INCREASES →

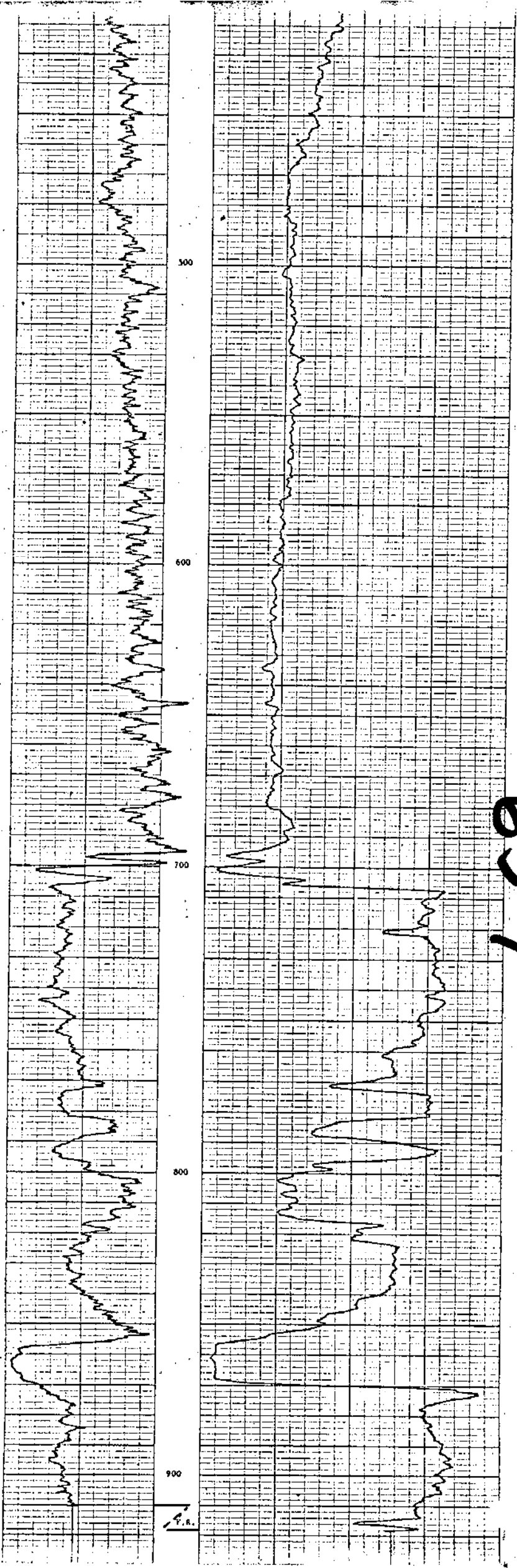
CPS

CPS



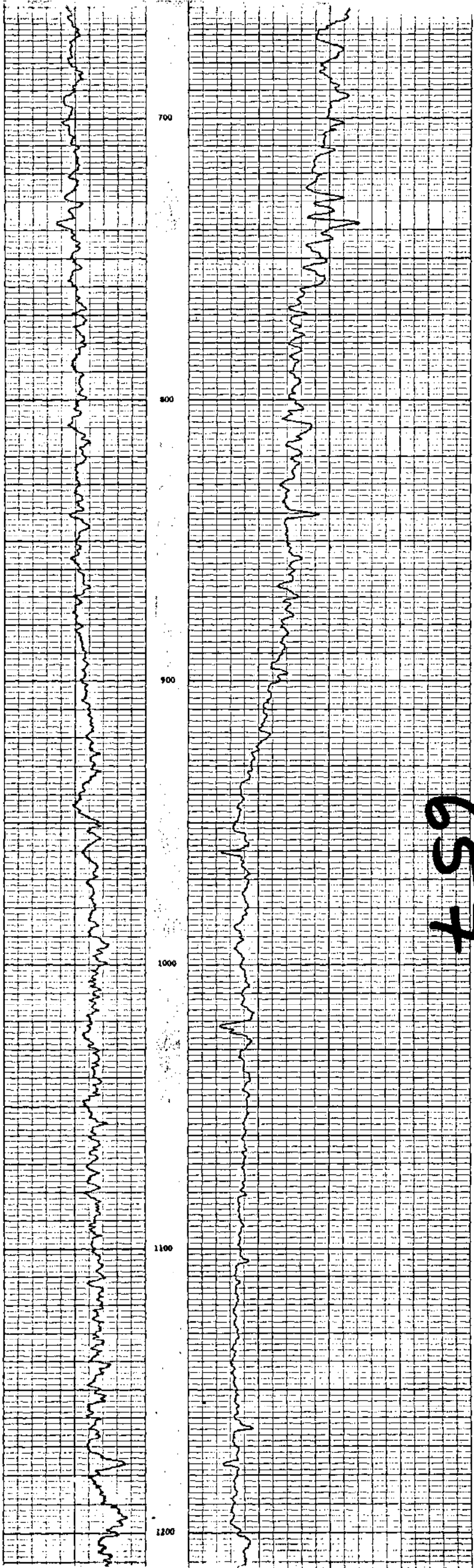


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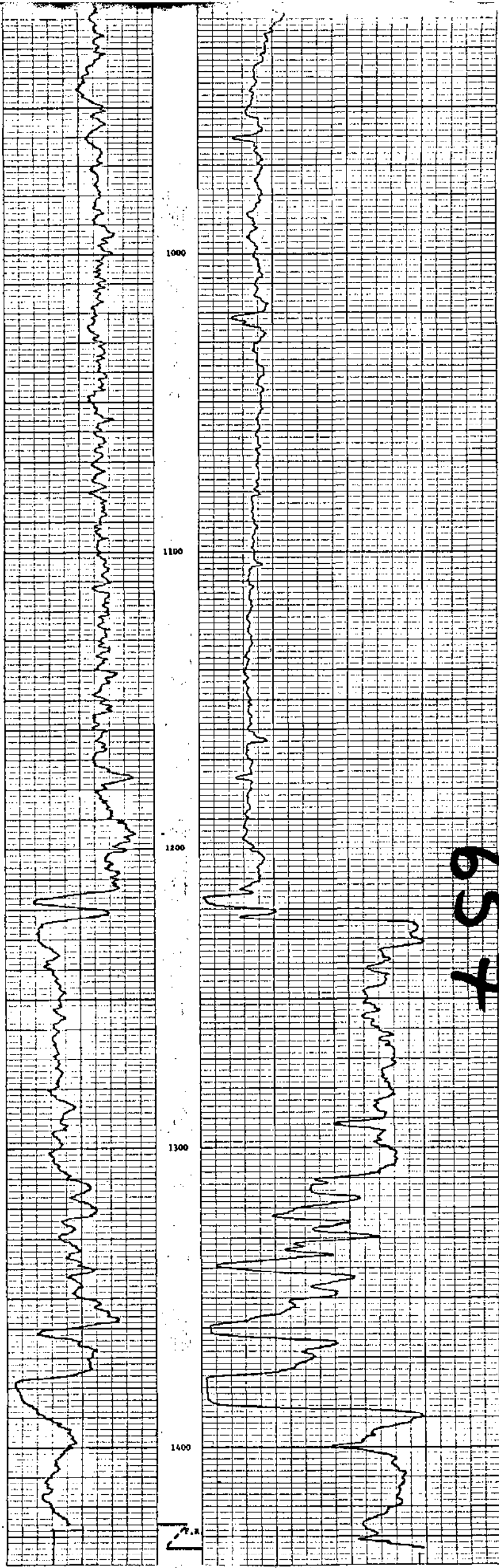


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PR. Sukunko. 75(4)A

DEPARTMENT OF
LAW

UNIVERSITY OF
SOUTH ALABAMA

00 657

TABLE A-1 SELECTED QUALITY DATA

SKEETER SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (BTU/LB) (3)		
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.	
P1-1	507	1.95		4.9	8	23.0	6	CONFIDENTIAL				14765	
	508	2.70	4.65	33.4	4½							10025	
P1-2	511	1.87		4.2	7½	19.6	4	CONFIDENTIAL				14705	
	—	0.49		50.0	—							—	
	512	3.54	5.90	19.1	4							12475	
P1-4	530	6.50		44.9	2	(contaminated sample)		48-2	5.4	4		8200	
P1-14	520	4.40		10.6	8							14240	
P1-15	522	3.00		3.0	2			9-7-76	2.7	2		14287	
P1-16	526	1.90		5.2	8	36.7	2½					14740	
	—	3.27	5.17	50.0	—								
P1-21	541	2.79		10.7	8	17.6	6					13860	) 12800
	542	0.71	3.50	30.7	3½							10600)
P1-22A	544	1.00		3.4	6½	30.3	4					15110	) 10800
	545	3.00	4.00	39.6	1½							9160)

TABLE A-1 SELECTED QUALITY DATA

SKEETER SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		01.60 S.G. Wash			C.V. (BTU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
P1-23	549	2.45		9.8	8	27.7	6				14080)
	550	0.15		58.8	1						—	) 11030
	551	2.85	5.45	42.1	1½						8730)
P1-24	555	2.32		5.2	8	9.9	8)
	556	0.47		9.7	8½							) 14060
	557	1.01	3.80	19.1	5)
P1-25	581	3.80		33.7	4						10152)
P1-26	585	0.27		24.0	1	15.3	7½)
	586	3.36		8.4	7½							) 13150
	587	0.43		53.8	1)
	588	0.49	4.55	19.5	3)
P1-27	562	1.00		2.9	8½	9.2	7))
	563	0.95		3.7	8			)92.2	3.2	8		) 14180
	564	1.20		31.9	1			)89.1	2.5	8) (4))
	565	0.50	3.65	4.3	8))
P1-29	567A	1.80		9.9	8	26.0	5½	)68.1	8.6	7		) 11510
	567B	3.20	5.00	35.1	2½			)56.1	4.3	8) (4))

TABLE A-1 SELECTED QUALITY DATA

SKEETER SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (BTU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
Pl-30	574	8.00	(5.66) (5)	9.8	7						13978	
Pl-30 (Repeat)	575	4.90	(2.80) (5)	14.0	3½							
Pl-30 (Repeat)	576	2.46		13.0	6½	10.5	8)
	577	3.61		2.8	8)
	578	1.37		9.6	7½							) 13930
	579	0.49		45.4	1)
	580	0.87	8.80	13.4	7)
C-31	---	4.89	(4.3) (5)	15.4	5½			87.2	5.3	6½	14470 (6)	
S-14	---	11.6		9.4				83.5	5.7	7½	14447 (6)	
S-49	---	13.0	(6.4) (5)	17.4				78.1	7.9	8½	14195 (6)	

TABLE A-2 SELECTED QUALITY DATA

CHAMBERLAIN SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (BTU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
Pl-1	510	1.96		32.7	2	13.2	2½				10075	
	509	4.34	6.30	2.4	2½						14940	
Pl-2	513	1.00		4.4	2½	3.9	5½	96.7	3.2	3	14800	) 14820
	514	5.00	6.00	3.5	7½			97.3	2.1	5½	15030	
Pl-5	518	6.20		3.5	7½						14940	
Pl-7	531	6.20		32.0	4½			65.4	4.0	7½	10350	
Pl-9	532	6.60		13.3	1½			79.6	3.3	1½	13430	
Pl-10	533	6.00		22.3	2½			3.7	3.6	1½	11950	
Pl-11	534	6.00		27.9	1½			71.3	3.6	2	11010	
Pl-14	—	0.10		50.0	—	5.6	8					
	521	6.65	6.75	4.6	8						14980	
Pl-15	—	0.10		—	—	(4.3)	(1½)					
	523	0.30		4.6	2	3.5	1½	94.3	2.5	2		) 14540
	524	5.05		2.6	1½			99.3	2.5	1½		
	525	1.05	6.50	8.8	1			96.3	7.3	1½		

TABLE A-2 SELECTED QUALITY DATA

CHAMBERLAIN SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (BTU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
Pl-16	527	0.30		67.6	-	6.9	6	10.1	4.4	5½)
	528	0.70		4.7	3½			96.4	4.1	3½		) 14400
	529	4.05	5.05	2.6	7						15050)
Pl-17	535	0.90		25.8	1	8.1	4½				11230	) 14180
	536	5.60	6.50	5.2	6½						14730)
Pl-18	537	0.50		51.6	½	7.4	6½				7070	) 14380
	538	6.10	6.60	3.8	7½						15010)
Pl-19	---	0.25		50.0		8.5	6					
	539	5.00	5.25	4.0	7						14760	
Pl-20	540	5.70		4.6	1½						14560	
Pl-21	543	5.40		3.8	7½						15100	
Pl-22A	546	2.00		23.9	4½	10.8	7				11650)
	547	2.50		3.9	7						14930	) 13710
	548	1.25	5.75	6.2	4						14390)

TABLE A-2 SELECTED QUALITY DATA

CHAMBERLAIN SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (BTU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
P1-23	552	0.75		24.5	3½	6.4	7½				11580)
	553	2.11		2.6	7½						15120	) 14490
	554	3.14	6.00	5.1	8						14820)
P1-24	558	3.73		5.2	6	6.8	7					) 14580
	559	3.12	6.85	7.8	7½)
P1-25	—	0.41		—	—							
	582	5.47		9.7	6	) 7.7	7½					) 14370
	583	2.12	8.00	6.4	8½))
P1-26	589	8.00		5.0	4						14622	
P1-27	—	0.49	—	50.0	—)						
	566	5.01	5.50	19.6	4½	) (22.9	4				12227	
P1-28	560	0.30		49.1	½	6.8	7					
	561	4.50	4.80	3.8	7½							
P1-29	568	0.75		25.8	3	7.1	7½))
	569	0.45		2.5	6))
	570	1.80		3.8	6½			) 94.0	3.2	8		) 14630
	571	1.76		2.7	8½			) 92.5	2.9	8) (4))
	572	2.49	7.25	6.7	8))

TABLE A-2 SELECTED QUALITY DATA

CHAMBERLAIN SEAM (1)

Bore No.	Sample No.	Thickness		Ply (2)		Composite (2)		-1.60 S.G. Wash			C.V. (STU/LB) (3)	
		Ply	Cumul.	Ash %	F.S.I.	Ash %	F.S.I.	Yield %	Ash %	F.S.I.	Ply	Compos.
Pl-29	573	21.50		20.5	3½						12122	
C-31	---	6.80		11.0	1½			81.3	2.9	2½	14850 (3)	
S-14	---	9.6		8.0	7						14696	
S-49	---	4.3		6.7				92.3	2.57	8½	15084 (3)	

PR-SUKUNKA 75(1)A-2

SUKUNKA

PLATE 2B

VOLUME 1

NOV-DEC 1975

OPEN FILE

SUKUNKA COAL PROJECT

00657

PLATE 2B AREA

VOLUME 1

GEOLOGICAL REPORT ON THE STRIP MINE
POTENTIAL OF THE NORTHEASTERN PART OF PLATE 2B

<p>MINING RECORDER RECEIVED and RECORDED</p> <p>MAY 11 1976</p> <p>M.R. #..... VICTORIA, B. C.</p>
--

PREPARED FOR:
BY :

COALITION MINING LIMITED.
PET-KO GEOLOGICAL SERVICES LTD.

REPORT No. : 1/4

JANUARY 31, 1976

FOREWORD

The normal requirements of a geological report of this nature would emphasize the presence, nature, size, and environment of the contained coal reserves, and set guidelines for the mining engineer to enable his mining feasibility plan, pit design, etcetera.

This aspect of the present report has been pre-empted by the publication of a "*Preliminary Report on Surface Mining in the Plate 2B Area*" by H. G. Stephenson (December, 1975).

In order to avoid unnecessary and time-consuming duplication of effort, Stephenson's findings have been accepted without reservation, and this report has concentrated on the presentation of all the accumulated data relative to Plate 2B, together with recommendations for extending the known area of potential open pit reserves.

PET-KO GEOLOGICAL SERVICES Ltd.



P. Antonenko, P. Geol.

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APPENDIX A

VOLUME 1

RATIONALE FOR PROPOSED ADDITIONAL DRILLING PROGRAMMES

- a) After Stephenson
- b) After Antonenko

APPENDIX B

VOLUME 1

GEOLOGICAL CROSS SECTIONS

NOTES TO ACCOMPANY CROSS SECTIONS

TRANSVERSE CROSS SECTIONS, WEST TO EAST:

- Section 1, 50 400 N
- Section 2, 49 900 N
- Section 3, 49 400 N
- Section 4, 48 650 N

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ADDITIONAL MAPS ON MASTER FILE (CM-SERIES):

- (i) Structure Contours on Floor of Skeeter Seam
- (ii) Isopach Map of Interseam Sediments between
Skeeter and Chamberlain Seams
- (iii) Isopach Map of Total Cover over Skeeter Seam

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VOLUME 2

DRILL HOLE DATA

P2-1, P2-2, P2-3, P2-4, P2-5, P2-5A;

C-4, C-4A, C-6, C-32, C-50, C-51;

CM-2, CM-3, CM-6, CM-7, CM-8;

CS-5, CS-6, CS-7;

S-19, S-50.

SECTION 2

SUMMARY

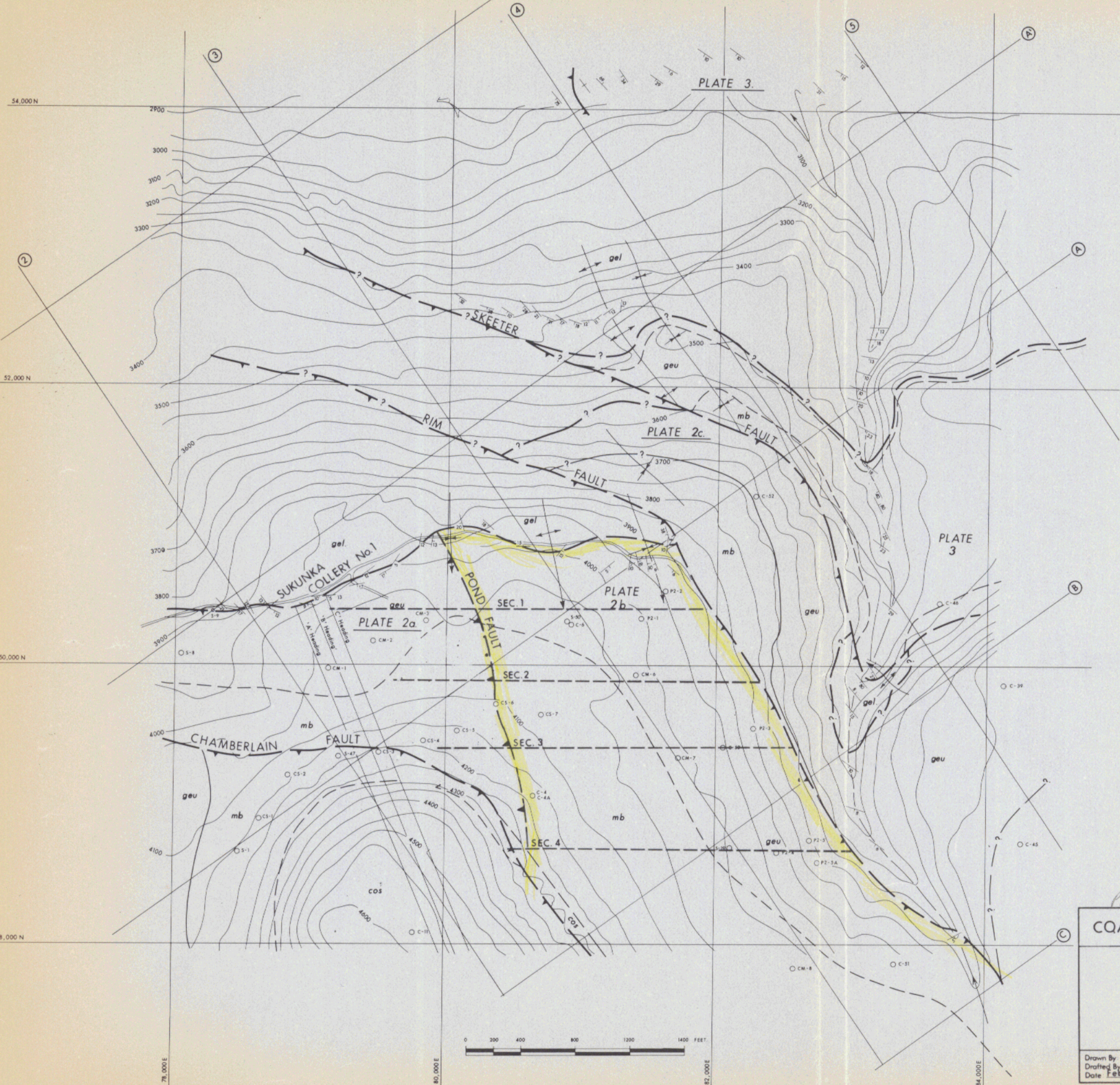
The presence of good quality, shallow, Skeeter and Chamberlain Seams in the northeast part of Plate 2B has been confirmed by 5 diamond drill holes sunk in October/November, 1975.

This conclusion was substantiated by a re-interpretation of data from 16 existing bore holes.

The following reserves, at three different stripping ratios, have been estimated (Stephenson, December, 1975):

- (1) 383,000 short tons at 6.9/1
- (2) 932,000 short tons at 8.3/1
- (3) 1,633,000 short tons at 11.0/1

Additional exploration and drilling are recommended, with the objective of further increasing the strippable reserves.

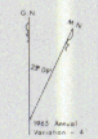


Reference		
FORM	MEMBER	GENERAL DESCRIPTION
LOWER CRETACEOUS	cos	Interbedded fine grained sandstone, mudstone & siltstone
	mb	Dark grey mudstone with common partings & ferruginous concretions & / or interbedded siliceous, sandy & pebbly mudstone at base
Geology	geu	Fine to medium to coarse grained, thin bedded to massive, generally crossbedded sandstone, shale & siltstone. Coal seams or base locally exceeds 10 feet in thickness
	gel	Fine to medium to coarse grained, thin bedded to massive crossbedded sandstone, in parts quartzite - in part carbonaceous interbedded mudstone, siltstone & shale locally continuous. Coal & rusty seams

- Bedding - inclined, vertical, horizontal, overturned
- Thrust fault
- Anticline - showing direction of plunge
- Syncline - showing direction of plunge
- Geological boundary - position approximate
- Chamberlain seam horizon, exposed by tracing position approximate, inferred
- Diamond drill hole - Coalition
- Topographic contours, standard datum
- Access roads
- Basic exploration grid

DATA SOURCES Outcrop mapping, detailed survey traverses, diamond drill hole data. See also note on Map 1, DWG No SKR 114

NOTE: See Map 1, DWG No 148 114, dated 29-12-71, accompanying report dated March 10 1972, to geology of whole area at a Scale of 1" = 1000'



THIS MAP RE-DRAFTED FROM DWG No SKR 183 as PREPARED BY CLIFFORD McLEOD & ASSOCIATES Pty Ltd

PR-SUKUNKA 75(1)C

COALITION MINING LIMITED

SUKUNKA COAL PROJECT

LOCALITY MAP

Drawn By	K.L.A.R.	Scale 1" = 800'
Drafted By	K.L.A.R.	Contour Interval 100'
Date	Feb. 76	Drawing No C.M.L.-2
Revised		

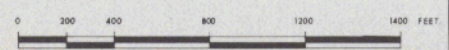


FIGURE 1-A

SECTION 3

GENERAL CONSIDERATIONS

3.1 OBJECTIVE

The primary objective of a detailed geological study of Plate 2B was to provide sufficient reliable geological information to allow Coalition Mining Limited to conduct a preliminary feasibility study into the open pit potential of Plate 2B.

3.2 LOCATION AND ACCESS

Plate 2B is located at the northwestern part of the Sukunka Coal Property grid area (Figure 1). It is accessible by means of an all-weather road which extends northeasterly from the Sukunka Colliery No. 1 Mine (No. 5 Adit).

3.3 PREVIOUS GEOLOGICAL INVESTIGATIONS OF PLATE 2B

The geology of Plate 2B has been discussed in general terms in two reports:

- (1) SUKUNKA COAL PROJECT - Geological Report, Vols. 1-12, McElroy & Associates Pty. Ltd., 1972;
- (2) SUKUNKA COAL PROJECT - Geological Report 1972, Supplement, Vols. 1-5, Bryan et al., 1973.

The open pit potential in particular has been discussed by the following:

- (3) V. Hulbert (1974) indicated, from airphoto interpreta-

tion, that there was some potential for low-cover reserves of the Skeeter and Chamberlain Seams on both sides of Skeeter Creek. He estimated that in situ reserves should be in excess of 2 million Tons for the combined remnant areas.

- (4) Paul Dyson, of Paul Dyson Consultants & Holdings Limited (1974), indicated favourable overburden-to-coal ratios in Plate 2 (present underground area). He estimated that 3 million Tons of open pit coal are probably available at ratios of less than 10:1.
- (5) G.R. Wallis (1974) conducted a Preliminary Study of Open Pit Reserves of the Upper Gething Sequence. Within Plates 2C/2B, preliminary reserve figures of 1.67 million short tons at a stripping ratio of 5:1 were estimated, and 2.18 million short tons at a stripping ratio of 7:1.

3.4 1975 INVESTIGATION AND EVALUATION

3.4.1 Drilling Programme

Six diamond drill holes were drilled during the period October 28 and November 8, 1975 by Tonto Drilling Ltd., using a truck-mounted drill and a skid-mounted unit equipped with an HQ3 core barrel. Hole depth varied from 65 ft to 186 ft, and the combined total footage was 665 ft (Table 1). Details of the drilling, logging, and analytical statistics are presented in Volume 2 of this report.

The estimated actual cost was \$26,685.00, which could be broken down as follows:

TABLE 1

PLATE 2B DRILLING PROGRAMME

DDH's from 1975 Programme

DDH*No.	TOTAL DEPTH (ft)	DEPTH TO SEAM		SEAM THICKNESS	
		S**	Ch***	S	Ch
P2-1	111	72.7	93.5	7.6	5.2
P2-2	86	32.6	65.8	9.4	7.2
P2-3	126	81.0	103.5	8.0	6.5
P2-4	186	135.5	162.9	10.1	8.0
P2-5	91	-	-	-	-
P2-5A	65	-	36.1	-	6.9
TOTAL 665					

DDH's from 1970, 1971, and 1972 Programmes

C-4	426	315.5	-	7.7	-
C-4A	565	360	401	8.1	6.69
C-6	876	107	162	8.0	4.43
C-32	428	360	385	8.81	8.56
C-50	499	104	127	7.0	6.48
C51	432	131	161	10.12	11.60
CM-2	161	116.7	144.3	6.49	5.21
CM-3	193	150.6	172.15	4.77	5.61
CM-6	112	83.6	106.2	7.03	5.94
CM-7	130	89	112.8	9.75	6.19
CM-8	171	127.1	153.4	9.8	7.86
CS-5	330	282	315.8	6.49	6.52
CS-6	332	255.9	313.8	22.52*F	6.12
CS-7	356	268	290	7.92	6.04
S-19	201	133	157	8.0	6.4
S-50	218	94	119	6.5	4.8

* DDH = Diamond Drill Hole.

*F = Fault

** S = Skeeter Seam

*** Ch = Chamberlain Seam

See Volume 2 for drillhole data for each individual drill hole.

(1)	Footage rate	\$ 17.00/ft
(2)	Rig time	38.50/hr
(3)	Man-hours	12.50/hr
(4)	D-6 Caterpillar	29.50/hr
(5)	Third-party charges - (Water-truck)	16.00/hr
(6)	Consumables (mud, core boxes, etc.); cost + 10%	
(7)	Roke Oil Enterprises Ltd.	367.00/day

3.4.2 LOGGING PROGRAMME

All drill holes were logged to obtain the following logs:

1. Gamma Ray
2. Neutron Log
3. Density Log

These logs were used primarily as a check against seam depth and thickness, and for correlating purposes with other bore holes. Water levels were also identified in those bore holes where free-standing water was present.

4. Temperature Log was run in one drill hole (DDH P2-1).

The logging was contracted to Roke Oil Enterprises Ltd., Calgary.

3.4.3 ANALYTICAL PROGRAMME

The coal seams were described and measured, sampled in appropriate intervals, and shipped to the Coal Science and Mineral Testing Division of Birtley Engineering Ltd., Calgary, for standard raw coal analysis. No floats and sinks

testing was carried out on this suite of coal cores.

3.4.4 Geological Evaluation and Report Preparation

In order to provide ease of cross reference, this report has, in general, been modelled after the style of the Sukunka Coal Project - Plate 1 Area Report (Wallis, 1975). Certain sections have been deleted, and other modifications introduced where appropriate.

The information from the 6 diamond drill holes was evaluated in association with that from the 16 holes drilled previously, within and adjacent to, the Plate 2B area.

The essential elements of both stratigraphy and structure are shown on 4 cross sections transverse to the regional structural trend (Sections 1 to 4).

The cross sections have been integrated with the structure contour maps on the floor of the Chamberlain Seam, and with the somewhat limited, available topographical control of the Plate 2B area.

Appropriate maps of the physical and analytical data relating to the coal seams have been compiled.

SECTION 4

GEOLOGY - PLATE 2B

4.1 GENERAL GEOLOGY AND STRATIGRAPHY OF PLATE 2B

Only the Upper Gething sequence of sediments is relevant to the potential open pit mining area of Plate 2B (Figure 2). This sequence has been described in the "Geological Report on the Strip Mine Potential of the Northern Part of Plate 1" (Wallis, 1975).

Outcrop exposure throughout the area is minimal. The stratigraphy as observed in diamond drill holes P2-1 to P2-5A conforms with the established sequence.

One bore hole, DDH P2-5, was drilled into a steep, concealed escarpment infilled with glacial drift. The hole terminated at 91 ft, which was beyond the projected depths of the coal seams.

4.2 STRUCTURAL GEOLOGY OF PLATE 2B

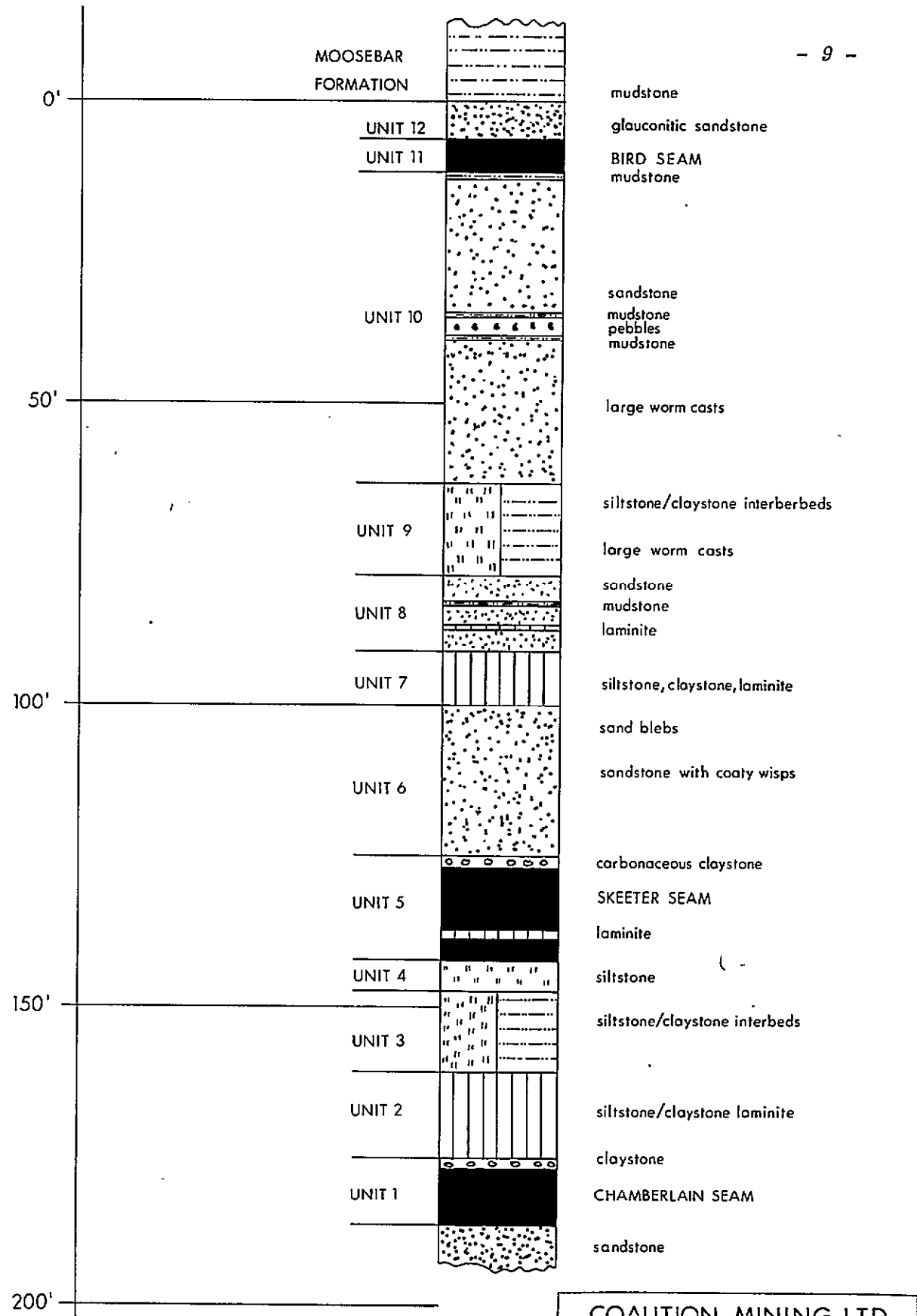
4.2.1 Introductory Statement

The McElroy (1972) report details the structural geology, both on a regional and localized scale.

Plate 2B is bounded on the northeast by the Rim intra-plate Fault, and on the southwest by the Pond intra-plate Fault (Figure 3).

4.2.2 Folding

The structure of Plate 2B is a gentle, southeasterly trending,



COALITION MINING LTD.

**COMPOSITE GRAPHIC SECTION
UPPER GETHING SEQUENCE**

Drawing: G. WALLIS Drafted By: M.E.W. Date: OCT/74	Scale: 1" = 25' Contour Interval: Drawing No: CML-4
--	---

CLIFFORD McELROY & ASSOC.
TO ACCOMPANY REPORT No. 1/4/19

FIGURE 2



Reference		
FORM	MEMBER	GENERAL DESCRIPTION
LOWER CRETACEOUS	Member	
	Subunit	
	Subunit	Interbedded fine-grained sandstone, mudstone & siltstone
	Member	Dark grey mudstone with concretion, pyrite & ferrous concretions &/or stratoids. Glauconitic, sandy & pebbly mudstone at base
Geology	Upper Gething	Fine to medium to coarse grained, thin-bedded to massive, generally cross-bedded sandstone, shale & siltstone. Coal seam or base locally exceeds 10 feet in thickness.
	Lower Gething	Fine to medium to coarse grained, thin-bedded to massive cross-bedded sandstone, in parts argillaceous - in part carbonaceous interbedded mudstone, siltstone & shale, locally carbonaceous. Coal & coaly seams.

Bedding - inclined, vertical, horizontal, overturned
 Thrust fault
 Anticline - showing direction of plunge
 Syncline - showing direction of plunge
 Geological boundary, position accurate
 position approximate
 position inferred
 Chamberlain Seam horizon, exposed by trenching
 position approximate, inferred
 Diamond drill hole - Coalition
 Topographic contours, standard datum
 Access roads
 Basic exploration grid

DATA SOURCES Outcrop mapping, detailed survey traverses, diamond drill hole data. See also note on Map 1, DWG No. SKR 114.

NOTE: See Map 1, DWG No. SKR 114, dated 29-12-71, accompanying report dated March 10, 1972, for geology of whole area at a scale of 1" = 1000'.

1985 Annual Variation - 4'
 THIS MAP RE-DRAFTED FROM DWG No. SKR 183 as PREPARED BY CLIFFORD McLEERY & ASSOCIATES Pty. Ltd.

PR-SUKUNKA 75(1)C

COALITION MINING LIMITED

SUKUNKA COAL PROJECT

GEOLOGICAL AND TOPOGRAPHICAL MAP

Drawn By: K.L.A.R.
 Drafted By: _____
 Date: FEB 76 Revised: _____

Scale 1" = 800'
 Contour Interval 100'
 Drawing No. CML-3

FIGURE 3

southeasterly plunging anticline with average flank dips of 10° both to the northeast and southwest. The average angle of plunge is 5° .

The possibility of subsidiary structures being present on the flanks of the main anticline must be recognized.

SECTION 5

ECONOMIC APPRAISAL

5.1 INTRODUCTION

A generalized economic appraisal was presented in Appendix A, Volume 5, of the 1972 Report (McElroy, 1972), and the 1972 Supplement (Bryan et al., 1972).

This report details the characteristics of the seams which have open pit potential in Plate 2B.

5.2 SKEETER SEAM

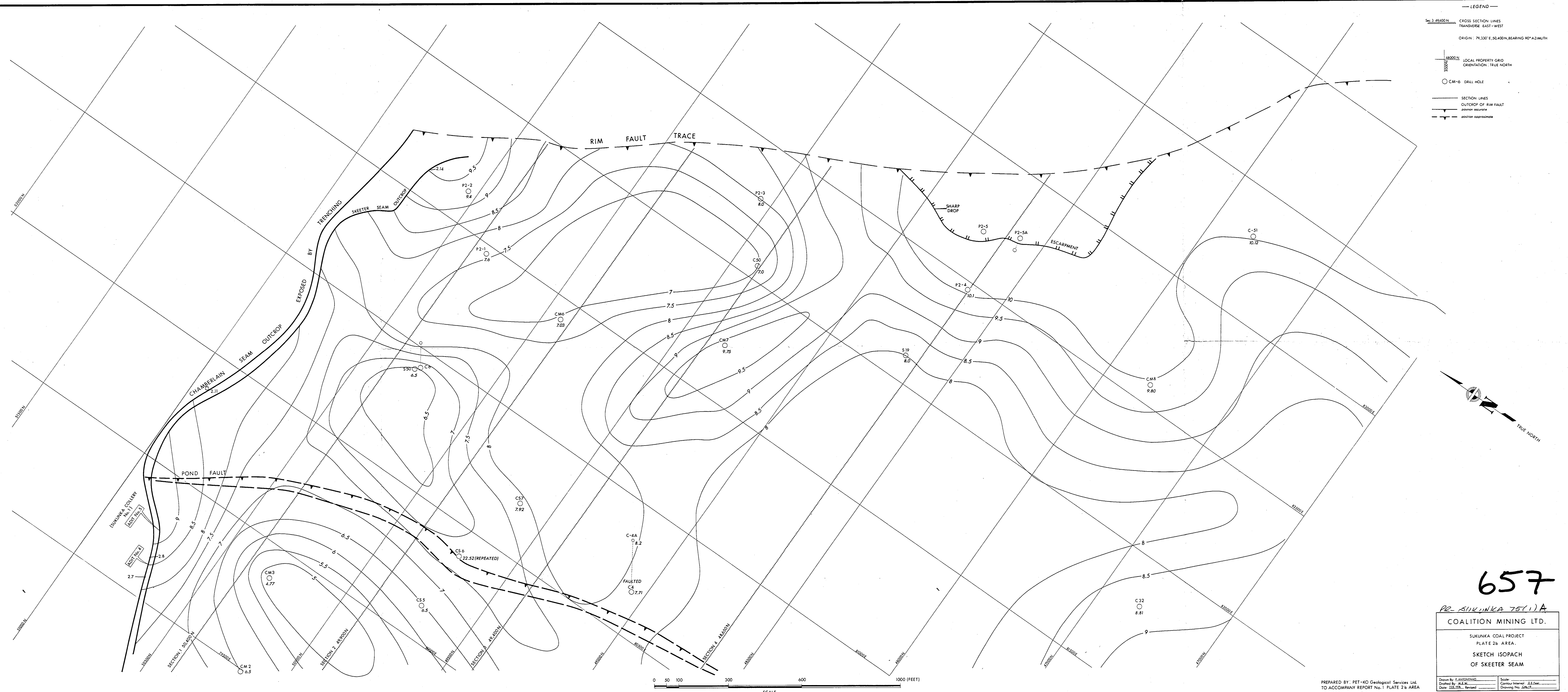
5.2.1 Seam Thickness

The seam varies in thickness between 6.5 and 10.1 ft, with an average seam thickness of 8.3 ft (Figure 4). 68.9% of the total seam comprises coal (P2 Series).

An upper interval of clean coal has been defined from various cores. The thickness of the upper unit averages 6 ft, with a range of 5.4 to 6.6 ft.

The rock band below the upper coal varies from 0.5 ft to 2.0 ft in thickness.

The lower band of relatively inferior coal is between 0.5 and 2.0 ft thick.



657

PR-SUKUNKA 75(1)A
 COALITION MINING LTD.
 SUKUNKA COAL PROJECT
 PLATE 2b AREA.
 SKETCH ISOPACH
 OF SKEETER SEAM

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

Drawn By: J. ANTONIENKO
 Drafted By: J.E.R.
 Date: 11/1/78
 Scale: _____
 Contour Interval: 0.5 Feet
 Revised: _____
 Drawing No. CM-29

5.2.2 Coal Quality

The raw coal quality variations are presented both diagrammatically (Figure 5) and in tabular form (Table 2). For completeness, this data should be assessed in conjunction with washed coal data presented in the 1972 Report (Table 3). The variation in ash values is shown for both raw and washed coal (Figures 6 and 6A respectively).

Selected quality data are included in Appendix A.

No significant oxidation effects are apparent.

Some form of cleaning process will be necessary to reduce ash of the bottom portion of the seam to an acceptable level, if this horizon is to be included as part of the run-of-mine product (see Stephenson, 1975; Tables 2, 3).

5.3 CHAMBERLAIN SEAM

5.3.1 Seam Thickness

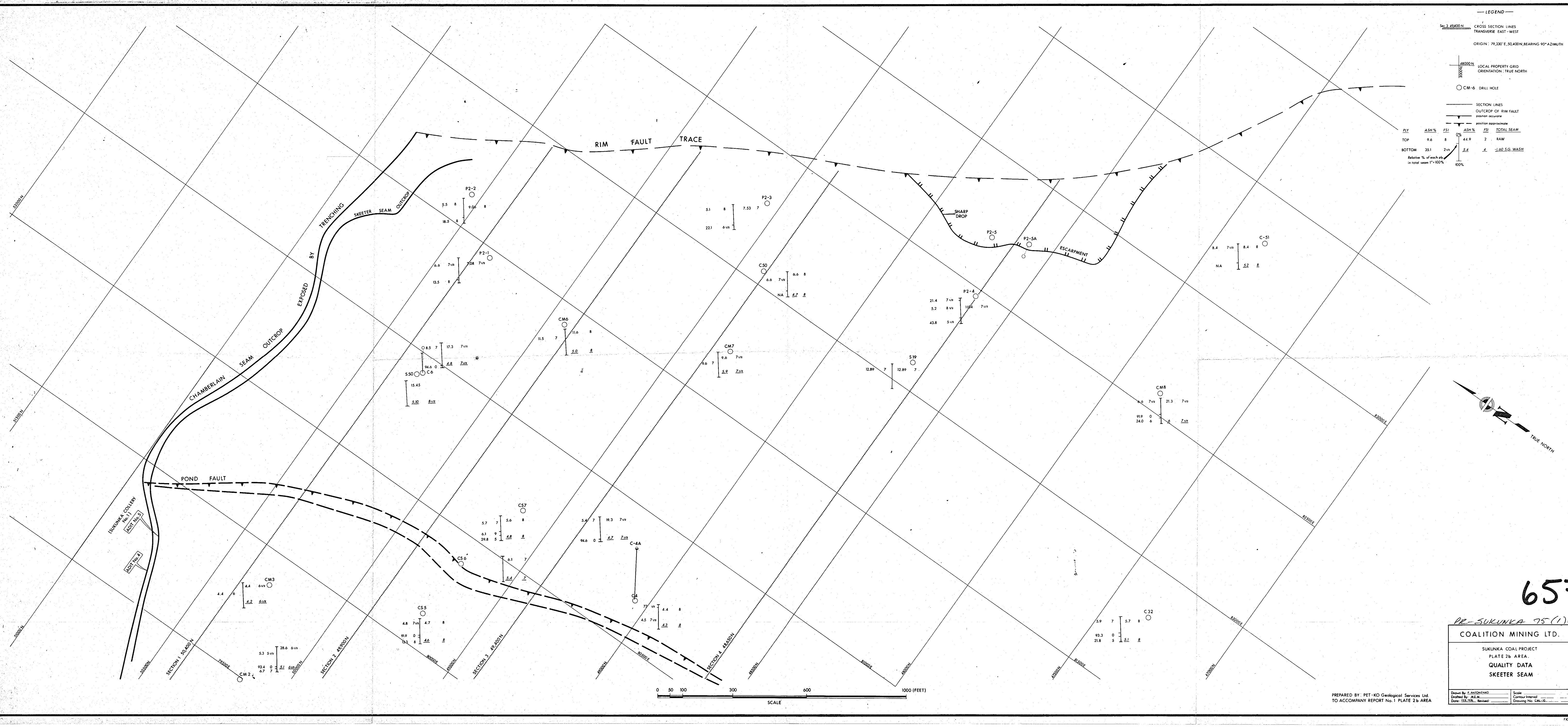
The thickness of the Chamberlain Seam varies between 4.5 ft and 11.6 ft (Figure 7). The average thickness of the seam is 7.0 ft.

Two drill holes, DDH P2-4 and DDH P2-5A, showed low FSI figures. However, very little non-metallurgical coal is expected on Plate 2B, possibly as little as 5 to 10% of the total potential in situ open pit reserves.

No sheared coal appears to have been encountered above the Chamberlain Seam, which may suggest a minimum of tectonic displacement on Plate 2B.

5.3.2 Coal Quality

Selected quality data have been tabulated for the various



LEGEND

SECTION 3 49400N
 CROSS SECTION LINES
 TRANSVERSE EAST-WEST
 ORIGIN: 79,330' E, 50,400' N, BEARING 90° AZIMUTH

49000N
 30000E
 LOCAL PROPERTY GRID
 ORIENTATION: TRUE NORTH

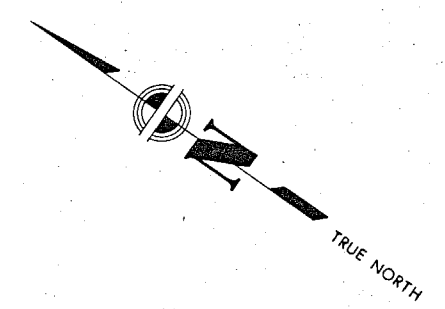
○ CM-6 DRILL HOLE

SECTION LINES
 OUTCROP OF RIM FAULT
 position approximate

position approximate

PLY	ASH %	FSI	ASH %	FSI	TOTAL SEAM
TOP	9.6	8	44.9	2	RAW
BOTTOM	35.1	2 1/2	5.4	4	-1.60 S.G. WASH

Relative % of wash clay
 in total seam 1"=100%
 100%



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PR-SUKUNKA 75(1)A
COALITION MINING LTD.
 SUKUNKA COAL PROJECT
 PLATE 2b AREA
QUALITY DATA
SKEETER SEAM

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

Drawn By: P. ANTONIENKO
 Drafted By: M.E.W.
 Date: 15.5.1978
 Scale: _____
 Contour Interval: _____
 Drawing No. CML-10

TABLE 2

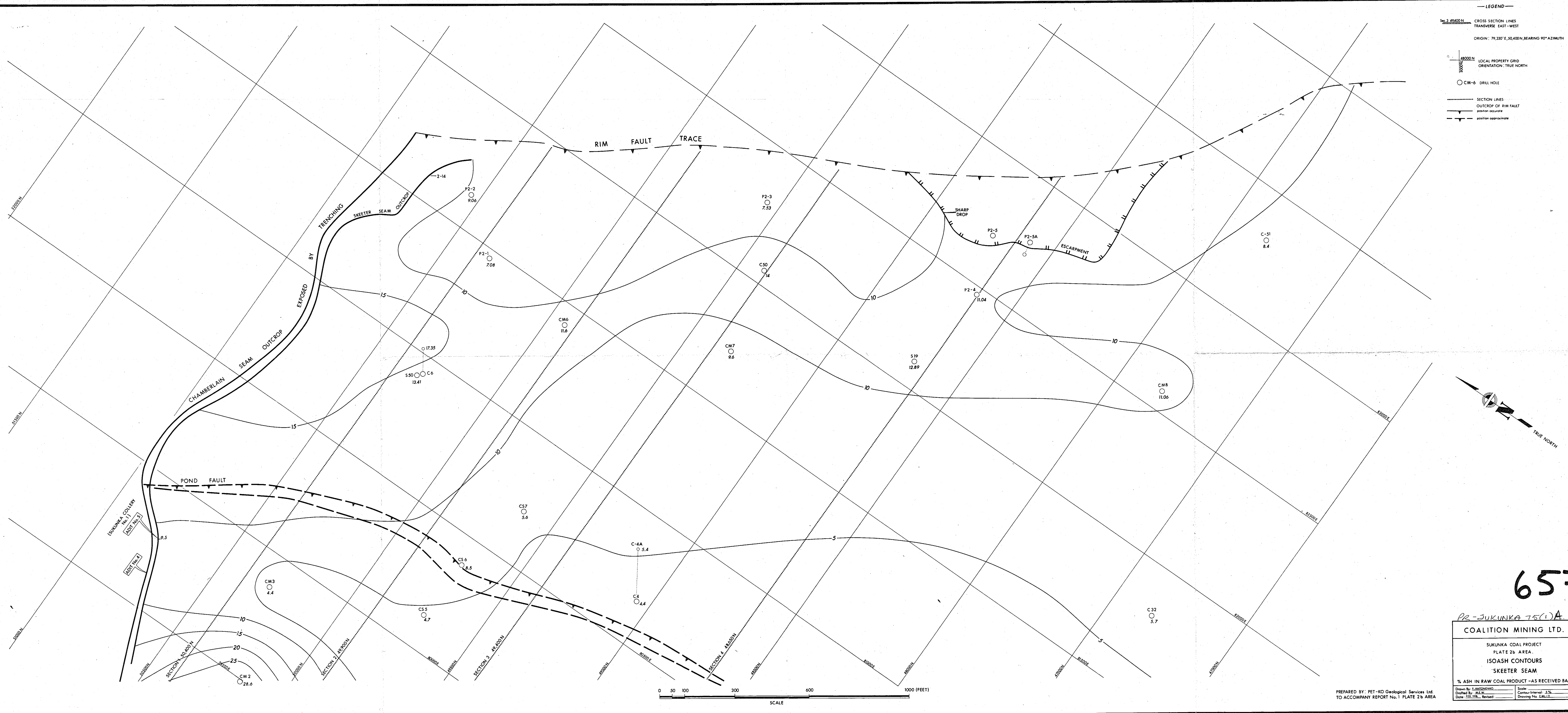
SKEETER SEAM

	<u>Upper Coal</u>	<u>Lower Coal</u>	<u>Full Seam (ex bands)</u>
Mean Ash %	5.6	24.67	8.68
Range	5.1 - 6.6	13.5 - 44.4	7.08 - 11.04
No. of Values	4	4	4
Mean FSI	8	7	7½
Range	7½ - 8½	5½ - 8	5½ - 8½
No. of Values	4	4	4
Mean C.V. (BTU/lb)			
Range	14,515 - 14,810	8,305 - 13,350	11,600 - 14,500
No. of Values	4	4	4

TABLE 3

MEAN VALUES OF ANALYTICAL DATA FOR
WASHED PRODUCT AT S.G. 1.60 (AIR DRY BASIS)
SKEETER SEAM (PLATE 2)

Moisture	0.9 %
Volatile Matter	22.7 %
Volatile Matter (D.A.F.)	24.9 %
Ash	4.8 %
Fixed Carbon	71.6 %
C.S. No.	7½
C.V. (BTU/lb)	14,550
Sulphur	0.45%
Phosphorus	0.023%



LEGEND

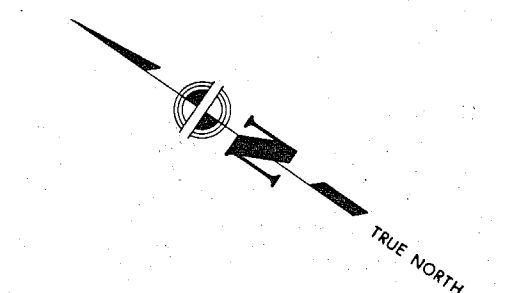
--- CROSS SECTION LINES
 --- TRANSVERSE EAST-WEST

ORIGIN: 79,330' E, 50,400' N, BEARING 90° AZIMUTH

--- LOCAL PROPERTY GRID
 --- ORIENTATION: TRUE NORTH

○ CM-6 DRILL HOLE

--- SECTION LINES
 --- OUTCROP OF RIM FAULT
 --- position accurate
 --- position approximate



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P2-SUKUNKA 75(1)A

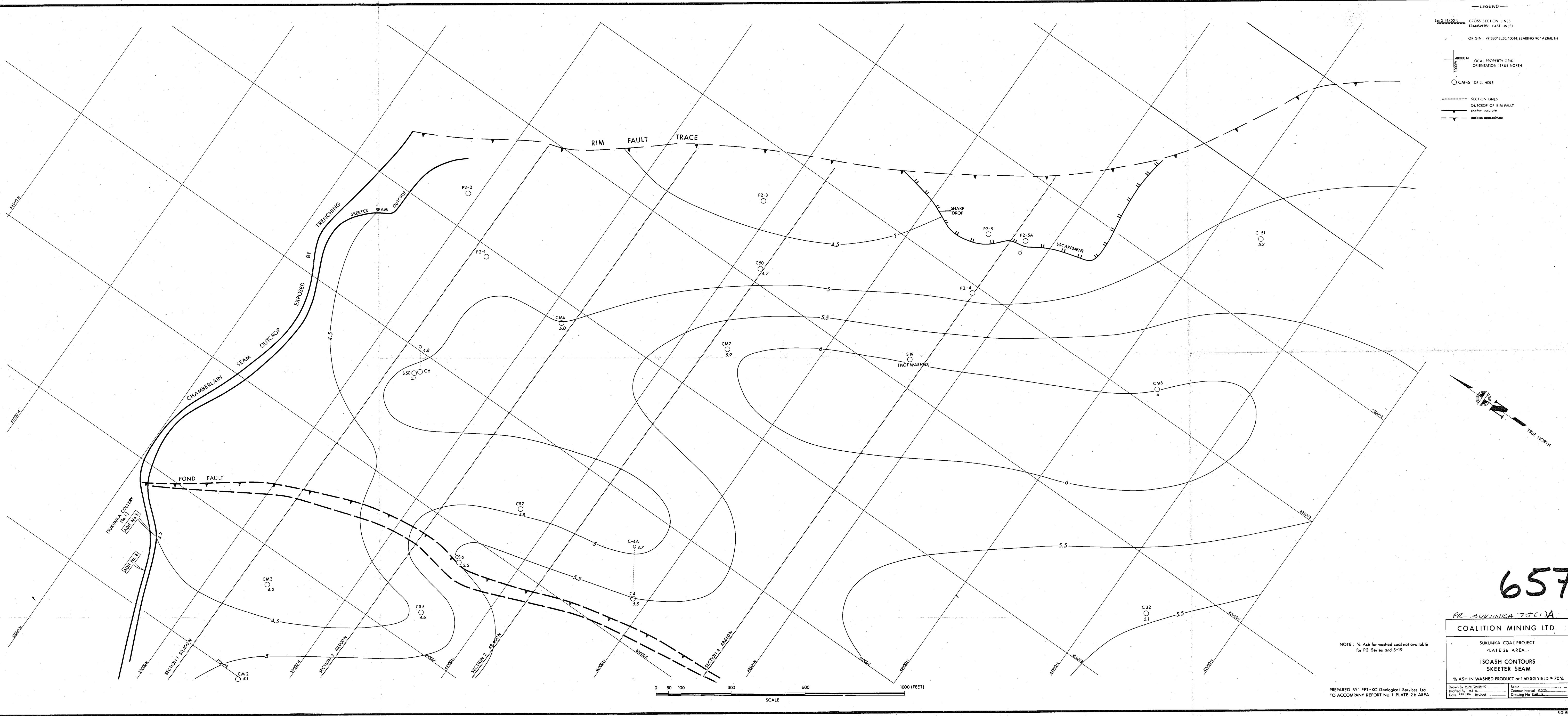
COALITION MINING LTD.

SUKUNKA COAL PROJECT
 PLATE 2b AREA.
 ISOASH CONTOURS
 SKEETER SEAM

% ASH IN RAW COAL PRODUCT - AS RECEIVED BASIS

Drawn By: J. MASON	Scale:
Drafted By: J.M.S.	Contour Interval: 3.75
Date: 11/17/78 - Revised	Drawing No. C.M.L.11

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA



— LEGEND —

SECTION LINES
 CROSS SECTION LINES
 TRANSVERSE EAST-WEST

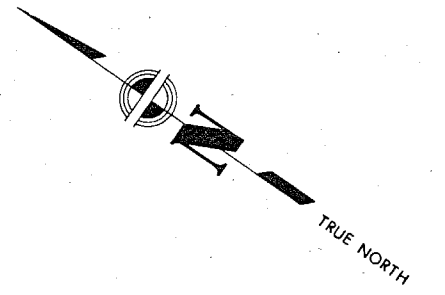
ORIGIN: 79,330' E, 50,400' N, BEARING 90° AZIMUTH

LOCAL PROPERTY GRID
 ORIENTATION: TRUE NORTH

○ CM-6 DRILL HOLE

SECTION LINES
 OUTCROP OF RIM FAULT
 position accurate

SECTION LINES
 position approximate



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NOTE: % Ash for washed coal not available for P2 Series and S-19

PREPARED BY: PET-KO Geological Services Ltd
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

PR-SUKUNKA 75(1)A

COALITION MINING LTD.

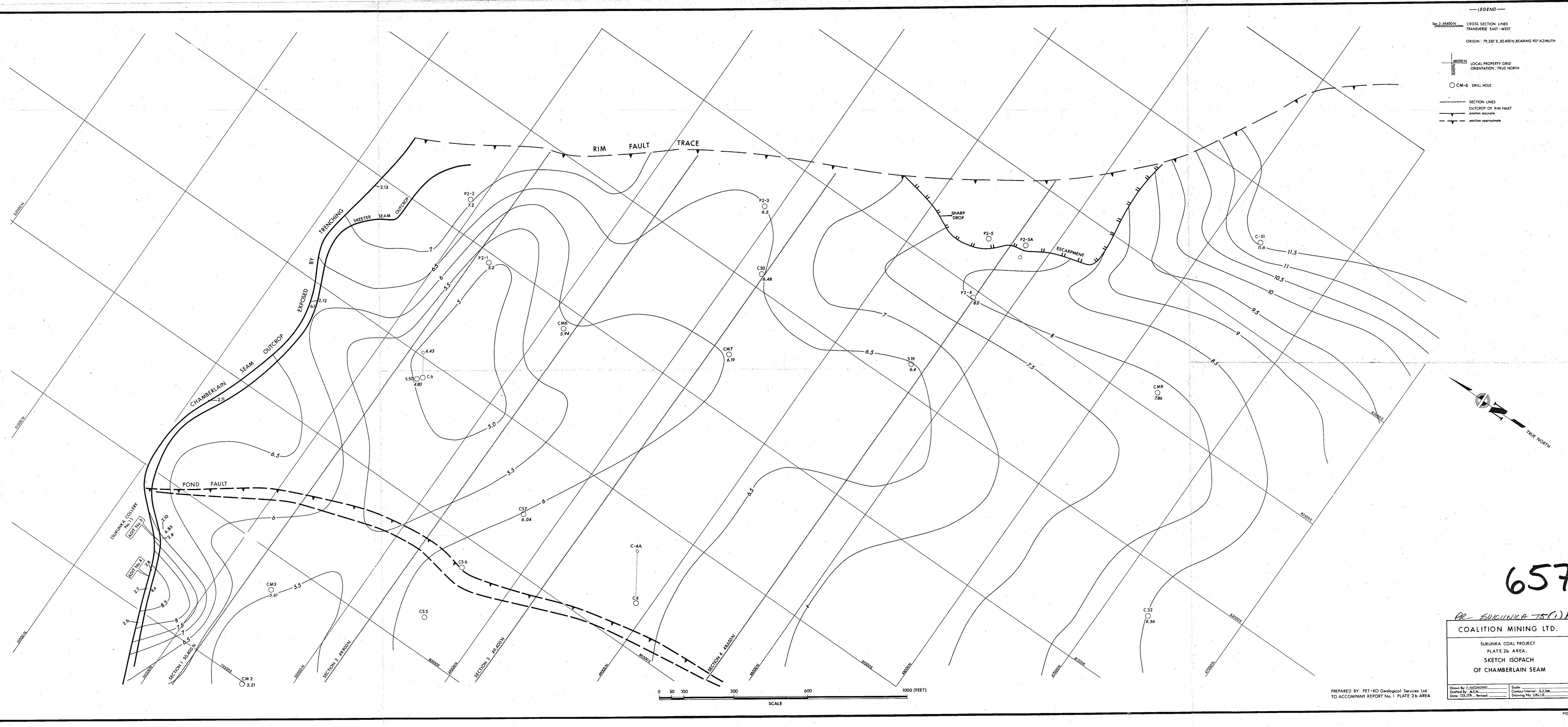
SUKUNKA COAL PROJECT
 PLATE 2b AREA

**ISOASH CONTOURS
 SKEETER SEAM**

% ASH IN WASHED PRODUCT at 1.60 SG YIELD > 70%

Drawn By: S. ANDERSON
 Date: 11/1/00 - Revised

Scale
 Contour Interval: 0.5%
 Drawing No: CML-13



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PR- SUKUNKA 75(1)A
COALITION MINING LTD.
 SUKUNKA COAL PROJECT
 PLATE 2b AREA
 SKETCH ISOPACH
 OF CHAMBERLAIN SEAM

Drawn By: P. ANTONENKO
 Drafted By: M.E.W.
 Date: 12/12/78 - Revised: _____
 Scale: Contour Interval: 0.5 Feet
 Drawing No. C44-138

analyzed intervals of the Chamberlain Seam (Appendix A), and the raw coal ash and FSI are displayed diagrammatically (Figure 8).

The mean raw coal quality for this seam are included as Table 4, which should be compared with the mean washed coal (S.G. 1.60) data presented in the 1972 Report (Table 5). Variations in raw coal and washed coal ash are relatively slight (Figures 9, 9A).

(i) Seam Character

The Chamberlain Seam in the drilled area is generally free from stone bands. There is no evidence from this programme to suggest that the high quality of the Chamberlain Seam differs in this area of Plate 2B from that present in the remainder of the property.

(ii) Degree of Weathering

Oxidation of the Chamberlain Seam has occurred in small, localized areas, as outlined by the analytical data from isolated bore holes.

Special note is made of two localized oxidation points:

- (a) DDH P2-4, where the ash is 5.9%, and FSI is 2;
- (b) DDH P2-5A, a 30°-angle hole about 25 ft from the outcrop. The ash is 2.6%, and FSI 1½.

Both of these holes are near the outcrop and close to the Rim Fault (Figure 8).

Based on analytical data of bore holes on the Plate 2B area, very little oxidation is anticipated.

Good mining practice should achieve the necessary quality control near the outcrop areas and the Rim Fault trace.



LEGEND

--- 3.45000N CROSS SECTION LINES
 TRANSVERSE EAST - WEST

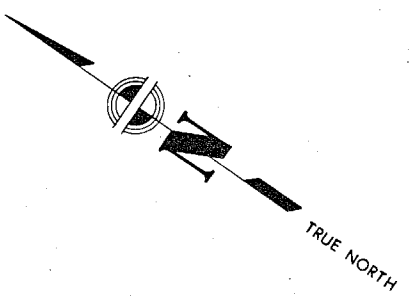
ORIGIN : 79,330'E, 50,400'N, BEARING 90° AZIMUTH

--- 48000N LOCAL PROPERTY GRID
 ORIENTATION : TRUE NORTH

○ CM-6 DRILL HOLE

..... SECTION LINES
 OUTCROP OF RIM FAULT
 position accurate

--- position approximate



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PR-SUKUNKA 75(1)A

COALITION MINING LTD.

SUKUNKA COAL PROJECT
 PLATE 2b AREA.
 ISOASH CONTOURS
 CHAMBERLAIN SEAM
 % ASH IN RAW COAL PRODUCT - AS RECEIVED BASIS

Drawn By: J. ANTICENKO
 Drafted By: J.L.W.
 Date: 12.12.05, Revised: _____

Scale: _____
 Contour Interval: 0.5
 Drawing No: CML13

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

0 50 100 300 600 1000 (FEET)

SCALE

TABLE 4

CHAMBERLAIN SEAM

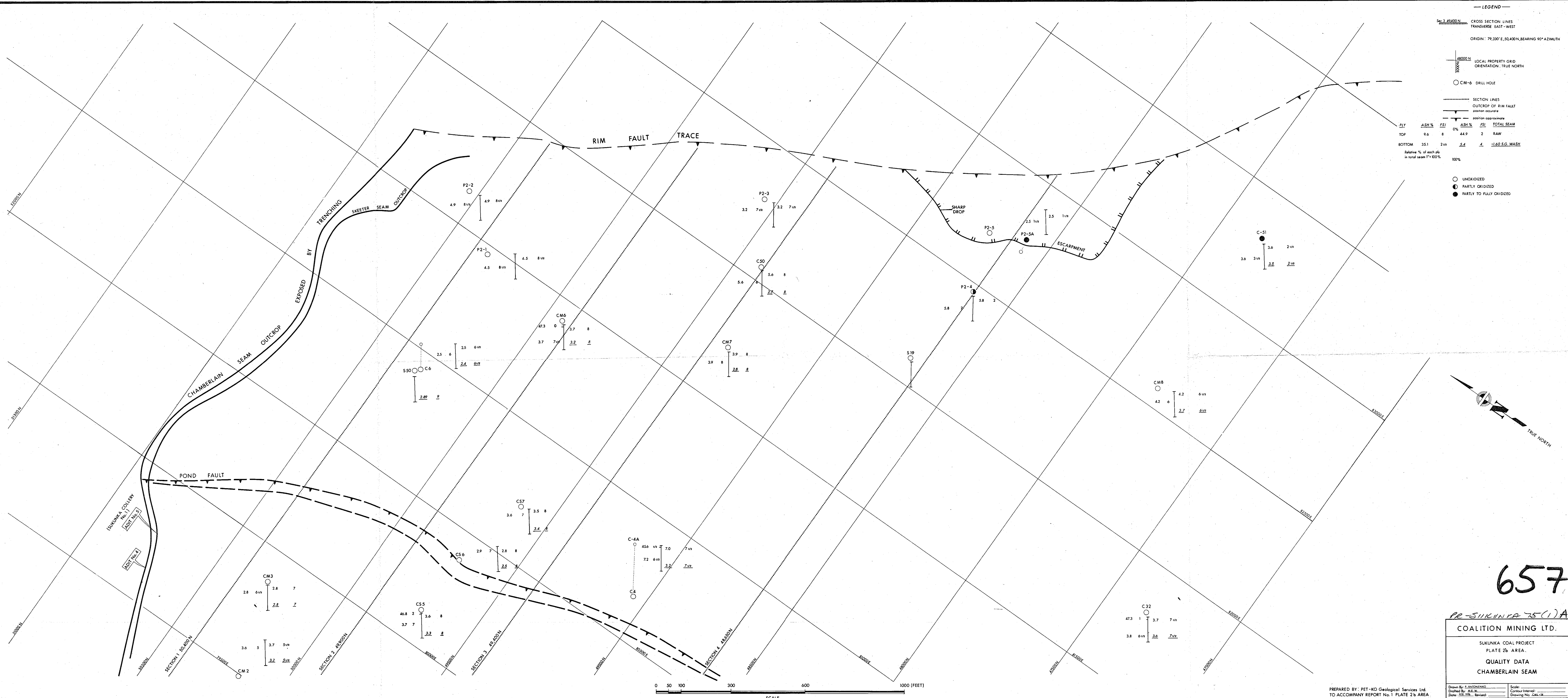
MEAN VALUES OF RAW COAL ANALYTICAL DATA (AIR DRY BASIS)

	METALLURGICAL TOTAL SEAM	NON-METALLURGICAL TOTAL SEAM
Mean Ash %	4.26	4.25
Range	3.2 - 6.6	2.6 - 5.9
No. of Values	3	2
Mean FSI	8	1 $\frac{1}{4}$
Range	7 $\frac{1}{2}$ - 8 $\frac{1}{2}$	1 $\frac{1}{2}$ - 2
No. of Values	3	2
Mean	14.805	14.550
Range	14,515 - 15,080	14,490 - 14,600
No. of Values	3	2

TABLE 5

RANGE OF MEAN VALUES OF ANALYTICAL DATA FOR
WASHED PRODUCT AT S.G. 1.60 (AIR DRY BASIS)
CHAMBERLAIN SEAM (VARIOUS ELEMENTS - PLATE 2)
(Data for Upper Split Excluded)

Moisture %	0.8	-	1.0
V. M. %	19.2	-	22.2
V. M. % (D.A.P.)	20.6	-	26.2
Ash %	3.9	-	5.3
Fixed Carbon %	73.0	-	73.9
C.S. No.	7	-	7 $\frac{1}{2}$
C.V. (BTU/lb)	14,520	-	15,030
Sulphur %	0.35	-	0.45
Phosphorus %	0.021	-	0.035



LEGEND

CROSS SECTION LINES
 TRANSVERSE EAST-WEST

ORIGIN: 79,330'E, 50,400'N, BEARING 90° AZIMUTH

LOCAL PROPERTY GRID
 ORIENTATION: TRUE NORTH

○ CM-6 DRILL HOLE

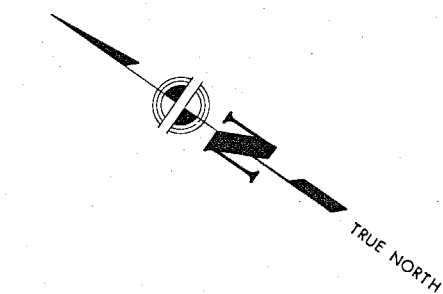
SECTION LINES
 OUTCROP OF RIM FAULT
 position accurate

SECTION LINES
 position approximate

PLY	ASH %	FSI	ASH %	FSI	TOTAL SEAM
TOP	0.6	8	0%	44.9	2 RAW
BOTTOM	35.1	2 1/2	5.4	4	1.60 S.G. WASH

Relative % of each ply
 in total seam 1" = 100%
 100%

○ UNKIDZIED
 ● PARTLY OXIDIZED
 ● PARTLY TO FULLY OXIDIZED



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PR-SUKUNKA 75(1)A
COALITION MINING LTD.

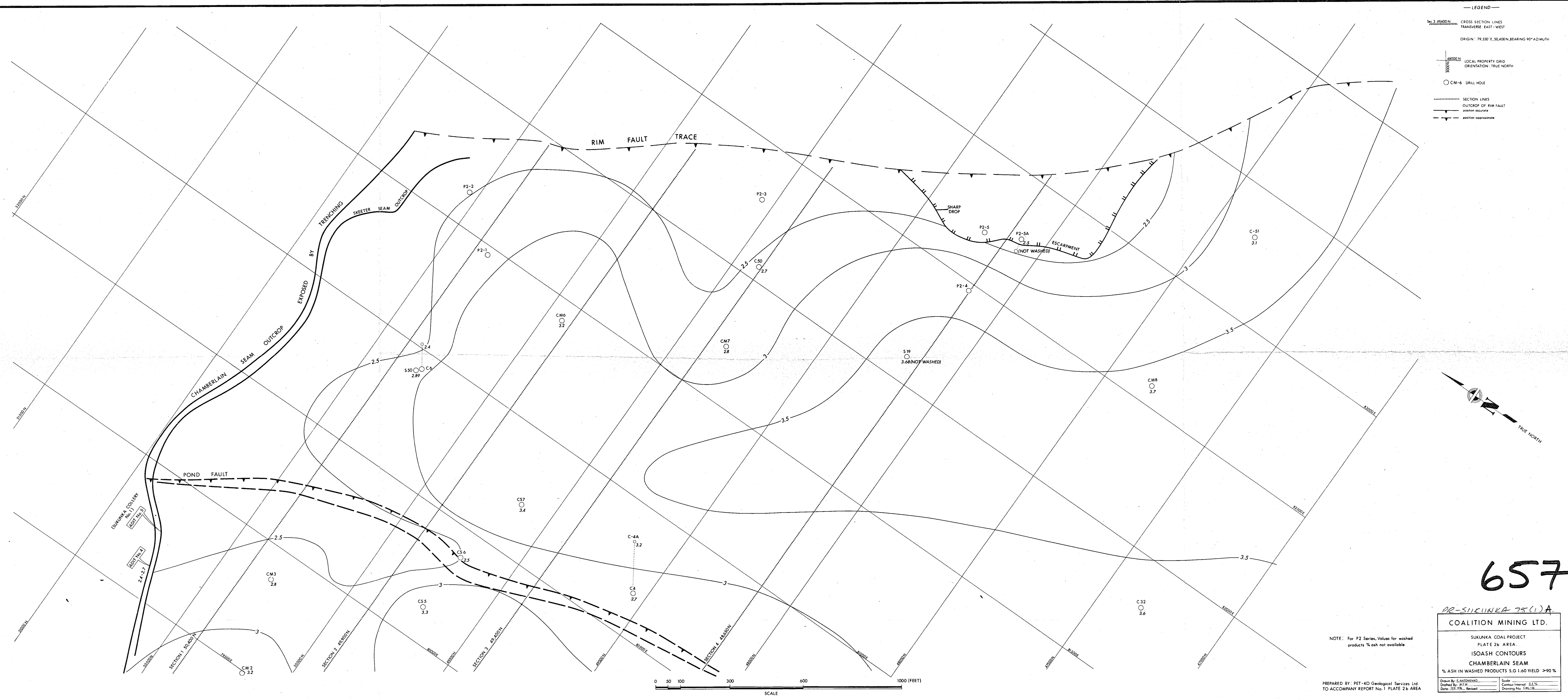
SUKUNKA COAL PROJECT
 PLATE 2b AREA
 QUALITY DATA
 CHAMBERLAIN SEAM

Drawn By: J. J. JENSEN
 Drafted By: J.E.W.
 Date: 11/17/78 - Revised

Scale:
 Contour Interval:
 Drawing No. CML-38

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

LEGEND
 SECTION LINES
 CROSS SECTION LINES
 TRANSVERSE EAST - WEST
 ORIGIN: 79,330' E, 50,400' N, BEARING 90° AZIMUTH
 LOCAL PROPERTY GRID
 ORIENTATION: TRUE NORTH
 CM-6 DRILL HOLE
 SECTION LINES
 OUTCROP OF RIM FAULT
 position accurate
 position approximate



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PR-SUKUNKA 75(1)A
 COALITION MINING LTD.
 SUKUNKA COAL PROJECT
 PLATE 2b AREA
 ISOASH CONTOURS
 CHAMBERLAIN SEAM
 % ASH IN WASHED PRODUCTS S.G. 1.60 YIELD >90 %

NOTE: For P2 Series, Values for washed products % ash not available

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

Drawn By: EASTON/MSK
 Checked By: J.E.V.
 Date: 11/10/00, Revised: _____
 Scale: Contour Interval: 0.5 %
 Drawing No: C.M.L-36

5.4 EFFECT AND ECONOMIC SIGNIFICANCE OF TECTONIC ACTION ON OPEN PIT MINING

5.4.1 Coal Reserves

Thickening of the seams occurs as a result of overfolding and overthrusting along the Pond Fault zone, for example, 22.5 ft of Skeeter Seam was intersected in DDH CS-6. This phenomenon recurs along the Pond Fault zone and in the southwestern limit of the strip mine area.

However, the depth of overburden near this fault zone will probably prohibit any increase in recoverable reserves produced as a result of this phenomenon.

5.4.2 Coal Quality

The formation of Plate 2B by thrust fault action appears to have had little or no effect on the quality of the coal seams within the area examined.

5.4.3 Mineability

No sheared coal appears to have been encountered above or within the Chamberlain Seam by any of the drill holes. However, it is likely that near-horizontal shearing will occur, but this will not adversely affect normal open-pit mining practice, as it causes no structural anomaly (Figure 10).

5.5 GROUND WATER

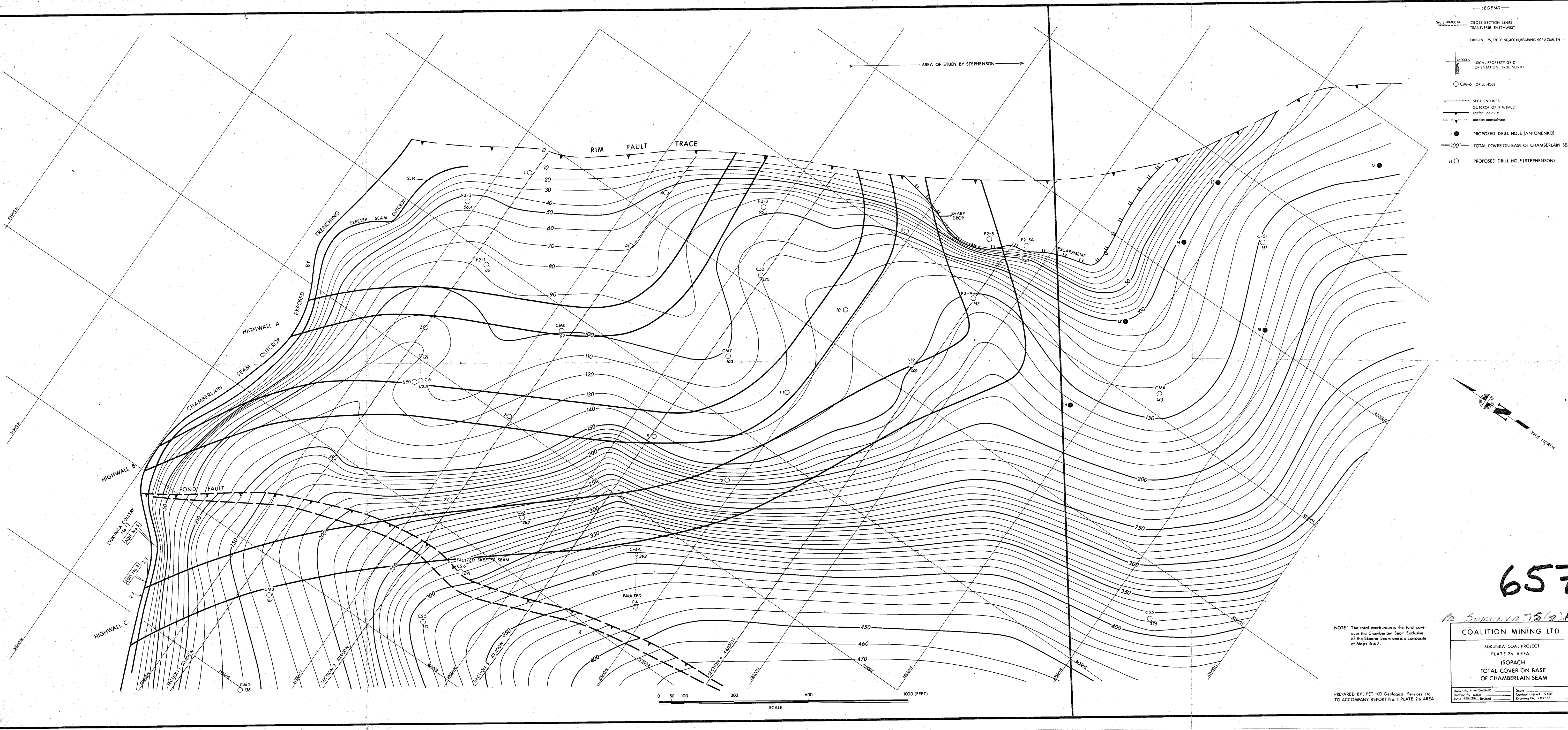
Logging of the bore holes has provided data on the water level of each hole whenever water was present.

One temperature log was run, on DDH P2-1, 6 hours after drilling. The results were inconclusive. Sufficient data is not available for detailed ground water interpretation. Of the 6 holes drilled within Plate 2B, ground water levels were recorded in DDH P2-1 and DDH P2-4, at 3,934 and 3,868 ft R.L. respectively.

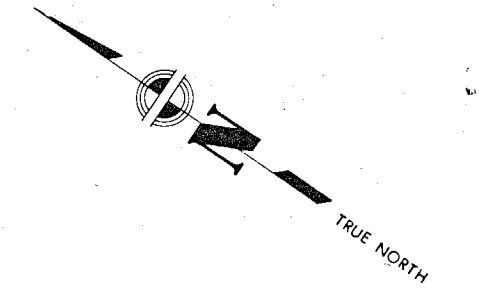
5.6 DEPTH OF COVER

In accord with the increase in height of the surface elevation from the northeast to the southwest, the cover over the two seams thickens in that direction (Figure 10). The maximum overburdens of 268 ft and 290 ft over the Skeeter and Chamberlain Seams respectively, are reached adjacent to the limiting Pond Fault near CS-7. A strip mine high wall could be placed at this point for a stripping ratio of 11.0/1. The northeast half of Plate 2B is under 135 ft average cover. This cover comprises the remnants of the upper sandstone unit, a shaly unit, and a lower sandstone unit above the Skeeter Seam. The ratio of sandstone to shale is approximately 3 to 1.

Varying amounts of unconsolidated drift, ranging from 0 to 40 ft, cover these sediments to the southeast, near DDH P2-4.



- LEGEND**
- Sec. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100
 - CROSS SECTION LINES
TRANSVERSE EAST - WEST
 - ORIGIN: 79,330'E, 50,400'N, BEARING 90° AZIMUTH
 - LOCAL PROPERTY GRID
ORIENTATION: TRUE NORTH
 - CM-6 DRILL HOLE
 - SECTION LINES
OUTCROP OF RIM FAULT
position accurate
 - position approximate
 - PROPOSED DRILL HOLE (ANTONENKO)
 - PROPOSED DRILL HOLE (STEPHENSON)



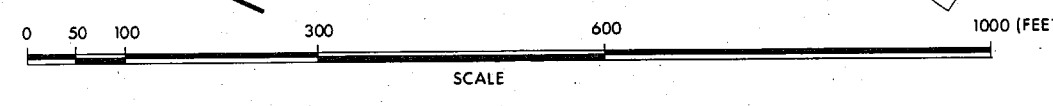
657

Mr. SUKINKA 75(2)A

COALITION MINING LTD.
 SUKINKA COAL PROJECT
 PLATE 2b AREA
 ISOPACH
 TOTAL COVER ON BASE
 OF CHAMBERLAIN SEAM

NOTE: The total overburden is the total cover over the Chamberlain Seam exclusive of the Skeeter Seam and is a composite of Maps 6 & 7.

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA



SECTION 6

COAL RESERVES

6.1 COAL RESERVES - SKEETER AND CHAMBERLAIN SEAMS

H. G. Stephenson (1975) has calculated the reserves of coal at various stripping ratios (Figure 10). For the combined Skeeter and Chamberlain Seams, these ratios are:

<u>Stripping Ratio</u>	<u>Recoverable Coal (Short Tons)</u>
6.9:1	383,000
8.3:1	932,000
11.0:1	1,633,000

The lower coal of the Skeeter Seam was not included in the reserves, though it may be recoverable:

Stephenson indicates that 90 to 95% of the coal in the area will be good metallurgical coal.

SECTION 7

ENVIRONMENTAL CONSIDERATIONS

7.1 GENERAL OBSERVATIONS

Plate 2B does not appear to differ from Plate 1 as far as environmental factors are concerned. As with Plate 1, with careful planning, good restoration practices, and pollution control measures, no environmental problems should arise as a result of strip mining on Plate 2B (see Wallis, 1975).

SECTION 8

R E C O M M E N D A T I O N S

SECTION 8

RECOMMENDATIONS - PLATE 2B

8.1 ADDITIONAL DRILLING

The accuracy with which surface-mineable reserves can be calculated will be improved appreciably with greater structural and topographical control.

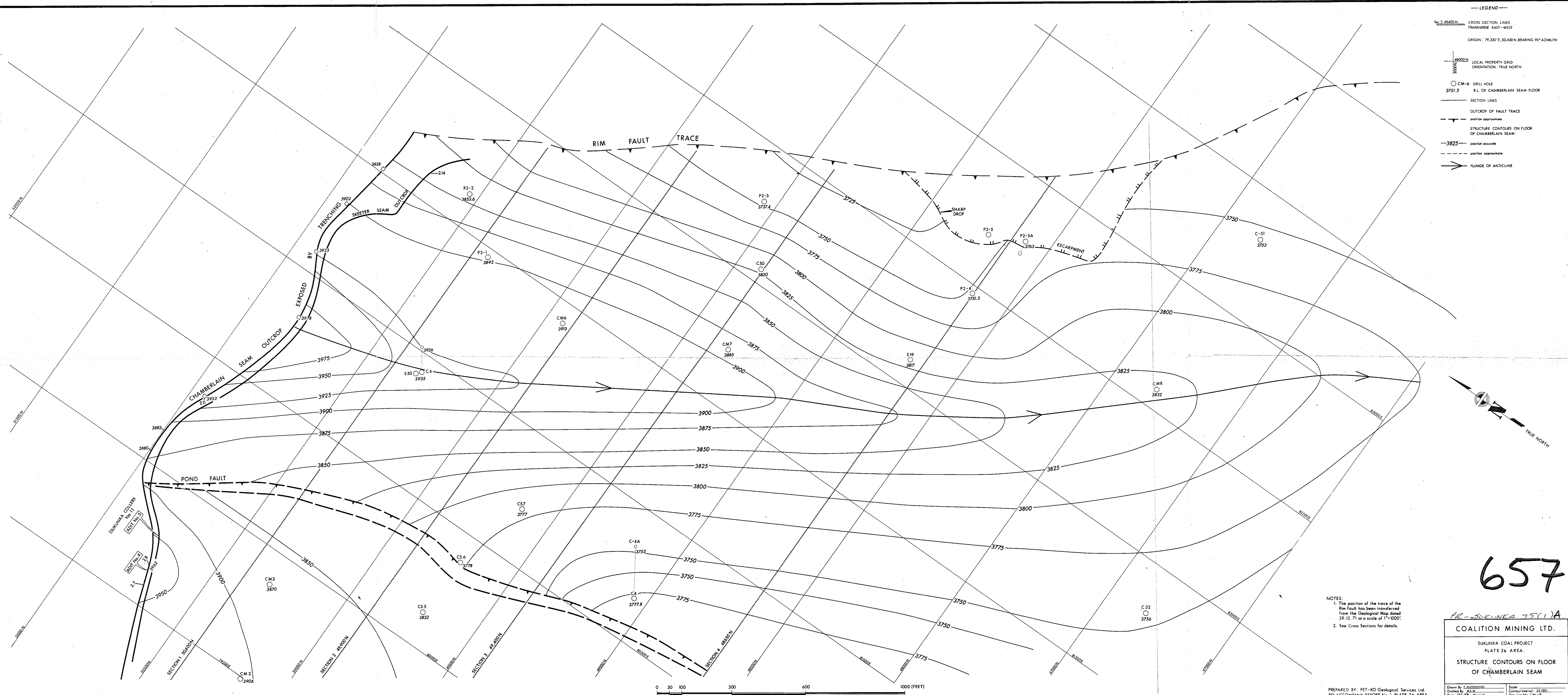
Stephenson (1975) recommended 12 drill holes for the next stage of exploration, at approximately 300 to 400 foot centres (for detail, see Appendix B).

The writer wishes to recommend an additional minimum six holes in the vicinity of DDH C-51 and DDH CM-8, as it is considered that potential exists for extending and increasing the open-pit reserves to the southeast along the Rim Fault trace and along the eastern flank of the anticline. This programme will serve to delineate the southeastern limit of the open pit area.

8.2 SEAM QUALITY EVALUATION

SKEETER SEAM

- (i) Although no evidence of oxidation in the Skeeter Seam had been detected in any of the Plate 2B drill holes to date, quality control near outcrops and near the Rim Fault should be maintained by a programme of trenching and/or shallow-cored seam drilling.
- (ii) Definition of the oxidized region around the outcrop and Rim Fault should be achieved before commencement of pit operations.



- LEGEND —
- 48000N — CROSS SECTION LINES
 - TRANSVERSE EAST-WEST —
 - ORIGIN: 79,330' E, 50,400' N, BEARING 90° AZIMUTH
 - LOCAL PROPERTY GRID —
 - ORIENTATION: TRUE NORTH
 - CM-6 DRILL HOLE
 - 3751.5 R.L. OF CHAMBERLAIN SEAM FLOOR
 - SECTION LINES —
 - OUTCROP OF FAULT TRACE —
 - position approximate —
 - STRUCTURE CONTOURS ON FLOOR OF CHAMBERLAIN SEAM —
 - 3825 — position accurate
 - position approximate —
 - PLUNGE OF ANTICLINE —

NOTES:
 1. The position of the trace of the Rim Fault has been transferred from the Geological Map dated 29.12.71 at a scale of 1"=1000'.
 2. See Cross Sections for details.

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PR-SUKUNKA 75(1)A

COALITION MINING LTD.

SUKUNKA COAL PROJECT
 PLATE 2b AREA.

STRUCTURE CONTOURS ON FLOOR OF CHAMBERLAIN SEAM

Drawn By: E. ANDERSON
 Drafted By: M. J. ...
 Date: 11.10.78, Revised: ...

Scale: Contour Interval: 25 FEET.
 Drawing No. C.M.L. 18

PREPARED BY: PET-KO Geological Services Ltd.
 TO ACCOMPANY REPORT No. 1 PLATE 2b AREA

CHAMBERLAIN SEAM

- (iii) Outcrop oxidation effects should be covered as in the Skeeter Seam, (ii), above.
- (iv) Quality control near the Rim Fault must be achieved by diamond drilling.

8.3 OUTCROP DEFINITION

Detailed outcrop definition is recommended, both by trenching and bulldozing along the Rim Fault, in conjunction with the proposed drilling programme. Proper outcrop delineation will eliminate drilling in unconsolidated material or glacial drift.

8.4 POSSIBLE EXTENSION OF PROVEN OPEN PIT RESERVES

There are definite possibilities of extension of the reserves to the southeast of the area studied by G.H. Stephenson (1975). The proposed 6-hole programme (# 13 to # 18) is a preliminary investigation in this respect, and could lead to more drilling. If, after the 6 holes are completed, seam thicknesses and overburden thickness are still favourable, drilling should continue until a southern limit has been established.

8.5 DRILLING PROCEDURES

Eighteen drill holes have been recommended. It is recommended that:

- (a) Diamond coring be used in critical areas,

e.g. near outcrops, fault zones, areas containing few cored holes with high core recoveries, etc.

- (b) Rotary drilling for areas where only infill holes are required.

It is suggested that between 7 and 10 of the 18 holes should be diamond-drilled, and the remaining 11 to 8 be rotary-drilled. All of the holes should be logged.

SECTION 9

CONCLUSIONS

1. The results of the present drilling programme have substantiated the existence of reserves of Skeeter and Chamberlain Seams in an open pit situation, which is located in a favourable sedimentary and structural environment.
2. Depending on the overburden-to-coal ratio deemed most favourable, between 400,000 and 1.6 million short tons of coal, suitable for extraction by open pit mining methods, have been outlined.
3. A definite potential exists for increasing these reserves to the southeast of the present proposed open pit area.
4. Additional surveying and drilling are required to achieve greater topographic, structural, and qualitative control.
5. A minimum of 18 drill holes are recommended: 12 to achieve greater control, and 6 to extend the open pit reserves to the southeast, and to define the southern and southeastern limits of the open pit coal area of Plate 2B.

SECTION 10

ACKNOWLEDGEMENTS

The assistance and guidance of Dr. C.B. Newmarch, and the cooperation of the staff of Brascan Resources Limited are gratefully acknowledged.

Mr. R. E. Shields, field supervisor at Coalition Mining Limited, also provided invaluable assistance.

SECTION 11

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- WALLIS, G.R., (1975): Sukunka Coal Project. Plate 1 Area.
Geological Report on the Strip Mine Potential of
the Northern Part of Plate 1. Rpt. No. 1/4/20,
March 31, 1975. Clifford McElroy & Associates
Pty. Ltd. for Coalition Mining Limited.

NOTES TO ACCOMPANY GEOLOGICAL CROSS SECTIONS

The cross sections here were originally constructed at a scale of 1 inch equals 50 feet.

The four cross sections have been constructed in an east-west direction transverse to the regional strike. The position of the sections is shown in Figure 1. The following data have been used in the construction of the sections:

- (1) The detailed logs of the drill holes adjacent to the cross sections, transferred directly onto the sections;
- (2) The structure contour maps and topographic maps were used to adjust seam floor elevations whenever it was necessary to project a bore hole to the sections.
- (3) The point of origin of the cross sections is 79 330 E, 50 400 N. Bearing 90° Azimuth on the exploration grid.

APPENDIX A

RATIONALE FOR PROPOSED ADDITIONAL DRILLING PROGRAMMES

- a) After Stephenson
- b) After Antonenko

APPENDIX A

RATIONALE FOR PROPOSED ADDITIONAL DRILLING PROGRAMMES

a) After Stephenson

In his preliminary report on strip mining in the Plate 2B Area, Stephenson (1975) has recommended an additional 12 drill holes for the next stage of exploration, at approximately 300-400-foot centres.

Accuracy with which surface-mineable reserves can be calculated will be improved with greater structural and topographical control.

Stephenson recommends three holes along Cross Section 1, 50,400 N; No. 1 adjacent and 100 ft west of the Rim Fault trace. No. 2, 350 ft west of DDH P2-1; No. 3, approximately 400 ft west of S-50. Along Cross Section 2, 49,900 N, he has placed 4 proposed drill sites: No. 4 adjacent and 200 ft west of the Rim Fault trace; No. 5 250 ft west of No. 4; No. 6 400 ft west of DDH CM-6; No. 7 approximately 400 ft west of No. 6.

Along Cross Section 3, 49,400 N, only one proposed location occurs: No. 8, 430 ft west of DDH CM-7.

The remaining 4 proposed drill sites are located between Section 3, 49,400 N, and Section 4, 48,650 N, which places them along an east-west line at approximately 49,030 N. No. 9 is located 240 ft west of the Rim Fault trace; No. 10, 400 ft west of No. 9; No. 11, 400 ft west of No. 10, and No. 12, 400 ft west of No. 11.

These locations are only approximate. They may be altered according to terrain and road-building conditions.

b) After Antonenko

At this point, the writer wishes to recommend an additional minimum 6 holes in the vicinity of DDH's C-51 and CM-8, for the purpose of extending and increasing the reserves to the southeast along the Rim Fault trace, and along the eastern flank of the anticline. This will serve to delineate the southeastern limit of the open pit area..

DDH C-51 intersected 11.6 ft of Chamberlain Seam and 10.12 ft of Skeeter Seam. Total overburden over Chamberlain Seam is 151 ft.

DDH CM-8 intersected 7.86 ft of Chamberlain Seam and 9.80 ft of Skeeter Seam. Total overburden over Chamberlain Seam is 143 ft (See isopach maps of Skeeter and Chamberlain Seams, Figures 4 and 7, and Total Overburden Over Chamberlain Seam, Figure 11).

Therefore, on an east-west line at 48,100 N, proposed Drill Hole No. 13 is 300 ft west of the Rim Fault trace; No. 14 is 300 ft west of No. 13; No. 15 is 400 ft west of No. 14; and No. 16 is 400 ft west of No. 15.

On an east-west line at 47,600 N, No. 17 is located approximately 360 ft west of the Rim Fault trace, and No. 18 800 ft due west of No. 17 (See Figure 11 - Proposed Drill Sites Map). The location of these drill sites may be adjusted according to terrain conditions.

APPENDIX B

GEOLOGICAL CROSS SECTIONS

NOTES TO ACCOMPANY CROSS SECTIONS

TRANSVERSE CROSS SECTIONS, WEST TO EAST:

Section 1, 50 400 N

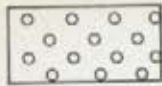
Section 2, 49 900 N

Section 3, 49 400 N

Section 4, 48 650 N

LITHOLOGY SYMBOLS

STRATIGRAPHIC UNITS



CONGLOMERATE
pebble to granule



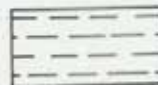
BRECCIA



SANDSTONE



SILTSTONE



CLAYSTONE



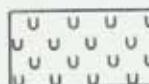
STONE COAL or
CLAYSTONE
CARBONACEOUS



MUDSTONE



COAL,
UNDIFFERENTIATED



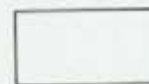
SOIL, WEATHERED and
UNCONSOLIDATED
MATERIAL



INTERBEDDED



LAMINITE



45°
INCLINED STRATA



FAULT
established
probable
possible

Kmb

MOOSEBAR FORMATION

GETHING FORMATION

UPPER GETHING SEQUENCE (Kgu)

BIRD SEAM

UPPER SANDSTONE

SILTSTONE - CLAYSTONE SEQUENCE

LOWER SANDSTONE

SKEETER SEAM

INTERSEAM SEDIMENTS

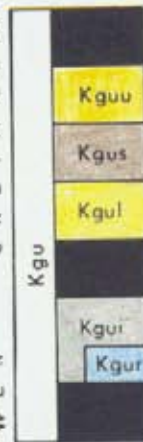
SILTSTONE - MUDSTONE LAMINITE

CHAMBERLAIN SEAM

LOWER GETHING SEQUENCE (Kgl)

UPPER SANDSTONE

LOWER CRETACEOUS



Kglu

LEGEND

DDH
P2-2



DRILL HOLE LOCATION
AND LITHOLOGY
PENETRATED

GEOLOGICAL BOUNDARY

POSITION ACCURATE

POSITION APPROXIMATE

- ? - ? -

POSITION INFERRED

FAULT TRACE SHOWING
DIRECTION OF MOVEMENT

POSITION ACCURATE

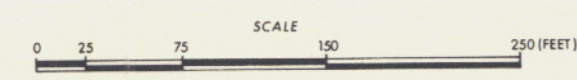
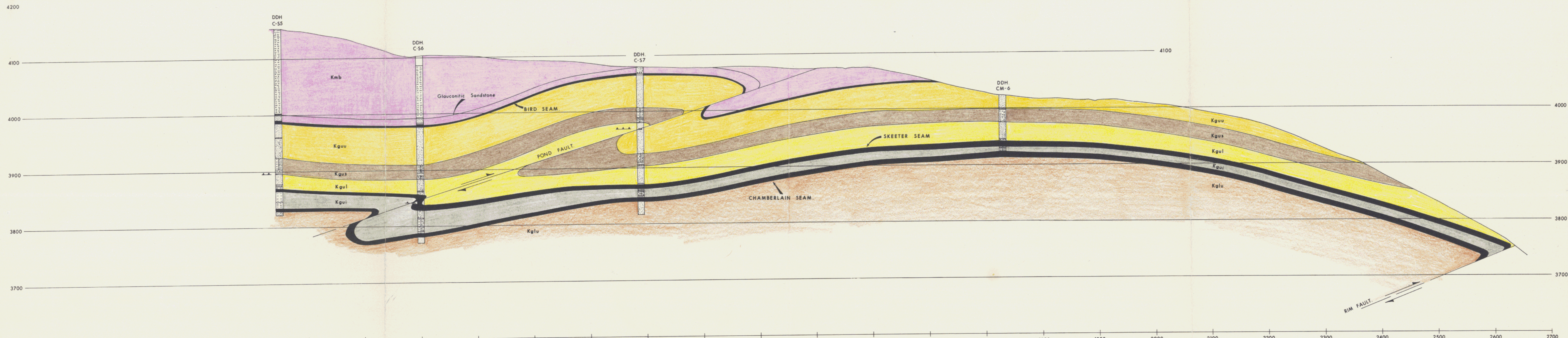
POSITION APPROXIMATE

POSITION INFERRED

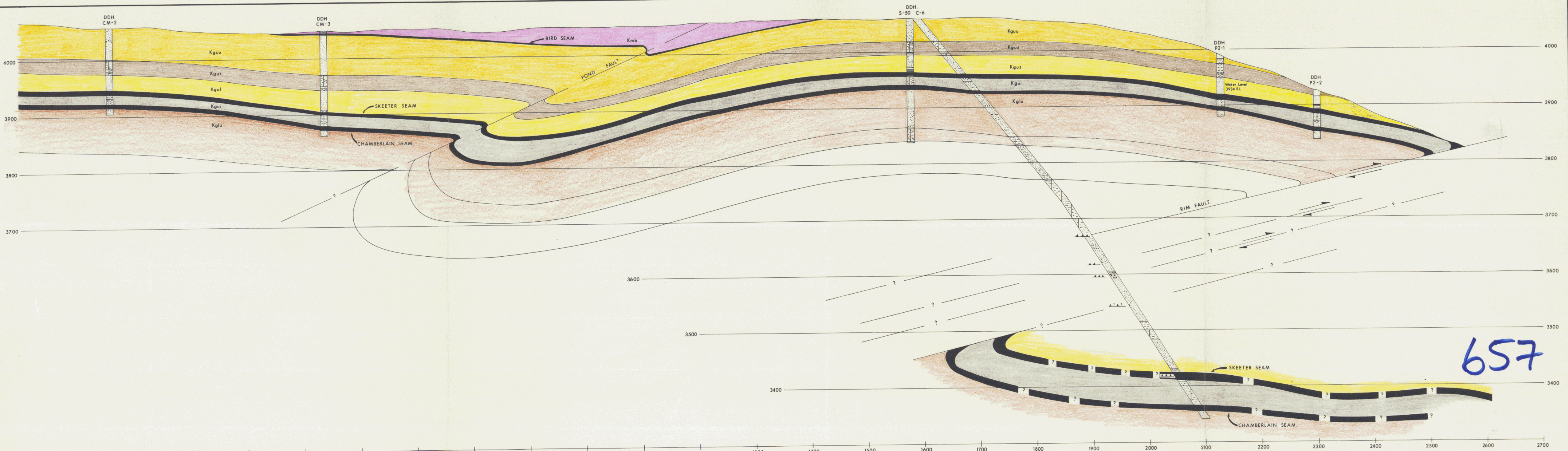
REFERENCE FOR CROSS SECTIONS

COALITION MINING LIMITED

SUKUNKA COAL PROJECT



657
 PR-SK75(1) A
 See Drawing No. CML 1 for Reference
 COALITION MINING LTD.
 SISKIYOU COAL PROJECT
 PLATE 2b AREA
 CROSS SECTION No. 2
 49,900 N.
 DATE: FEB 11 1978 Draw No. CML 6 Vol. 2
 BY: P. ANTONENKO
 PREPARED BY: PET-KO Geological Services Ltd
 To ACCOMPANY REPORT No. 1 PLATE 2b Area.

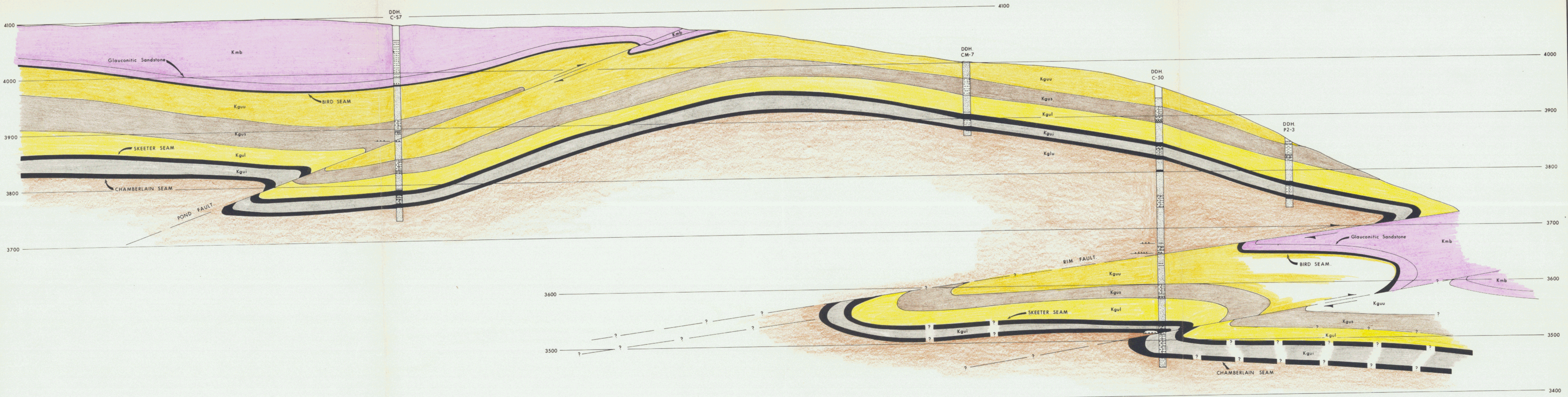


657

PR-SK 75(1)A

See Drawing No. C.M.L. 1 for Reference
COALITION MINING LTD.
 SUKUMA COAL PROJECT
 PLATE 2b AREA
 CROSS SECTION No. 1
 50,400 N.
 DATE: FEB. 11 1978 Drawn by C.M.L. 1 101-2
 BY P. ANTONENKO

PREPARED BY: PET-KO Geological Services Ltd.
 To ACCOMPANY REPORT No. 1 PLATE 2b Area



0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700

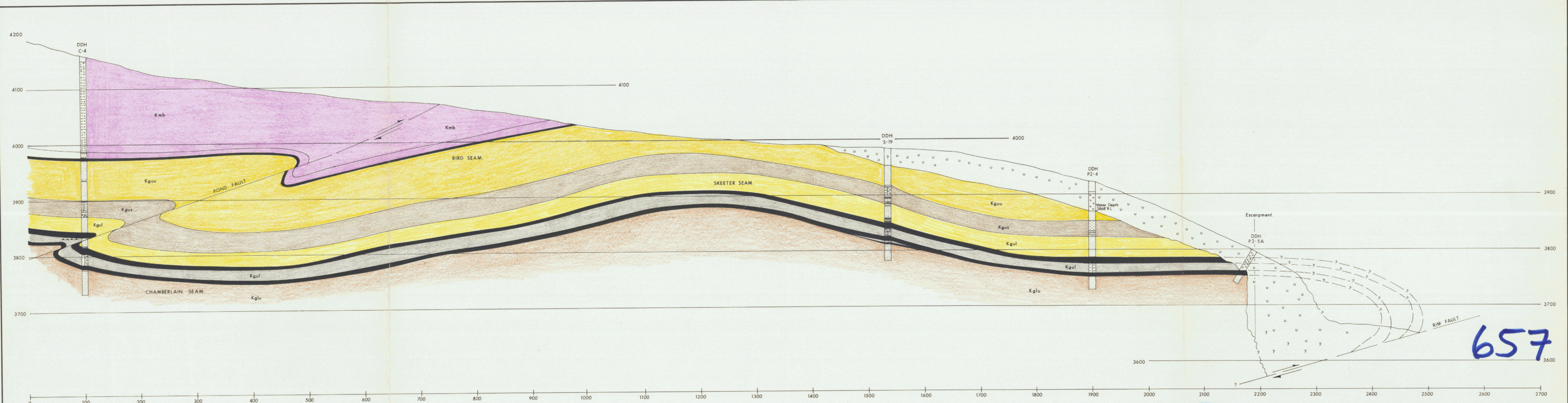
SCALE
0 25 75 150 250 (FEET)

PR-SK 75(1) A

657

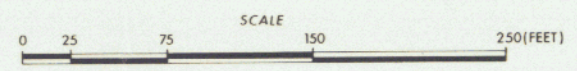
PREPARED BY: PET-KO Geological Services Ltd
To ACCOMPANY REPORT No. 1 PLATE 2b Area

See Drawing No. CML for Reference
COALITION MINING LTD.
 SURENDA COAL PROJECT
 PLATE 2b AREA
 CROSS SECTION No. 3
 49,400 N.
 DATE: FEB 11 1978
 Draw No. CML 7 Vol. 2
 BY PANTONENKO



657

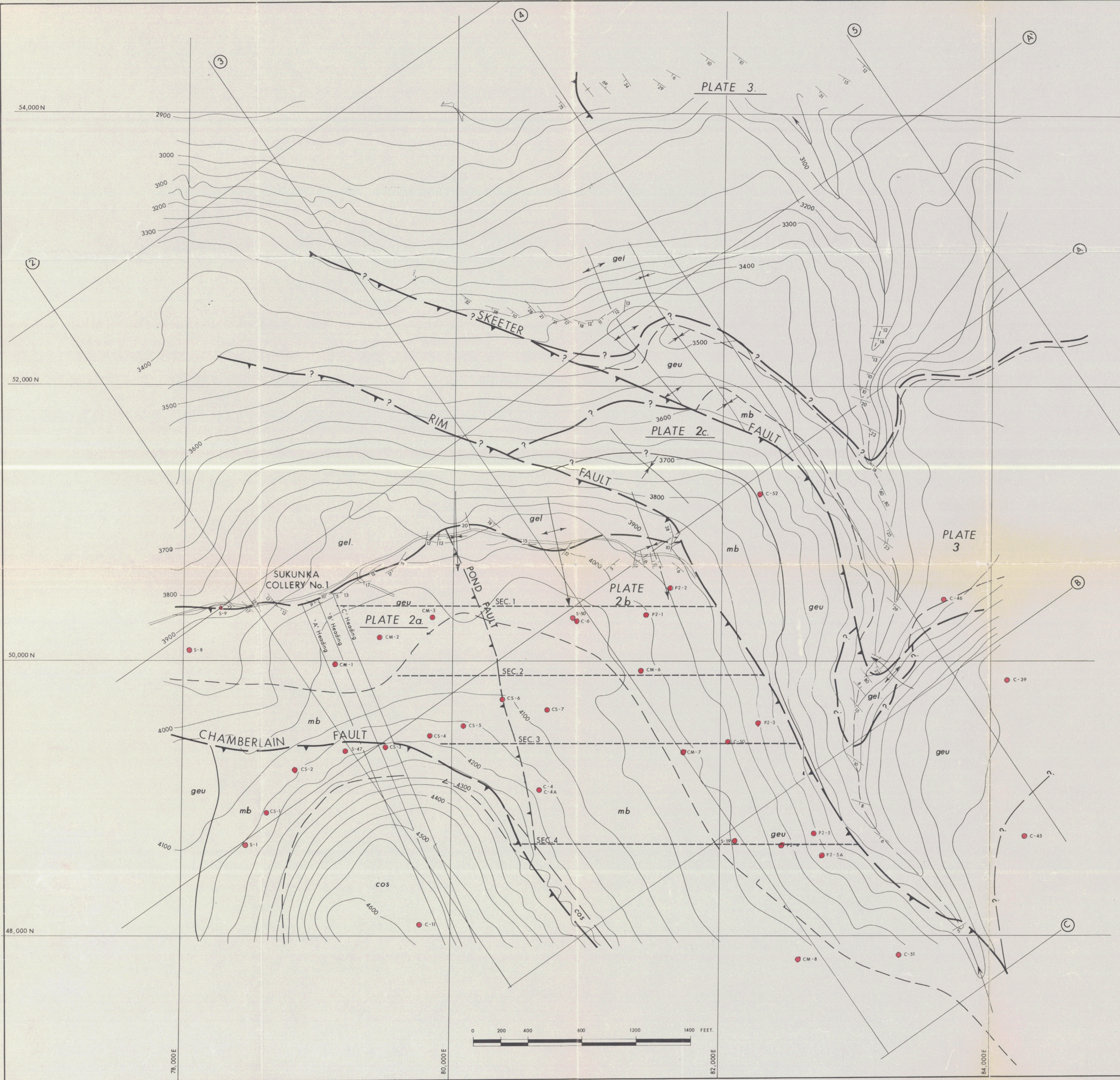
PR-SK 75(1)A



PREPARED BY: PET-KO Geological Services Ltd
To ACCOMPANY REPORT No. 1 PLATE 2b Area

See Drawing No. CML 1 for Reference

COALITION MINING LTD	
SUNNIVA COAL PROJECT	
PLATE 2b AREA	
CROSS SECTION No. 4	
48,650 N.	
DATE: FEB 11, 1970	DWG No. CML 8 Vol 2
BY P. ANTONENKO	



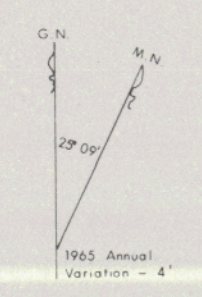
Reference

FORM	MEMBER	GENERAL DESCRIPTION
LOWER CRETACEOUS	Member	
	cos Sukunka	Interbedded fine-grained sandstone, mudstone & siltstone.
Geology	mb	Dark grey mudstone with common spongy & ferruginous concretions & / or interbeds. Glauconitic, sandy & pebbly mudstone at base.
	geu Upper Getting	Fine to medium to coarse-grained, thin-bedded to massive, generally crossbedded sandstone, shale & siltstone. Coal seam at base locally exceeds 10 feet in thickness.
	gel Lower Getting	Fine to medium to coarse-grained, thin-bedded to massive crossbedded sandstone, in parts quartzitic - in parts carbonaceous interbedded mudstone, siltstone & shale, locally carbonaceous. Coal & coaly seams.

	Bedding - inclined, vertical, horizontal, overturned
	Thrust fault
	Anticline - showing direction of plunge
	Syncline - showing direction of plunge
	Geological boundary, position accurate
	position inferred
	Chamberlain seam horizon, exposed by trenching
	position approximate, inferred
	Diamond drill hole - Coalition
	Topographic contours, standard datum.
	Access roads
	Basic exploration grid

DATA SOURCES - Outcrop mapping, detailed survey traverses, diamond drill hole data. See also note on Map 1, DWG No SKR 114.

NOTE - See Map 1, DWG No SKR 114, dated 29-12-71, accompanying report dated March 10, 1972, for geology of whole area at a Scale of 1" = 1000'.



THIS MAP RE-DRAFTED FROM DRWG No SKR 183 as PREPARED BY CLIFFORD McELROY & ASSOCIATES Pty. Ltd.

657

PR-SUKUNKA 7501A

COALITION MINING LIMITED

SUKUNKA COAL PROJECT.
GEOLOGICAL MAP
PLATES 2a, b & c
NORTHERN OUTCROP

Drawn by: K.L.A.R.	Scale: 1" = 400'
Checked by: [blank]	Cartographic: [blank]
Date: 2-76	Drawing No: C.M.L. 3

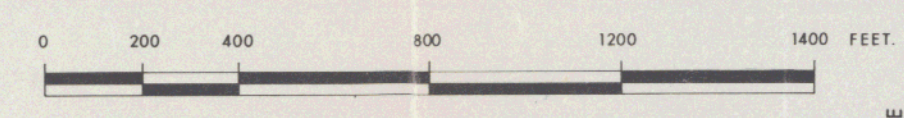


FIGURE 1

PR-SUKUNKA-75(1) ~~A~~

SUKUNKA

GATES MEMBER
REPORT

- VOLUME 1 -

OCT - NOV 1975

OPEN FILE

GATES MEMBER COAL PROJECT

VOLUME 1

GEOLOGICAL REPORT ON THE GATES MEMBER
OF THE COMMOTION FORMATION

COAL SEAMS IN THE VICINITY OF BULLMOOSE MOUNTAIN

00657

MINING RECORDER RECEIVED and RECORDED
MAY 11 1976
M.R. #..... VICTORIA, B. C.

PREPARED FOR:

COALITION MINING LIMITED

BY :

PET-KO GEOLOGICAL SERVICES LTD.

REPORT No.

JANUARY, 1976

FOREWORD

This report has been prepared for
Coalition Mining Limited as requested
by Dr. C. B. Newmarch of Brascan
Resources Limited, Calgary.

A handwritten signature in cursive script, appearing to read "P. Antonenko", written over a horizontal line.

P. Antonenko, P. Geol.

Calgary, March 10, 1975.

SECTION 1

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VOLUME 2

TITLE

MAP NO.

Geological Map

Structure Contours on Floor of
Gates 'A' Seam

Structure Contours on Floor of
Gates 'B' Seam

Isopach Total Gates 'A' Seam

Isopach Total Gates 'B' Seam

Isopach of Interseam Sediments between
Gates 'A' and 'B' Seams

Isopach of Total Cover over Gates 'A' Seam

Isopach of Total Cover over Gates 'B' Seam

Isopach of Total Coal in Gates 'A' Seam

Isopach of Total Coal in Gates 'B' Seam

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2	COMPOSITE GRAPHIC SECTION OF GATES MEMBER, COMMOTION FORMATION	N.B.
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N.B. For Figure 2, see Volume 1, page 11.

VOLUME 1

APPENDIX A

MEASURED SECTIONS

EXPLANATORY NOTES TO MEASURED SECTIONS

TRENCH No. 1	GATES 'B' SEAM (S-25) & GATES 'A' Seam
TRENCH No. 2	Gates 'B' SEAM (S-27) & Gates 'A' SEAM
TRENCH No. 3	GATES 'B' SEAM (S-31)
TRENCH G-2	GATES 'A' SEAM

GEOLOGICAL CROSS SECTIONS

NOTES TO ACCOMPANY GEOLOGICAL CROSS SECTIONS

1. The Section was drawn to an exaggerated vertical scale to illustrate the stratigraphic section. Originally drawn vertical scale, 1" = 50'.
2. The bore holes and trenches were placed directly on the cross section. Horizontal scale, 1" = 400'.

VOLUME 1

APPENDIX B

DRILL HOLE DATA

DIAMOND DRILL HOLE DATA

D.D.H.'s G-1 TO G-9

SECTION 2

SUMMARY OF CONCLUSIONS

SECTION 2

SUMMARY OF CONCLUSIONS

1. An evaluation of 9 diamond drill holes in the vicinity of Bullmoose Mountain, completed during the period October 6 to November 30, 1975, in conjunction with the information from previously drilled holes, has confirmed the presence of two relatively thick outcropping coal seams in the Gates Member of the Commotion formation. They are:
 - (1) Gates 'A' Seam
 - (2) Gates 'B' Seam
2. Three areas were located, having a limited potential for possible open pit mining. A total in situ reserve of 5.125 million long tons of coking coal is inferred. Elsewhere, the seams are comprised mainly of rock bands, or lack sufficient thickness.
3. The exploration revealed poor seam development with little or no prospect of the coals proving to be marketable. Any evaluation should proceed on the basis that the coal would be used for localized, or domestic mine, purposes only.
4. In the northeast part of the property, the Gates 'A' Seam may contain up to 3.50 million long tons of inferred coal in place, at stripping ratios of between 7.6/1 and 8.3/1. Anticipated low washed coal yields (<50%), and high inherent ash contents (>20%) are predicted for this seam.
5. Two areas are designated as having limited open pit po-

tential in the Gates 'B' Seam:

Area 1 - Northwest

An inferred reserve figure of 0.347 million long tons of in situ open pit coal has been calculated, at stripping ratios of

- (a) 5.1/1 (without benched highwall), and
- (b) 11.7/1 (with benches)

Area 2 - North

1.28 million long tons of in situ open pit reserves are inferred, with stripping ratios of

- (a) 8.4/1 (ex. benches), and
- (b) 10.6/1 (including benches)

The predicted washed coal characteristics for this seam are a yield of more than 60%, and ash content of less than 20% at S.G. 1.60.

6. The quality of both seams showed a relative, but patchy, improvement to the north and east of the Sukunka grid area.
7. The reserve tonnages quoted do not presume the economic extraction and utilization of the inferred quantities of coal.
8. The confidence level in the estimates of inferred reserves at these horizons is low, and further drilling is required to clarify the physical and analytical characteristics of these seams.
9. Reclamation costs in Alpine and sub-Alpine areas must be considered as a significant economic factor, assuming that permission to mine is, in fact, granted.

SECTION 3

I N T R O D U C T I O N

SECTION 3

INTRODUCTION

3.1 Objectives

The assessment of the economic potential of the Gates Member coal seams in the Commotion formation.

3.2 Previous Investigations

1. Previous work by the staff of Clifford McElroy & Associates Pty. Ltd., of Sydney, N.S.W., under the heading of "The Gates Member Coal Project", is contained in the 1972 Supplement (Bryan, McElroy & Wallis, March, 1973). In a study of 16 drill holes, drilled from 1970 to 1972, they concluded that the economic potential of the Gates Member is too low to warrant further expenditure. They gave two reasons:
 - (1) The economic thickness and quality of Seam 'B' is too variable to allow reserves to be calculated with an acceptable degree of confidence.
 - (2) Seam 'A', which is composed of a number of interbedded coal and rock horizons, cannot be readily correlated between bore holes.
2. In 1974, V. Hulbert outlined a plan of delineating the Gates Member 'B' Seam by means of a bulldozed road along the roof of the seam. Aerial photographs of the outcrop configuration could be transcribed from the photos to the existing 1" = 1,000' scale

geological map and, subsequently, structural interpretations could be made, along with a definition of potential surface and underground mining areas.

3. In September 1975, a photogeologic study outlined the outcrop areas of the Gates Member Seam 'B' throughout the property (Figure 1).

3.3 PRESENT INVESTIGATIONS

3.3.1 Drilling Program

The drilling program should be regarded as an initial scout investigation. Nine diamond drill holes were sunk during the period October 10 to November 30, 1975, by Tonto Drilling Ltd., using a truck-mounted drill and a skid-mounted unit equipped with an HQ-3 wireline core barrel. Hole depth varied from 65 ft to 221 ft, and the combined total footage was 1,102 ft. (Table 1).

One trench was opened in the Gates 'A' Seam adjacent to DDH G-2.

Drilling Costs

Budgeted Cost - approximately \$50,000.00

Estimated Actual Total Cost \$93,817.00

The costs may be broken down in the following manner:

(1)	Footage rate	\$ 17.00/ft
(2)	Drilling rig time	38.50/hr
(3)	Man-hours	12.50/hr
(4)	D-6C Caterpillar	29.50/hr
(5)	D-8H Caterpillar	48.50/hr
(6)	Third-Party charges - Water truck	16.00/hr
(7)	Consumables (mud, core boxes, etc.)	Costs + 10%
(8)	Roke Oil Enterprises Ltd.	367.00/day

NOTE: Escalation in budgeted costs was attributed to mechanical breakdowns, delays, and deteriorating weather conditions.

For FIGURE 1, the
GEOLOGY AND LOCATION MAP,
See VOLUME 2.

TABLE 1

GATES MEMBER DRILLING PROGRAM

<u>DDH's of Present Program</u>		<u>DDH's From Previous Years</u>	
<u>DDH No.</u>	<u>Total Depth (ft)</u>	<u>DDH No.</u>	<u>Total Depth (ft)</u>
G-1	111.0	C- 1	1,681.5
G-2	65.0	C-13	1,602.0
G-3	134.0	C-15	1,659.5
G-4	187.0	C-17	2,506.2
G-5	115.0	C-19	1,411.6
G-6	123.0	C-21	1,437.6
G-7	221.0	C-23	1,995.0
G-8	81.0	C-25	1,377.0
G-9	65.0	C-27	1,450.0
		C-36	1,352.7
Total	1,102.0	C-42	2,252.0
		S-23	1,457.0
		S-25	1,488.0
		S-29	1,545.0
		S-30	1,397.0
		S-31	1,558.0
		S-32	1,168.0
		S-35	1,754.0
		S-36	1,228.0
		S-39	1,608.0
		S-42	1,488.0
		S-44	1,528.0
		Total	34,941.1

3.3.2 Logging Program

All holes were logged to obtain three logs:

- (i) Gamma radiation log;
- (ii) Neutron log;
- (iii) Density log.

These logs were used as a check against estimated seam depths and thicknesses, and for correlation purposes.

Water levels were identified in those bore holes where free-standing water was present. A temperature log was run in two drill holes. The results were inconclusive.

The logging was contracted to Roke Oil Enterprises Ltd., Calgary.

3.3.3 Analytical Program

The core samples, after visual logging, were split into increments on the basis of thickness and quality.

A raw coal proximate analysis was calculated, plus determination of values for the Free Swelling Index (FSI), Calorific Value, and sulphur content were carried out.

No floats and sinks testing was done on this suite of coal cores.

Trenches were sampled and analyzed in a similar manner.

All analytical work was carried out by the Coal Sciences & Minerals Testing Division of Birtley Engineering, Calgary.

3.3.4 Geological Evaluation and Report Preparation

Each drill hole record in Volume 1 contains:

- (i) Summary data, location, etc.
- (ii) Seam sections where present
- (iii) Analytical data if analyzed
- (iv) Stratigraphic/lithologic graphic section, combined with log of 1" = 10'.
- (v) Core description

The essential elements of stratigraphy, seam section, and structure are shown on one cross section, designated X-Y, constructed down-dip from the northern edge of the outcrop of Gates Member Seam 'B', through 6 bore holes and 2 trenches. The cross section, geological maps, and seam quality evaluation form the basis for the preliminary appraisal of three potential open pit mining areas.

SECTION 4

GEOLOGY

SECTION 4

G E O L O G Y

4.1 REGIONAL GEOLOGY

Reference should be made to the 1972 Report (McElroy & Associates), and the 1972 Supplement for details of regional geology and stratigraphy.

In this western region, from the Peace River near Hudson's Hope south to the vicinity of the Wolverine River, and south-east throughout the Monkman Pass area, the Gates Member is well established as the lower coal-bearing member of the Commotion formation (Figure 2).

The Gates Member is present in the Bullmoose Mountain area in elevations above 4,800 feet.

4.2 STRATIGRAPHY OF GATES MEMBER

The Gates Member of the Commotion formation has been subdivided into 8 units, A to H, in ascending order. Unit H is the Gates 'A' Seam, and Unit F the Gates 'B' Seam.

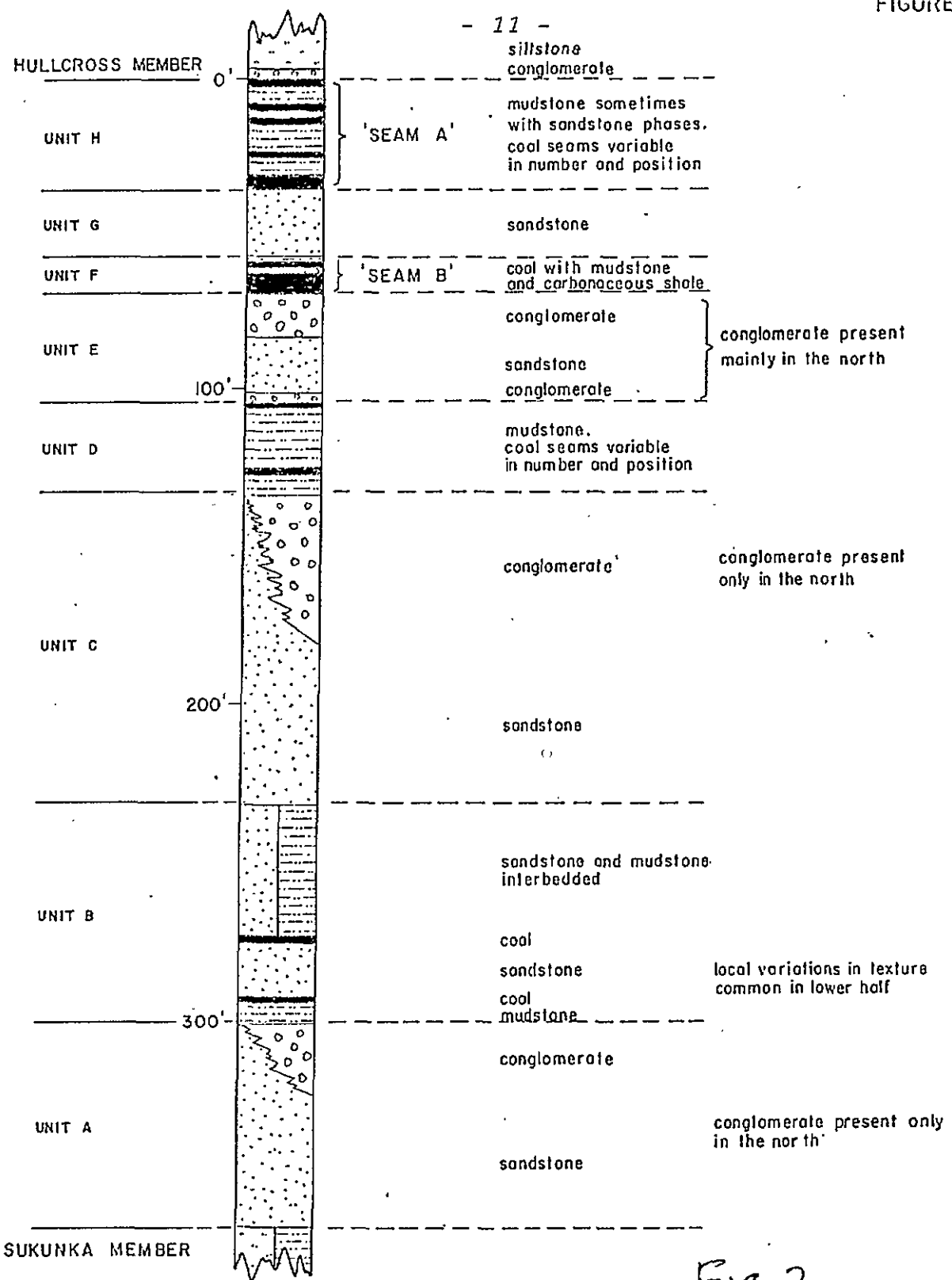


Fig. 2.

COMPOSITE GRAPHIC SECTION
OF GATES MEMBER
COMMOTION FORMATION

COALITION MINING LIMITED
SUKUNKA COAL PROJECT
February, 1973

SCALE.
1" = 50 Feet

SECTION 5

STRUCTURAL GEOLOGY

SECTION 5

STRUCTURAL GEOLOGY

5.1 REGIONAL STRUCTURE

The property is bounded on the north of the grid by the Skeeter Fault, on the east by the Bullmoose Fault Complex, and on the southwest by the Chamberlain Fault. Within this area are additional low-angle intra-plate thrust faults.

5.2 GATES MEMBER - FOLDING, FAULTING

Continuity of the main thrust faults upwards into the Gates Member is not clearly defined by, or apparent from, structural interpretation. The floor of the Gates 'A' and 'B' Seams exhibits a gentle west-southwesterly dip averaging $7\frac{1}{2}^{\circ}$.

SECTION 6

COAL SEAMS - ECONOMIC APPRAISAL

SECTION 6

COAL SEAMS - ECONOMIC APPRAISAL

6.1 REGIONAL DEVELOPMENT

The thickness and quality of both Gates Member 'A' Seam and Gates Member 'B' Seam showed widespread and unpredictable variations throughout the explored area (Table 2). Generally, the quality and thickness of both seams showed marginal improvement to the northeast. From the cumulative information of existing bore holes and trenches, and that from the new bore holes, substantial areas have been designated as having no economic value.

Three areas of possible open pit potential have been encountered, one within the Gates 'A' Seam, and two for the Gates 'B' Seam.

6.2 GATES MEMBER 'A' SEAM, UNIT H - PHYSICAL CHARACTERISTICS

This unit, which for the greater part of the area is predominantly comprised of medium to dark grey mudstones, carbonaceous shales, and thin coal beds, showed indications of significant improvement to the north and east (Figure 5).

In this area, two drill holes intersected encouraging thicknesses of coal in the Gates 'A' Seam, viz. 12.3 ft of total coal in DDH G-5, and 8.6 ft of total coal in DDH G-2.

In this latter bore hole, which collared in the 'A' Seam, the seam was overlain by unconsolidated drift, and by correlating with the full section in DDH G-5, it is postulated that up to 6 or 7 feet of "top" coal may have been removed by erosion (Figure 6).

These two bore holes and one trench may indicate a possible

TABLE 2

DDH BORE No.	GATES MEMBER - UNIT F				GATES MEMBER - UNIT H			
	TOTAL GATES	'B' SEAM (Incl. Rock Bands)	THICKNESS (ft)	FLOOR R.L. (ft)	TOTAL GATES	'A' SEAM (Incl. Rock Bands)	THICKNESS (ft)	FLOOR R.L. (ft)
C- 1	10.03	●	5' coal	4896	21.8	NEV		4975
C-15	5.0			5306	20.0	NEV		5354
C-17	6.36	●	4.53' coal	5180	30.9	NEV		5210
C-21	3.0	NEV ●		5121	24	NEV		5200
C-23	4.0 ?	NEV		5289?	10	NEV		5318
C-27	8.0	NEV		4992	26	NEV		5050
C-29	4.0 ?	NEV		5535	20 ?	NEV		5573
C-36	3.5 ?	NEV		4930	-			-
C-42	7.73	●		5059	28.0	NEV		5103
G-1	5.4	○		5312	24.8	NEV	○	5346
G-2	2.6	NEV ○		5920	41 ?		(8.6' coal)	5932
G-3	2.6	NEV		5696	35.1	NEV		5723
G-4	8.5	NEV ○	4.3' coal	4872	34.7	NEV	○	4930
G-5	4.6	○		6258	18.9		(12.3' total coal)	○ 6289
G-6	9.2	○	6.3' coal	5284	28.1	NEV	○	5327
G-7	10.6	NEV		4962	30.9	NEV		5023
G-8	12.3	NEV		4985	-			5041
G-9	7.1	NEV		5148	-			-

NEV = Seam of non-economic value

○ = Analysis on raw coal

● = Analysis on washed coal

(Continued)

TABLE 2

DDH BORE No.	<u>GATES MEMBER - UNIT F</u>			FLOOR R.L. (ft)	<u>GATES MEMBER - UNIT H</u>			FLOOR R.L. (ft)
	TOTAL GATES 'B' SEAM (Incl. Rock Bands) THICKNESS (ft)				TOTAL GATES 'A' SEAM (Incl. Rock Bands) THICKNESS (ft)			
S-23	8.0		●	4915	-			-
S-25	7.0		●	4840	34.12	NEV		4912
S-27	5.7		●	4805	- ?			- ?
S-29	4.5 ?	NEV		5060	26.9	NEV		5116
S-30	8.0	NEV	●	5059	-			-
S-32	-			-	-			-
S-35	7.81	NEV	●	5246	35.7	NEV	●	5289
S-39	3.0 ?	NEV		5311	28. ?	NEV		5363
S-42	11.	NEV		5033	18.	NEV		5103
S-44	13.91	NEV	●	5030	34.0	NEV	●	5085

NEV = Seam of non-economic value

● = Analysis on raw coal

● = Analysis on washed coal

economic development of Seam 'A'.

ANALYTICAL CHARACTERISTICS

Of the 9 bore holes drilled, only 4 intersected sufficient coal in the Gates 'A' Seam to justify analysis (Table 3).

A sampled Gates 'A' Seam trench (adjacent to G-2) also was analysed (Table 4).

From the limited information available, it is apparent that raw coal ash percentages are fairly high, ranging from 11.9% to 33.9%.

In the upper split in the trench adjacent to G-2, the ash was 61.1%, but the analysed material contained two rock bands. The coal band at the top of the Gates 'A' Seam has apparently thickened from 3.9 ft at DDH G-6, to 12.3 ft approximately 6,000 feet to the southeast at DDH G-5.

However, the quality of the raw coal at G-6 is markedly superior to that of G-5 (Table 3).

Weathered coal was intersected near the outcrop at G-5 and G-2.

In the southwest corner of the outcrop area, DDH G-4 intersected only 3.5 ft of Gates 'A' Seam coal, but further drilling to the southwest is needed to fully evaluate this large area.

6.3 GATES 'B' MEMBER SEAM, UNIT F - PHYSICAL CHARACTERISTICS

In the vicinity of the top of Bullmoose Mountain, the conglomerate floor of the Gates Seam 'B' crops out. This material forms the dip-slope on the greater part of the mountain, and it is possible that some remnant 'B' Seam sections could exist in this area.

However, the Gates 'B' Seam shows a thinning to the southeast, DDH G-2 intersecting only 2.6 ft of total coal. One mile

further south, DDH G-3 also intersected 2.6 ft of rock-banded coal in this horizon (Figure 7). Furthermore, any such remnant pods of 'B' Seam coal would be small, discontinuous, and most probably heavily oxidized.

In the northern area, three new drill holes, spaced over some 7,000 feet, intersected coal in the 'B' Seam of more encouraging quality and thickness (Figure 8).

Elsewhere, the new drill holes showed the Gates 'B' Seam to be composed mostly of rock bands and thin, uneconomical coal beds.

ANALYTICAL CHARACTERISTICS

Of the 9 bore holes drilled, only 5 intersected sufficient coal in the Gates 'B' Seam to justify analysis (Table 5). Of these, only 3 showed possible economic quality and thickness. The quality of the raw coal in Seam 'B', excluding stone bands, appears moderately good. The ash content on a raw coal analysis ranges from 6.2% to 16.7%, and a full seam free swelling index from 2 to 8. A rock band splits the seam into a relatively clean upper split, and a lower split with higher inherent ash content.

The 'B' Seam locally showed some near-surface oxidation effects.

Data from the 1972 Supplement (1973) included in this report for comparison, are raw and washed product analyses of the 'B' Seam in previously drilled holes (Table 6).

TRENCHES

Three trenches were bulldozed in a previous investigation, adjacent to DDH's S-25, S-27, and S-31. The analyses of these trenches appear in Table 6.

6.4 OTHER SEAMS

No other Gates Member coal seams were penetrated within the present drilling program. All drill holes bottomed approximately 15 ft below the floor of the Gates 'B' Seam.

TABLE 3

ANALYTICAL DATA OF GATES MEMBER SEAM 'A' - RAW COAL ANALYSES

BORE No.	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
G-1	2.7	SKR 630	4.5	0.8	12.5	24.7	62.0	0.50	13,790	8	adb*
				5.3	11.9	23.6	59.2	0.48	13,170		arb*
					12.6	24.9	62.5	0.50	13,900		db *
G-4	1.5	SKR 636	2.2	0.7	14.9	25.5	58.9	3.55	12,935	4	adb
				2.9	14.6	24.9	57.6	3.47	12,650		arb
					15.0	25.7	59.3	3.58	13,025		db
	2.0	SKR 637	3.6	0.9	25.0	25.1	49.0	0.51	11,140	6½	adb
				4.5	24.1	24.2	47.2	0.49	10,740		arb
					25.2	25.3	49.5	0.51	11,240		db
G-5	8.0	SKR 611	0.4	2.9	32.9	19.2	45.0	0.24	9,225	½	adb
				3.3	32.8	19.1	44.8	0.24	9,190		arb
					33.9	19.8	46.3	0.25	10,530		db
	1.2	SKR 612	0.7	2.5	28.9	21.3	47.3	0.27	9,450	½	adb
				3.2	28.7	21.2	46.9	0.27	9,385		arb
					29.6	21.8	48.6	0.28	9,695		db
	3.1	SKR 613	1.1	1.7	27.2	20.8	50.3	0.26	10,590	1	adb
				2.8	26.9	20.6	49.7	0.26	10,475		arb
					27.7	21.2	51.1	0.26	10,775		db
G-6	3.9	SKR 633	2.7	1.8	13.2	24.0	61.0	0.43	13,100	6	adb
				4.5	12.8	23.3	59.4	0.42	12,745		arb
					13.4	24.4	62.2	0.44	13,340		db

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

TABLE 3 CONTINUED - SUMMARY OF ANALYTICAL DATA

GATES MEMBER, SEAM 'A'

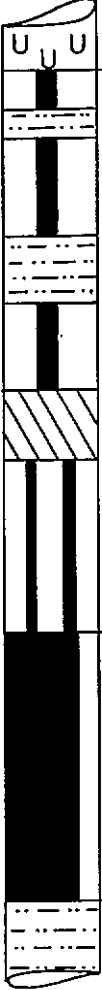
BORE NO.	SAMPLE NO.	ANAL. THICK. (FT.)	RAW COAL		WASH		WASHED PRODUCT - PROXIMATE ANALYSIS, A-D BASIS							
			S.G.	ASH %	S.G.	YIELD %	MOIST. %	V.M. %	ASH %	F.C. %	C.S. NO.	C.V. BTU/lb.	S %	P %
S 35	G-18	0.50	1.325	12.1	RAW	COAL	1.0	25.4	12.1	65.5	3½	-	-	-
	G-19	0.55	1.538	25.6	RAW	COAL	1.0	18.6	25.6	54.8	1	-	-	-
	G-20	1.28	1.404	19.0	1.60	85	1.0	23.8	13.1	62.1	4½	13460	0.30	0.007
S 44*	232.5' -241.0'	8.5	-	-	*	38	0.97	28.38	10.55	60.12	9	13572	1.90	-
* Data from Brameda Resources Ltd data, March 1971 Report.														
Washing S.G. not given.														

Summary of Gieseler Plastometer Tests.

Bore	Analysed Thickness (ft)	GIESELER PLASTOMETER TEST							
		Comp. Floats at S.G.	Initial Softening Temp. (°C) (0.1 ddm)	Fusion Temp. at 5 ddm (°C)	Max. Fluidity (ddm)	Max. Fluidity Temp. (°C)	Resolid. Temp. (°C)	Temp. Range, Soften To Resolid. (°C)	Temp. Range at 1 ddm (°C)
S 35	1.28	1.60	375	-	2.5	442	468	93	37

GATES "A" SEAM

ASH %
CUMULATIVE
FROM FLOOR

		WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO.						
	639	5.8'				
	640	2.8'				

Prepared by:
 PET-KO GEOLOGICAL SERVICES LTD.
 for
 COALITION MINING LIMITED

SEAM SECTIONS
 DDH G-2

TABLE 4

GATES 'A' SEAM TRENCH - 10 ft EAST OF 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 'A'	5.8	5997 SKR 639	9.2	3.3	61.1	14.9	20.7	0.09	3,675	N/A	adb*
				12.2	55.5	13.5	18.8	0.08	3,335		arb*
					63.2	15.4	21.4	0.09	3,800		db *
	2.8	5998 SKR 640	14.4	3.7	26.1	24.2	46.0	0.17	9,500	N/A	adb
				17.6	22.3	20.7	39.4	0.15	8,130		arb
					27.1	25.1	47.8	0.18	9,865		db

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

T-GATES A

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TABLE 5

ANALYTICAL DATA OF GATES MEMBER 'B' SEAM - RAW COAL ANALYSES

BORE HOLE No.	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
G-1	2.7	SKR 631	1.1	0.9	6.3	27.1	65.7	0.39	14,370	8½	adb*
				2.0	6.2	26.8	65.0	0.39	14,210		arb*
					6.4	27.3	66.3	0.39	14,500		db *
	2.3	SKR 632	0.8	0.9	12.4	25.3	61.4	0.37	13,510	7	adb
				1.7	12.3	25.1	60.9	0.37	13,400		arb
					12.5	25.5	62.0	0.37	13,635		db
G-2	2.6	SKR 615	0.2	4.7	12.0	22.8	60.5	0.44	11,495	N/A	adb
				4.9	12.0	22.8	60.3	0.44	11,470		arb
					12.6	23.9	63.5	0.46	12,060		db
G-4	4.3	SKR 638	2.2	0.9	19.9	24.8	54.4	0.24	12,020	4½	adb
				3.1	19.5	24.3	53.1	0.24	11,755		arb
					20.1	25.0	54.9	0.24	12,130		db
G-5	4.6	SKR 614	0.6	3.2	7.9	24.4	64.5	0.38	13,135	2	adb
				3.8	7.9	24.3	64.0	0.38	13,055		arb
					8.2	25.2	66.6	0.39	13,570		db
G-6	3.6	SKR 634	5.9	0.6	7.0	27.9	64.5	0.54	14,320	8	adb
				6.5	6.6	26.3	60.6	0.51	13,475		arb
					7.0	28.1	64.9	0.54	14,405		db
G-6	2.9	SKR 635	0.9	0.8	16.6	25.5	57.1	0.35	12,650	6	adb
				1.7	16.5	25.3	56.5	0.35	12,535		arb
					16.7	25.7	57.6	0.35	12,750		db

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

TABLE 5 CONTINUED - SUMMARY OF ANALYTICAL DATA

GATES MEMBER, SEAM 'B'

BORE NO.	SAMPLE NO.	ANAL. THICK. (FT.)	RAW COAL		WASH		WASHED PRODUCT - PROXIMATE ANALYSIS, A-D BASIS							
			S.G.	ASH %	S.G.	YIELD %	MOIST. %	V.M. %	ASH %	F.C. %	C.S. NO.	C.V. BTU/lb.	S %	P %
* S 23	36.0' -45.5'	8.0	-	21.56	RAW	COAL	1.18	23.45	21.56	53.81	4	11619	0.35	-
* S 25	155.0' -162.0'	7.0	-	-	*	74	1.14	26.21	9.20	63.45	8	13856	0.40	-
* S 27	58.0' -64.0'	5.7	-	16.86	RAW	COAL	0.97	24.85	16.86	57.52	5½	12275	0.35	-
* S 30	39.0' -47.0'	8.0	-	-	*	28	1.23	22.01	10.41	66.55	6½	13719	0.44	-
* S 35	197.2' -205.0'	6.4	-	-	*	42	1.05	27.16	7.80	63.93	8	14054	0.45	-
S 44	G 17	1.45	1.351	21.4	1.60	84	1.0	23.7	13.1	62.2	6	13160	0.42	0.005
C 1	G 12	1.61	1.329	5.6	1.60	98	1.0	27.7	4.7	66.6	8½	14560	0.48	0.011
	G13-16	3.44	1.465	21.1	1.60	83	1.0	24.1	11.7	63.2	7½	13410	0.91	0.051
C 17	G6-11	6.36	1.637	59.9	1.60	53	1.0	26.2	7.5	65.3	7	13980	0.37	0.011
C 21	G 21	1.56	1.347	10.0	1.60	99	1.0	25.2	9.5	64.3	7½	13830	0.51	0.056
C 42	G1-5	7.73	-	-	1.60	60	1.0	25.0	6.9	67.1	7½	14350	0.37	0.025

* Data from Brameda, March 1971 Report
Values for Wash S.G. not given

TABLE 5 CONTINUED - SUMMARY OF GIESELER PLASTOMETER TESTS

GATES MEMBER, SEAM 'B'

Bore	Analysed Thickness (ft)	GIESELER PLASTOMETER TEST							
		Comp. Floats at S.G.	Initial Softening Temp. (°C) (0.1 ddm)	Fusion Temp. at 5 ddm (°C)	Max. Fluidity (ddm)	Max. Fluidity Temp. (°C)	Resolid. Temp. (°C)	Temp. Range, Soften To Resolid. (°C)	Temp. Range at 1 ddm (°C)
14	1.45	1.60	364	425	70	445	478	114	63
15 (top)	1.61	1.60	366	412	1290	442	470	104	69
15 (bottom)	3.44	1.60	381	425	130	455	484	103	71
17	6.36	1.60	364	415	690	438	477	113	72
21	1.56	1.60	366	422	68	446	479	113	65
	— NOT INDEXED —								

GATES 'B' SEAM - MEASURED SECTION - TRENCH ADJACENT TO DDH S-25

SEAM	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
GATES 'B'	3.12	SKR 414	2.7	0.8	6.6	26.4	66.2	0.43	13,995	1½	adb*
				3.7	6.4	25.6	64.3	0.42	13,590		arb*
					6.7	26.6	66.7	0.43	14,110		db*
	0.30	SKR 415	8.9	1.1	37.8	18.2	42.9	0.32	8,890	½	adb
				9.9	34.4	16.6	39.1	0.29	8,100		arb
					38.2	18.4	43.4	0.32	8,990		db
	1.25	SKR 416	4.6	-	74.2					N/A	adb
					70.8						arb
	2.69	SKR 417	3.6	0.3	10.0	24.5	65.2	0.38	13,540	5	adb
				3.9	9.6	23.9	62.9	0.37	13,050		arb
					10.0	24.6	65.4	0.38	13,580		db
	0.80	SKR 418	1.1	0.6	46.9	14.9	37.6	0.16	7,435	1	adb
				1.7	46.4	14.7	37.2	0.16	7,355		arb
					47.2	15.0	37.8	0.16	7,480		db
	1.05	SKR 419	2.3	0.5	17.1	23.6	58.8	0.38	12,340	7	adb
				2.8	16.7	23.1	57.4	0.37	12,055		arb
					17.2	23.7	59.1	0.38	12,400		db
	1.10	SKR 420	3.0	-	83.1					N/A	adb
					80.6						arb
	2.0	SKR 421	9.4	0.6	28.3	22.5	48.6	0.47	10,485	7½	adb
				9.9	25.6	20.4	44.1	0.43	9,500		arb
					28.5	22.6	48.9	0.47	10,550		db

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

T-GATES B1

TABLE 6, CONT'D

GATES 'B' SEAM - MEASURED SECTION - TRENCH ADJACENT TO DDH S-25

	C O A L			R O C K B A N D S		
	SAMPLE No.	THICK.	S.G.	SAMPLE	THICK.	S.G.
TOP SPLIT	SKR 414	3.12 x	1.35	SKR 415	0.30 x	1.35
				SKR 416	1.25 x	2.18
	SKR 417	2.69 x	1.39			
				SKR 418	0.80 x	1.82
	SKR 419	1.05 x	1.43			
				SKR 420	1.10 x	2.38
BOTTOM SPLIT	SKR 421	2.00 x	1.54			

Total available coal = 7.81
 Total recoverable coal = 6.81
 Total included stone = 1.55
 % raw coal (volume) = 81.5 %
 % raw coal (weight) = 74.9 %

GATES MEMBER "B" SEAM

ASH %
CUMULATIVE
FROM FLOOR

		WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO.						
0.00	0.15					
	414	3.12'	6.6	1 1/2		
	415	0.30'	37.8	1/2		
S	416	1.25'	74.2			
	417	2.69	19.0	5		
	418	0.80	46.9	1		
	419	1.05	17.1	7		
	420	1.10	83.1			
S	421	2.0	28.3	7 1/2		
12.45						
13.41						

Prepared by:
PET-KO GEOLOGICAL SERVICES LTD.
for
COALITION MINING LIMITED

SEAM SECTIONS
DDH S-25
VICINITY

TABLE 6

GATES 'B' SEAM - MEASURED SECTION - TRENCH ADJACENT TO DDH S-27

SEAM	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
GATES 'B'	3.32	SKR 408	11.1	2.8	19.7	24.0	53.5	0.15	10,810	N/A	adb*
				13.6	17.5	21.3	47.6	0.13	9,610		arb*
					20.3	24.7	55.0	0.15	11,400		db *
	0.77	SKR 409	9.8	1.7	8.6	26.0	63.7	0.29	12,945	N/A	adb
				11.3	7.8	23.5	57.4	0.26	11,675		arb
					8.7	26.4	64.9	0.30	13,170		db
	1.97	SKR 410	9.3	1.6	28.5	21.5	48.4	0.38	9,900	N/A	adb
				10.8	25.8	19.5	43.9	0.34	8,980		arb
					29.0	21.8	49.2	0.39	10,060		db
	1.60	SKR 411	4.5	1.3	82.8	8.6	7.3	0.9		N/A	adb
				5.7	79.1	8.2	7.0	0.9			arb
					83.9	8.7	7.4	0.9			db
	0.58	SKR 412	11.2	1.4	21.8	22.2	54.6	0.55	10,900	N/A	adb
				12.4	19.4	19.7	48.5	0.49	9,680		arb
					22.1	22.5	55.4	0.56	11,055		db
	3.36	SKR 413	17.4	5.2	21.9	22.0	50.9	0.29	10,420	N/A	adb
				21.7	18.1	18.2	42.0	0.24	8,605		arb
					23.1	23.2	53.7	0.31	10,990		db

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

T-GATES B2

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TABLE 6, CONT'D

GATES 'B' SEAM - MEASURED SECTION - TRENCH ADJACENT TO DDH S-27

	C O A L			R O C K B A N D S		
	SAMPLE No.	THICK.	S.G.	SAMPLE No.	THICK.	S.G.
TOP SPLIT	SKR 413	3.36	x 1.56			
	SKR 408	3.32	x 1.53			
				Band	0.83	x 2.30
	SKR 409	0.77	x 1.37			
				Band	1.20	x 2.30
BOTTOM SPLIT	SKR 410	1.97	x 1.58			

Total available coal 8.65
 Total recoverable coal 7.65
 Total included stone Nil
 % Raw coal (Volume) 100 %
 % Raw coal (Weight) 100 %

ASH %
CUMULATIVE
FROM FLOOR

GATES MEMBER "B" SEAM

SKR. NO		WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
0.0						
	413	3.36	21.9			
s						
s						
s						
	408	3.32	19.7			
	409	0.77	8.6			
s						
s	410	1.97	28.5			
s						
s						
	411	1.60	82.8			
s						
13.67	412	0.58	21.8			

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SEAM SECTIONS
DDH S-27
VICINITY

TABLE 6, CONT'D

GATES 'B' SEAM - MEASURED SECTION - TRENCH LOCATION: VICINITY DDH S-31 - COAL ANALYSES

SEAM	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
GATES 'B'	2.20	SKR 600		4.3	8.6	26.0	61.1	0.42			1½
	0.35	SKR 601		2.8	28.0	22.1	47.1	0.38			1½
	1.05	SKR 602		1.4	16.4	23.6	58.6	0.36			2
	0.30	SKR 603		0.8	22.1	20.5	56.6	0.28			1½
	0.35	SKR 604		1.0	14.9	25.9	58.2	0.21			6
	0.35	SKR 605		1.3	33.0	19.6	46.1	0.21			1½
	0.50	SKR 606		1.1	15.3	23.6	60.0	0.36			2
	5.10	Comp. SKR 600 to 606 incl.		1.7	14.8	24.3	59.2	0.42			1½

T-GATES B3

GATES MEMBER "B" SEAM

ASH %
CUMULATIVE
FROM FLOOR

SKR No.		WT %	ASH %	C.S.N ²	INCL. BANDS	EXCL. BANDS
0.00						
	600	2.20				
		0.90				
	601	0.35				
		1.70				
	602	1.05				
		0.30				
	603	0.30				
		0.30				
	604	0.35				
	605	0.35				
		0.35				
8.95	606	0.50				

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SEAM SECTIONS
DDH S-31

TABLE 6, CONT'D

GATES 'B' SEAM -- MEASURED SECTION -- TRENCH LOCATION: VICINITY DDH S-31 -- COAL ANALYSES

Size Analysis

<u>Size Fr.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>	
				<u>Wt.</u>	<u>Ash</u>
+28M	77.4	15.5	1 1/2	77.4	15.5
-28M	22.6	13.7	1 1/2	100.0	15.1

Sink Float Analysis: +28M

<u>S.G.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>	
				<u>Wt.</u>	<u>Ash</u>
-1.40	65.4	5.5	2	65.4	5.5
1.40-1.60	20.4	16.8	1 1/2	85.8	8.2
+ 1.60	14.2	59.6	N.A.	100.0	15.5

Froth Flotation: -28M

<u>Prod.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>		
				<u>Wt.</u>	<u>Ash</u>	
Stage I	6.6	11.8	2	6.6	11.8	1st min froth
Stage II	3.4	12.1	1 1/2	10.0	11.9	2nd min froth
Tails	90.0	13.6	1 1/2	100.0	13.4	1 min condition

7% P.D.

0.48 lb./T.D.S.

4:1 = Kerosene:MIBC

1 min wetting

1 min condition

Birtley Engineering
Subsidiary of Great West Steel Industries

35

TABLE 6, CONT'D

MEASURED SECTION - GATES MEMBER 'B' SEAM

LOCATION: VICINITY OF DDH S-31

Coal is 57% of full seam.

Float/Sink @ 1.60 S.G. is 85.8% of 57% = 48.9%

of full seam.

Total thickness of seam = 8.95 ft

<u>SAMPLE No.</u>	<u>C O A L THICKNESS (feet)</u>	<u>ROCK BANDS THICKNESS (feet)</u>
SKR 600	2.20	0.90
601	0.35	1.70
602	1.05	0.30
603	0.30	0.50
604	0.35	0.10
606	0.50	0.35
Totals	5.10 = 57% of seam	3.85 = 43% of seam

SECTION 7

R E S E R V E S

SECTION 7

R E S E R V E S

7.1 GATES MEMBER 'A' SEAM

An area of open pit potential for this seam has been outlined (Figure 9).

Reserves of 3.498 million long tons of in situ coal are inferred for this area at a stripping ratio of 8.3/1 (Table 7). Accurate delineation of both the quality and quantity of coal requires substantiation by further exploration. The reserve calculations are based only upon the results of two drill holes and an adjacent trench.

7.2 OPEN PIT POTENTIAL OF GATES 'B' SEAM - AREA No. 1

This area is located on the northwestern edge of the Gates 'B' Seam outcrop. Preliminary reserve calculations are based on data derived from 4 existing trenches of the Gates 'B' Seam and 3 previously drilled bore holes (Figure 10).

At stripping ratios of 5.1/1 (excluding batters), and 11.7/1 (including batters), 0.347 million long tons of in situ coal are inferred for this open pit mining area (Table 8).

7.3 OPEN PIT POTENTIAL OF GATES 'B' SEAM - AREA No. 2

This area is located on the northern edge of the Gates 'B' Seam outcrop. Preliminary calculations are based on the results of 3 bore holes and a trench adjacent to DDH S-31 (Figure 10).

Reserves of 1.28 million long tons of coal in place are inferred, with stripping ratios of 8.4/1 and 10.6/1 (excluding and including batters; Table 9).

TABLE 7 - GATES 'A' SEAM

Cover Thickness (feet)		Area (cu yds x 10 ⁶)		Rock Volume (cu yds x 10 ⁶)		Coal Thickness (yards)	Tonnage in situ Coal (x 10 ⁶)		Rock in Batters at Highwall (cu yds x 10 ⁶)	Overburden to Coal	
Range	Average	Total	Cumul.	Total	Cumul.		Total	Cumul.		Excl. Batters	Incl.
10- 50	30	0.650	0.650	6.500	6.500	2.67	1.735	1.735		3.7/1	
50-100	75	0.400	1.050	10.000	16.500	2.67	1.068	2.803		5.9/1	
100-140	120	0.260	1.310	10.400	26.900	2.67	0.695	3.498	2.000	7.6/1	8.3/1
<u>TABLE 8 - GATES 'B' SEAM - AREA No. 1</u>											
10- 50	30	0.109	0.109	1.090	1.090	2.67	0.291	0.291		3.7/1	
50-100	75	0.012	0.121	0.300	1.390	2.67	0.032	0.323	1.000	4.3/1	7.4/1
100-140	120	0.009	0.130	0.375	1.765	2.67	0.024	0.347	2.300	5.1/1	11.7/1
<u>TABLE 9 - GATES 'B' SEAM - AREA No. 2</u>											
10- 50	30	0.333	0.333	3.330	3.330	2.00	0.666	0.666		5.0/1	
50- 70	60	0.150	0.483	3.000	6.330	2.00	0.300	0.966	1.500	6.6/1	8.2/1
70-100	85	0.157	0.640	4.448	10.778	2.00	0.314	1.280	2.800	8.4/1	10.6/1

- NOTES:
1. Reserves to be categorized as being of inferred status only.
 2. Areas (Column 2) are subject to substantial variation when more control is established.
 3. As a consequence of 2., above, the quantities in Columns 3, 5, and 7 are also liable to substantial variation.
 4. The reserves quoted do not guarantee the economic extraction, washability and marketing of the inferred quantities of coal.
 - *) Coal thickness and tonnage (Columns 4 and 5) include provision for 3" wastage at each rock-coal interface, excluding minor stone bands.
 5. GATES 'A' SEAM ONLY: Anticipated low washed coal yields and high inherent ash are predicted for this seam.

SECTION 8

PHYSICAL AND ENVIRONMENTAL CONSTRAINTS

ON MINING

SECTION 8

PHYSICAL AND ENVIRONMENTAL CONSTRAINTS ON MINING

8.1 HIGH WALL STABILITY

The sediments above the Gates 'B' Seam (Figure 2) are generally comprised of sandstones, shales, siltstones, and mudstones. A high wall with a slope of 45° should contain any sloughing shales and mudstones in either of the potential open pit areas.

8.2 WATER

Water levels were observed in electric logs of only two bore holes, DDH's G-3 and G-8. The water level in G-3 is at 28 ft. This hole is south of the exploration grid, and far removed from presently defined potential mining areas.

The water level is at 12 ft in G-8, which is located between Gates 'B' Seam open pit areas No. 1 and No. 2.

Near the northwestern outcrop area, numerous springs were observed, and these may contribute to the expense of road building and maintenance, in particular with access to the Gates 'B' Seam potential open pit Area No. 1.

8.3 ACCESSIBILITY

The three indicated potential open pit areas are accessible by means of a very steeply inclined road beginning at the Sukunka Colliery No. 1 Mine (average grade = 1 in 8).

Road construction to the potential open pit mine sites may present a major cost factor inasmuch as the elimination of

steep inclines is desirable.

8.4 NATURAL GAS

There were no recorded occurrences of natural gas in any of the G Series drill holes.

8.5 ENVIRONMENTAL IMPACT

The areas of open pit potential under investigation are located in Alpine and sub-Alpine regions.

The area of open pit potential for the Gates 'A' Seam is above the tree line, and consists of Alpine meadows.

The potential Gates 'B' Seam open pit areas No. 1 and No. 2 have a generally sparse growth of stunted pine, spruce, and balsam fir, interspersed with Alpine meadow.

Assuming government approval for mining these areas is forthcoming, costs under current regulations will be substantial.

SECTION 9

RECOMMENDATIONS

SECTION 9

RECOMMENDATIONS

9.1 POTENTIAL OPEN PIT AREA GATES 'A' SEAM

- (a) Initially 5 equally spaced diamond drill holes are recommended to further assess the quality and thickness of the Gates 'A' Seam within the designated potential open pit area. The holes will also check the thickness of cover and enable additional structural and topographical control.
Coal seam analyses should include washability tests.
- (b) The Gates 'A' Seam should be exposed as fully as possible by bulldozer trenching in the vicinity of DDH G-2 for at least 200 feet.

9.2 POTENTIAL OPEN PIT AREA GATES 'B' SEAM - AREA No. 1

- (a) The entire western outcrop edge of the Gates 'B' Seam should be exposed by bulldozer trenching.
- (b) Three diamond drill holes should be sunk between DDH's S-23 and S-27.

The above program will assist in determining seam quality, washed coal characteristics, and cover control for the entire area.

9.3 POTENTIAL OPEN PIT AREA GATES 'B' SEAM - AREA No. 2

- (a) Further bulldozer outcrop stripping of the Gates 'B' Seam should be continued in the vicinity of DDH S-31, as far as terrain conditions permit.

- (b) Three diamond drill holes should be spaced close to the outcrop edge, to complement DDH's C-42, G-1, and G-6.

This program will achieve greater topographical, structural, and qualitative control.

Data on washed coal characteristics should be obtained.

SECTION 10

REFERENCES

SECTION 10

REFERENCES

- BRYAN, J. H., McELROY, C.T.
& WALLIS, G.R., (1973): Sukunka Coal Project - Geological Report, 1972 Supplement. Rept. No. 1/4/12, Vols. 1-5. Unpub. Rept. for Coalition Mining Limited, March, 1973.
- HULBERT, V., (1974): Results of Photo-Geologic Study, Sukunka Coal Field. Unpub. Rept. for Brascan Resources Limited.
- McElroy, C. T., & WALLIS, G. R., (1972): Sukunka Coal Project - Geological Report. Vols. 1-12. Unpub. Rept. for Coalition Mining Limited, March, 1972.

SECTION 11

ACKNOWLEDGEMENTS

SECTION II

ACKNOWLEDGEMENTS

The assistance and guidance of Dr. C.B. Newmarch, A.J. McLean, and the cooperation of the staff of Brascan Resources Limited, in particular the Drafting Department and Ms. P.J. Olthof, are gratefully acknowledged.

Mr. R. E. Shields, Field Supervisor at Coalition Mines Limited, also provided valuable assistance.

APPENDIX A

MEASURED SECTIONS

MEASURED SECTION

GATES MEMBER - A SEAM -

Location: Adjac. D.D.H. S-25

Grid Ref: 42 450 N 86 000 E

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
-	-	Siltstone, containing 0.15' claystone band 0.80' above base of unit
1.30	1.30	Conglomerate, pebbles to 0.08' maximum average 0.03'; weathered; pebbles: black quartzite and mudstone. Undulating contact with coal below - possible washouts
1.10	2.40	Coal, weathered, cleat evident in some bands to 0.15'
0.13	2.53	Coal, sooty
0.75	3.28	Coal, weathered and sooty; distortion of bedding by minor rolls
1.65	4.93	Claystone
0.70	5.63	Claystone and coal, interbedded, lenses of bright coal to 0.18'
0.03	5.66	Coal, dull with minor bright bands (?)
0.25	5.91	Coal, weathered
0.27	6.18	Coal and claystone, intermixed; weathered

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.18	6.36	Claystone
0.40	6.76	Coal, dull and bright
0.03	6.79	Claystone
0.03	6.82	Coal, bright
0.03	6.85	Claystone
0.02	6.87	Coal, weathered
0.03	6.90	Claystone
0.04	6.94	Coal, bright
0.05	6.99	Claystone
0.07	7.06	Coal, bright
0.03	7.09	Claystone
0.02	7.11	Coal
0.04	7.15	Claystone
0.03	7.18	Coal
0.84	8.02	Claystone, carbonaceous partings
0.10	8.12	Coal, bright
0.10	8.22	Claystone

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.05	8.27	Coal, bright
0.15	8.42	Claystone, carbonaceous flecks
0.03	8.45	Coal, bright
0.20	8.65	Claystone, carbonaceous flecks, calcite vein
		Claystone FLOOR

MEASURED SECTION

GATES MEMBER - B SEAM

Location: Adjac. D.D.H. S-25

Grid Ref: 42 450 N 86 800 E (1" = 1000' Geol. Map)

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
-	-	Claystone
0.15	0.15	Siltstone ROOF
0.08	0.23	Coal, weathered
0.50	0.73	Coal, dull
1.19	1.92	Coal, dull and bright
0.32	2.24	Coal, bright with minor dull bands
0.28	2.52	Coal, dull and bright
0.40	2.92	Coal, bright with minor dull bands; evidence of shearing
0.20	3.12	Coal, dull with minor bright bands
0.05	3.17	Coal, weathered
0.10	3.27	Claystone
0.30	3.58	Coal, weathered
1.25	4.82	Claystone, sheared, coaly flecks and bands in lower 0.30'

GATES MEMBER - B SEAM

2.

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.41	5.23	Coal, bright with minor dull bands
1.25	6.48	Coal, dull and bright
0.40	6.88	Coal, dull
0.15	7.03	Coal, dull with minor bright bands
0.40	7.43	Coal, dull and bright
0.08	7.51	Coal, bright
0.80	8.31	Coal, stony
0.15	8.46	Coal, stony
0.10	8.56	Coal, dull and bright
0.10	8.66	Coal, bright
0.60	9.26	Coal, bright with minor dull bands; minor shearing, cleat well developed
0.10	9.36	Coal, stony
0.45	9.81	Claystone
0.65	10.46	Claystone with penny bands
2.0	12.46	Coal, sheared
0.45	12.91	Claystone
0.40	13.31	Coal, weathered

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.10	13.41	Shale, carbonaceous
		Claystone, dark grey
		FLOOR

GATES MEMBER "B" SEAM

ASH %
CUMULATIVE
FROM FLOOR

SKR. NO.

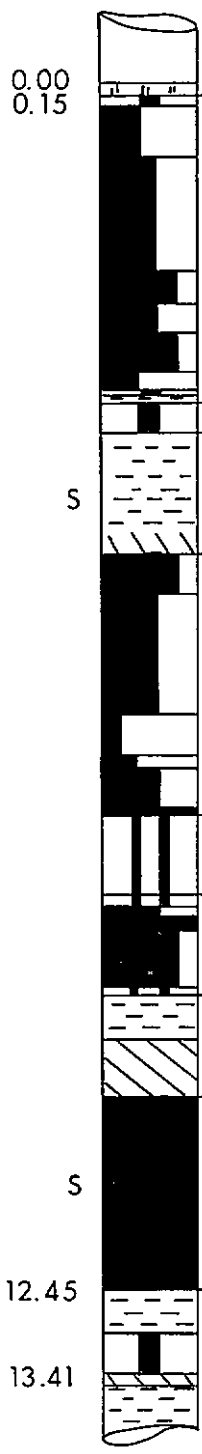
WT %

ASH %

C.S.N^o

INCL.
BANDS

EXCL.
BANDS



414

3.12'

6.6

1 1/2

415

0.30'

37.8

1/2

416

1.25'

74.2

417

2.69

19.0

5

418

0.80

46.9

1

419

1.05

17.1

7

420

1.10

83.1

421

2.0

28.3

7 1/2

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SEAM SECTIONS

DDH S-25
VICINITY

MEASURED SECTION

GATES MEMBER - A SEAM

Location: Adjac. D.D.H. S-27

Grid Ref: 41 400 N 87 850 E

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
-	-	Sandstone, fine grained, quartz- lithic
0.70	0.70	Conglomerate, pebbles to 0.35' maximum average 0.05'
2.50	3.20	Coal, weathered
1.70	4.90	Claystone, weathered
0.90	5.80	Coal, heavily weathered
0.10	5.90	Claystone
0.35	6.25	Coal, weathered
0.25	6.50	Claystone
1.60	8.10	Coal, weathered, containing minor claystone bands
1.60	9.70	Claystone with coaly bands
1.10	10.80	Siltstone
1.00	11.80	Coal, stony
		Claystone, dark grey
		FLOOR

GATES MEMBER "A" SEAM

ASH %
CUMULATIVE
FROM FLOOR

SKR No.		WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
0.60						
0.70	0.70					
	2.50					
3.20	1.70					
	3.20					
	1.60					
	1.10					
	1.00					
11.80						
SECTION NOT SAMPLED						

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SEAM SECTIONS
DDH S-27

MEASURED SECTION

GATES MEMBER - B SEAM

Location: Adjac. D.D.H. S-27

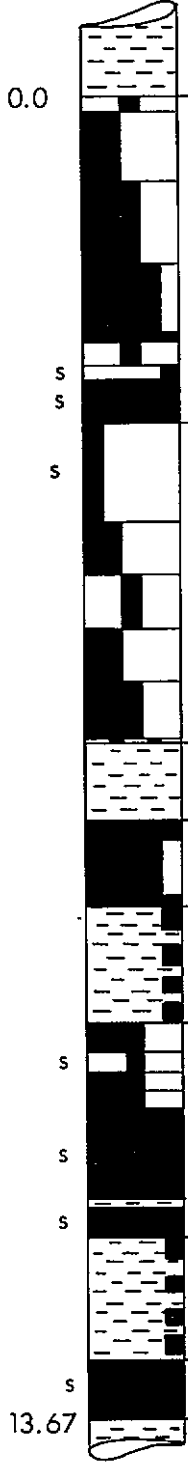
Grid Ref: 41 000 N 87 850 E (1" = 1000')

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
-	-	Claystone ROOF
0.15	0.15	Coal, weathered
0.74	0.89	Coal, dull with minor bright bands
0.83	1.72	Coal, dull and bright
0.01	1.73	Claystone
0.10	1.83	Coal, bright; cleat well developed
0.57	2.40	Coal, bright with minor dull bands
0.06	2.46	Claystone
0.11	2.57	Coal, bright
0.22	2.79	Coal, weathered
0.11	2.90	Claystone and sheared coal
0.46	3.36	Coal, sheared
1.00	4.36	Coal, sheared with claystone bands
0.54	4.90	Coal, dull with minor bright bands

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.55	5.45	Coal, weathered and bright
0.55	6.00	Coal, dull with minor bright bands
0.60	6.60	Coal, dull and bright
0.08	6.68	Coal, stony
0.75	7.43	Claystone
0.11	7.54	Coal, bright
0.08	7.62	Coal, sooty
0.55	8.17	Coal, bright with minor dull bands
0.03	8.20	Coal, sooty
0.11	8.31	Coal, bright
1.20	9.51	Claystone, fracture planes; with bright coal lenses to 0.06' maximum
0.31	9.82	Coal, dull and bright
0.22	10.04	Coal, weathered; evidence of shearing
0.14	10.18	Coal, dull and bright
0.04	10.22	Coal, stony,
0.22	10.44	Coal, dull and bright
0.93	11.37	Coal, sheared, unidentifiable

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.10	11.47	Claystone with coaly blebs
0.32	11.79	Coal, sheared, unidentifiable
1.60	13.09	Claystone, with lenses of bright coal to 0.08'
0.58	13.67	Coal, sheared
		Claystone FLOOR

GATES MEMBER "B" SEAM

				ASH % CUMULATIVE FROM FLOOR		
		WT %	ASH %	C.S.N ^o	INCL. BANDS	EXCL. BANDS
SKR. NO						
0.0						
	413	3.36	21.9			
	408	3.32	19.7			
	409	0.77	8.6			
	410	1.97	28.5			
	411	1.60	82.8			
13.67	412	0.58	21.8			

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 for
 COALITION MINING LIMITED

SEAM SECTIONS
 DDH S-27
 VICINITY

MEASURED SECTION
GATES MEMBER - "B" SEAM

Location: 48 200 N 88 100 E

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
-	-	MUDSTONE
2.20	2.20	<u>COAL</u> , dull, with minor bright bands, top 0.5 ft sooty
0.90	3.10	MUDSTONE, grey, soft
0.35	3.45	<u>COAL</u> , sooty
1.70	5.15	MUDSTONE, as above
1.05	6.20	<u>COAL</u> , dull, with minor bright bands
0.30	6.50	MUDSTONE, as above
0.30	6.80	<u>COAL</u> , dull
0.50	7.30	MUDSTONE, as above
0.35	7.65	<u>COAL</u> , dull and bright
0.10	7.75	MUDSTONE, as above
0.35	8.10	<u>COAL</u> , dull, with minor bright bands

MEASURED SECTION

GATES MEMBER - "B" SEAM

Location: 48 200 N 88 100 E

THICKNESS (ft)	CUMULATIVE THICKNESS (ft)	DESCRIPTION
0.35	8.45	MUDSTONE, as above
0.50	8.95	<u>COAL</u> , sooty
Floor		CONGLOMERATE

The entire seam was relatively soft and slightly moist. There is a small thrust in the roof, 25 ft from the measured section.

GATES MEMBER "B" SEAM

ASH %
CUMULATIVE
FROM FLOOR

SKR No.	WT %	ASH %	C S N ^o	INCL BANDS	EXCL. BANDS
0.00					
600	2.20				
		0.90			
601	0.35				
		1.70			
602	1.05				
		0.30			
603	0.30				
		0.30			
604	0.35				
605	0.35				
		0.35			
606	0.50				
8.95					

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SEAM SECTIONS
 DDH S-31

COAL ANALYSES - MEASURED SECTION - TRENCH

Location: Vicinity DDH S-31

BRASCAN RESOURCES

October 9, 1975

Size Analysis

<u>Size Fr.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>	
				<u>Wt.</u>	<u>Ash</u>
+28M	77.4	15.5	1 1/2	77.4	15.5
-28M	22.6	13.7	1 1/2	100.0	15.1

Sink Float Analysis: +28M

<u>S.G.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>	
				<u>Wt.</u>	<u>Ash</u>
-1.40	65.4	5.5	2	65.4	5.5
1.40-1.60	20.4	16.8	1 1/2	85.8	8.2
+ 1.60	14.2	59.6	N.A.	100.0	15.5

Froth Flotation: -28M

<u>Prod.</u>	<u>Wt.</u>	<u>Ash</u>	<u>F.S.I.</u>	<u>Cumulative</u>		
				<u>Wt.</u>	<u>Ash</u>	
Stage I	6.6	11.8	2	6.6	11.8	1st min froth
Stage II	3.4	12.1	1 1/2	10.0	11.9	2nd min froth
Tails	90.0	13.6	1 1/2	100.0	13.4	

7% P.D.

0.48 lb./T.D.S.

4:1 = Kerosene:MIBC

1 min wetting

1 min condition

Birtley Engineering

Subsidiary of Great West Steel Industries

SUKUNKA D.D.H. G-2 TRENCH GATES "A" SEAM (10' east of DDH G-2)

<i>Geological Description of Strata</i>	<i>Estimated Thickness (ft)</i>	<i>Estimated Depth to Stratum Floor (ft)</i>	<i>Footage Recovered (ft)</i>	<i>Remarks</i>
Roof unconsolidated sandstone and surface debris				
<u>COAL</u> , soft	0.4	0.4		
MUD, light grey, soft, weathered	0.3	0.7		
<u>COAL</u> , dirty, soft	1.0	1.7		
MUD, light grey, soft, weathered	0.7	2.4		} SKR 639
<u>COAL</u> , dirty	0.9	3.3		
MUD, carbonaceous	0.7	4.0		
<u>COAL</u> , bony	1.8	5.8		
<u>COAL</u> , hard, bright and dull	2.8	8.6		SKR 640
Floor: SHALE, dark grey, carbonaceous				

COAL ANALYSES

BRASCAN RESOURCES

MEASURED SECTION - TRENCH

October 9, 1975

Location: Vicinity DDH S-31

SEAM	THICK. ANAL. (ft)	SAMPLE No.	A.D.M.	MOISTURE	ASH %	VOL %	F.C.%	S %	B.T.U.	F.S.I.	CALC. FACTORS
Gates "B"	2.20	SKR 600		4.3	8.6	26.0	61.1	0.42		1½	
	0.35	SKR 601		2.8	28.0	22.1	47.1	0.38		1½	
	1.05	SKR 602		1.4	16.4	23.6	58.6	0.36		2	
	0.30	SKR 603		0.8	22.1	20.5	56.6	0.28		1½	
	0.35	SKR 604		1.0	14.9	25.9	58.2	0.21		6	
	0.35	SKR 605		1.3	33.0	19.6	46.1	0.21		1½	
	0.50	SKR 606		1.1	15.3	23.6	60.0	0.36		2	
	5.10	SKR 600 to 606 incl.		1.7	14.8	24.3	59.2	0.42		1½	