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CONSULTING GEOLOGICAL ENGINEERS

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Report On

1972 Diamond Drilling and Trenching Program

Nordenskiold Coal Area, Yukon

Arjay Kirker Resources Ltd.

Yukon Territorial Coal Licenses
10 (SE Quarter - NTS 115H/8)
11 (NE Quarter - NTS 115H/8)
12 (SW Quarter - NTS 105E/5)

M.P. Phillips

January, 1973

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1"=100 feet horizontal

SUMMARY AND RECOMMENDATIONS

Proven reserves totalling 2.8 million tons of bituminous coal were outlined by diamond drilling on the Cairnes seam in the Nordenskiold River area, southern Yukon during 1972. These reserves occur within Yukon Territorial Coal License 10, issued to Arjay Kirker Resources Ltd. The average analyses of the two drill sections is 31.3 per cent ash, 2.0 per cent residual moisture, 19.7 per cent volatile matter, 47.1 per cent fixed carbon, 0.48 per cent sulphur with a colorific value of 9,400 BTU/lb. The seam varies in width from 15 to 30 feet and dips 70°. The potential for increasing the reserves appears to be excellent, but no further work should be carried out until markets for the coal can be found. A number of narrow seams above and below the Cairnes Seam were also intersected.

INTRODUCTION

During the period August 18 to October 21, 1972, Arjay Kirker Resources Ltd. constructed access roads, performed minor bulldozer trenching and diamond drilled six core holes ,totalling 3435 feet ,on coal leases in the Nordenskiold River area, southern Yukon. The program was managed by R.J. Kirker, P. Geo. of Calgary, and was supervised by R. Allan from August 18 to September 14 and by the writer M.P. Phillips ,of Archer, Cathro & Associates Ltd. from September 14 to October 21. P. Dyson, P. Geo., consulting coal geologist of Calgary made two visits to the property.

PROPERTY

The property consists of Territorial Coal Licenses 10, 11, and 12, which form an L-shaped block with a total area of 675 square miles. The licences were issued to Arjay Kirker Resources Ltd. on April 9, 1970 and expire on April 9, 1973. Most of the 1972 program was conducted on License 10.

LOCATION AND ACCESS

The coal licenses are located fifty miles northwest of Whitehorse and cover the following NTS map-sheets:

License 10 - southeast quarter - 115H/8
11 - northeast quarter - 115H/8
12 - southwest quarter - 105E/5

Whitehorse is located at the terminus of the 120 mile narrow gauge White Pass & Yukon Route railway from the port of Skagway, Alaska.

The closest all-weather road is the Klondike Highway between Whitehorse

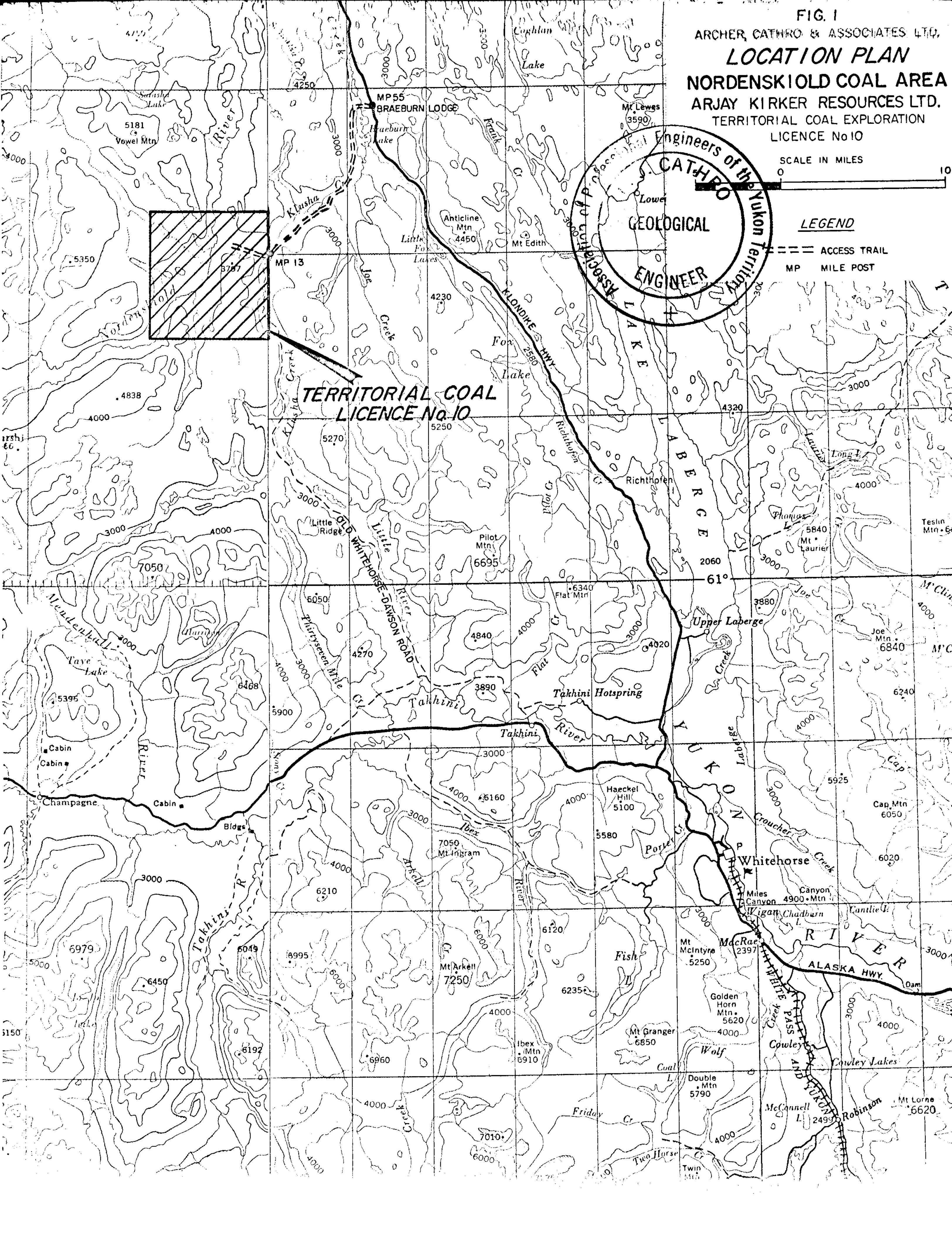


FIG. 1
ARCHER, CATHRO & ASSOCIATES LTD.
LOCATION PLAN
NORDENSKIOLD COAL AREA
ARJAY KIRKER RESOURCES LTD.
TERRITORIAL COAL EXPLORATION
LICENCE No 10
SCALE IN MILES
0
10
LEGEND
ACCESS TRAIL
MP MILE POST
Association of Professional Engineers of the Yukon Territory
CATHRO
GEOLOGICAL ENGINEER
TERRITORIAL COAL LICENCE No. 10
MP55
BRAEBURN LODGE
Braeburn Lake
MP 13
KLONDIKE HWY.
OLD WHITEHORSE-DAWSON ROAD
LAKE LABERGE
Mt Lewes
Anticline Mtn
Mt Edith
Little Fox Lakes
Fox Lake
Richthofen
Pilot Mtn
Flat Mtn
Upper Laberge
Takhini Hotspring
Takhini River
Champagne
Whitehorse
Miles Canyon
Canyon Mtn
Wigan
Chadburn L.
MacRae
ALASKA HWY.
YUKON RIVER
WHITE PASS AND YUKON
Cowley
Cowley Lakes
Robinson
Mt Lorne
Mt Ingram
Mt Arkell
Ibex Mtn
Mt McIntyre
Golden Horn Mtn
Mt Granger
Double Mtn
Haeckel Hill
Mt Laurier
Joe Mtn
Cap Mtn
Vowel Mtn
Taye Lake
Mendenhall River
Nordenskiold
Klusha Cr.
Little Ridge
61°

and Dawson City, which crosses the northeast side of the licenses.

The nearest settlement is Braeburn at M.P. 55 on the Klondike Highway. It has lodging , eating and gas facilities and a 5000 foot gravel airstrip. The Whitehorse-Faro power line passes through Braeburn.

Access to the property is provided by a seventeen mile trail suitable for four-wheel drive vehicle only. The trail follows the old Whitehorse-Dawson Road for the first thirteen miles. A new four mile road was built to the property in 1970 and was upgraded in 1972. Water crossings are made at the north end of Braeburn Lake, at Joe Creek and in two places over Klusha Creek. None of the crossings are difficult except for the last one on the Klusha Creek, where culverts were installed in 1972.

TOPOGRAPHY

The Licenses lie within the Yukon Plateau. Relief is moderate, consisting of rolling hills and broad flat valleys. Elevations varying from about 2500 feet to 4000 feet in the eastern and southern part of the licenses. In the northwest part of the licenses, along the Nordenskiold River, relief exceeds 5000 feet and is more rugged.

Glacial till exceeding 100 feet in thickness forms terraces along the valleys below the 5000 foot elevation. In places, deep ravines and creeks have cut through the glacial till and exposed bedrock. Above the 3000 foot contour glacial till cover is thin and bedrock is more common.

Permafrost conditions exist below spruce and pine covered north facing slopes. Grass covered south facing slopes often have a light cover of poplar.

Forest fires have burnt over large parts of the licenses at frequent intervals.

HISTORY

In 1907, D.D. Cairnes of the Geological Survey of Canada mapped and sampled three coal seams which outcrop in an east-trending ravine located 1.25 miles north of Division Mountain. This ravine has been named Teslin Creek. Another coal outcrop was located by Cairnes at the base of Red Ridge, three miles northwest of Teslin Creek. Cairnes was examining the coal potential for a possible smelter on the Whitehorse Copper Belt. Old claim posts found in the area probably date from this period.

During 1970 and 1971, Arjay Kirker Resources Ltd. carried out bulldozer trenching, mapping, sampling and test I.P. surveys over the coal outcrops on Teslin Creek located on License No. 10. Reconnaissance geological mapping was carried out on the remainder of the coal licenses. Clearing and upgrading of stream crossings along the old Dawson-Whitehorse road from Braeburn was carried out to provide access. Details of this work for this period is covered in reports by Joseph F. Hlavay, P.Eng. September 1970 and R.J. Kirker, February, 1971.

GEOLOGY

Regional

Interbedded sandstone and shales containing coal seams and minor pebble conglomerate of the Jurassic Laberge Series are disconformably overlain by chert and volcanic cobble conglomerate of the lower Cretaceous Tantalus Formation. Cretaceous Hutshi Group lavas and breccias cover the sedimentary rocks and form sills and dykes in the Laberge Series. Laberge and Tantalus

rocks were folded in Mid Cretaceous time along a northwest-southeast trending axis. Axial folds are steep or slightly overturned.

Teslin Creek

Outcrops of Laberge Series along Teslin Creek occur on the northeast limb of a syncline. Beds strike about N50°W and dip about 70° to the southwest. A thirty foot wide coal seam, (the Cairnes Seam) is exposed in Teslin Creek and occurs a minimum of 1500 feet stratigraphically below the base of the Tantalus Formation. The Red Ridge coal outcrops, three miles northwest of Teslin Creek, are only 800 feet below the base of the Tantalus Formation.

Dark green dykes and sills of Hutshi Group andesite cut the Laberge Series. These rocks are aphanitic to fine grained with bleached borders and chilled contacts and contain scattered fine grained phenocrysts of chloritized hornblende and feldspar. Some bands of andesite contain scattered medium-sized quartz amygdales. In places, narrow quartz and carbonate filled fractures are present. The andesite forms sillsup to fifty feet wide along incompetent shale and coal horizons. Black xenoliths of coal are sometimes present in the sills.

Drilling cut a 1900 foot stratigraphic section of Laberge Series sediments, extending 400 feet below and 1500 feet above the Cairnes coal seam. The following is a description of the rock types intersected in the drill holes:-

Laberge Series

Sandstone - is moderately indurated, light grey, coarse grained to gritty textured, commonly crossbedded, and has a high feldspar content. Shale bands, and casts and coal partings are common. Narrow pebble bands or loosely packed conglomerates are rare.

Shale - is mostly purple colored, massive, and arenaceous. The rock could probably be called a siltstone because of its arenaceous and non fissile nature . Soft, black, fissile, carbonaceous shale is common only in the coal seams. Strippy bands of interlaminated purple shale and light colored calcareous sandstone are common. A 200 foot band was intersected in Hole 2.

Coal - is dull black and often contains partings and narrow bands of carbonaceous shale and black shale.

Cairnes Seam

At Teslin Creek, the seam is 30 feet thick(locally bulges to 40 feet) and contains two narrow,purple,arenaceous shale bands. Southeast of Teslin Creek, trenching only partially exposed bedrock and did not cut the seam. The swing in seam strike and minor faulting in trenches immediately northeast of Teslin Creek may reflect a northeast-southwest fault along the creek. Northwest of Teslin Creek, at 16N, a trench shows the seam has narrowed to about 24 feet in thickness. Another trench to the northwest did not intersect bedrock. Hole 6 shows that bedrock is covered by some 100 feet of glacial till.

In Hole 1 the seam has a true thickness of 31.6 feet. However

in Hole 6, 1500 feet to the northwest, the seam has separated into two beds, the upper 1.9 feet thick and the lower 15.4 feet thick, separated by 11.4 feet of interbedded shale and sandstone. Northwest of Teslin Creek, the seam gradually decreases in width. Downdip, a facies change or local disconformity has reduced the width by about half. Southwest of Teslin Creek a fault may have displaced the seam.

Footwall Seam

The footwall seam occurs 25 stratigraphically feet below the Cairnes Seam. Based on drill results this seam appears to have a consistent true thickness of 6.5 feet. In Hole 1, an eleven foot andesite sill has displaced it 36 feet from the Cairnes seam.

Hanging Wall Seams

A total of 27 seams, called HW1 to HW27, were intersected in drill holes above theCairnes Seam. Their thickness varies from 0.6 to 8.2 feet. Tentative correlation of these seams between holes indicates the individual seams vary widely downdip.

CORE LOGGING AND SAMPLING

All core was transported to Whitehorse by truck where it was logged, sampled and stored at the Core Library of the Yukon Resident Geologist, Department of Indian Affairs and Northern Development. Logs for the holes are included in the Appendix of this report. Whole core samples were collected on all seams. Samples from Hole 1 and parts of Hole 2 were collected in the field and the remainder of the holes were sampled after the core was moved to Whitehorse. Samples of interest were sent to Birtley Engineering (Canada) Ltd. of Calgary, Alberta for analysis.

Other samples which were not of immediate interest were given to the Yukon Resident Geologist. They were then forwarded to Dr. P.A. Hacquebard, coal petrologist with the Geological Survey of Canada, who plans to carry out reflectance rank determination tests on all samples and proximate analysis on the thicker coal sections. Sample pulps have also been sent from Birtley Engineering to Dr. Hacquebard for stratigraphic correlation.

COAL ANALYSIS

Results of Birtley Engineering's analysis, shown in Table 1, indicate that the Cairnes and FW Seams fall into the bituminous groups according to the A.S.T.M. rank classifications.

DIAMOND DRILLING

Drill contractor and camp operator was E. Caron Diamond Drilling of Whitehorse, which used a Longyear '38' drill machine and ancillary equipment. In October 1972, an additional machine was added to the program but was never used due to the lack of drillers. Coring charges were $8.25 per foot for NQ size and $9.25 per foot for HQ size. Other work was charged at cost plus rates. A D7 bulldozer was used to move the drill. Six wire line holes totalling 3435 feet were completed during the period August 28 to October 21, 1972. Only one hole (Hole 4) was stopped by caving ground conditions before it reached the planned depth.

Holes1 to 4, inclusive, and the top 434 feet of hole 5 were drilled NQ size. The balance of Hole 5 was drilled BQ size. Hole 6, the only hole with a thick section of overburden, was cased to bedrock using a tricone bit and cored NQ size in bedrock.

Until freeze-up on October 5, 1972, drill water was supplied from Teslin Creek through waterline. After freeze-up, a 1000 gallon water truck was used to transport water from the Nordenskiold River to the drillsites. A drilling mud solution was used as a circulation medium. Drilling mud from the hole was run into settling tanks and then recirculated. Various additives were added to reduce mud losses in fractures and stabilize caving ground conditions. Fresh mud was prepared when needed.

Core recovery varied from 98 to 100 per cent but was slightly lower in the wide, soft friable coal.

Acid tests were only carried out in Hole 5 and 6. The test was unsuccessful in Hole 6. No change in the hole dip was found in Hole 5.

In the early stages of the drill program delays were encountered by mechanical breakdowns in the drill machine, metal failure at the connections of the HQ core rods and improper anchoring of the machine. Delays at the end of the program were mainly due to stuck rods in caving fractured ground. The use of drilling mud, large core size and a five foot core barrel were responsible for the excellent core recovery.

TRENCHING

A D7E bulldozer with hydraulic blade and ripper was used to carry out limited trenching on Red Ridge and along the Cairnes seam. Four long shallow trenches were cut over a distance of 2500 feet on the southwest flank of Red Ridge. Bedrock was not exposed in any of the trenches. Three trenches were cut to locate the Cairnes Seam; two northwest and another southwest of Teslin Creek.

ROAD CONSTRUCTION

In August 1972 a 4-mile trail suitable for four-wheel drive vehicles was constructed from the old Whitehorse-Dawson road to the campsite one mile northwest of Teslin Creek. Roads to the drilling sites were built as needed and in September a 2 1/2 mile road was constructed to the southeast flank of Red Ridge.

SURVEYING & LINECUTTING

White, Hosford and Impey, of Whitehorse cut, chained and levelled 4.01 miles of baseline and 4.01 miles of crosslines between September 26 and October 13. Baseline stations at 400 foot intervals and crossline stations at 200 foot intervals were established with wooden hubs and aluminum tags showing the grid co-ordinates. Drill holes and trenches were tied into the grid.

This grid was tied into a government survey monument on Division Mountain . Co-ordinates are based on the Territorial Plane Co-ordinate System and elevations are referred to sea level datum.

COAL RESERVES

Figure 10 shows the method in which the coal reserves were calculated. Strike length totals 2500 feet, 1500 feet between the two holes and a projection of 500 feet southeast of Hole 1 and 500 feet northwest of Hole 6. The reserves have been broken down into three blocks with thicknesses of 30,20 and 15 feet to show the narrowing of the Cairnes seam from Hole 1 to Hole 6. The down dip component of the seam has been assumed at 1250 feet, or one half the strike length. The reserves total 2.8 million tons and have been classed as proven because of the good continuity of the seam. Surface drilling at 1500 to 2000 foot intervals is common practice in blocking out reserves

in British Columbia and Alberta. The potential for increasing reserves along strike is excellent.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

M.P. Phillips

R.J. Cathro, P.Eng.

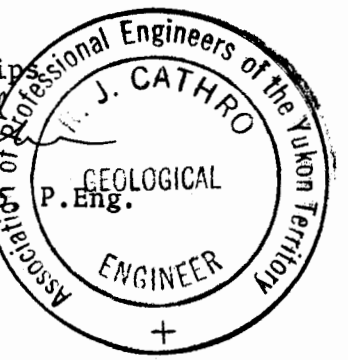


TABLE 1

RESULTS OF COAL ANALYSIS

Analysis by Birtley Engineering (Canada) Ltd. - Calgary, Alberta

Hole No.	Sample No.	Sample Interval in feet	% Ash	Residual	% Moisture Air Dry	% Volatile Matter	% Fixed Carbon	% Sulphur	Free Swelling Index	BTU/lb Dry Basis Average	A.S.T.M. Rank Classification	Seam
1 HW3	1A	314.0-317.3	29.6	1.2	0.90	21.6	47.6	0.30	N.A.	9,092	Med. vol. Bituminous	
HW2	1B	342.5-349.0	22.9	1.3	4.9	16.7	59.1	0.46	N.A.	9,096	Low vol. Bituminous	HW2
Cairnes	1C	505.0-510.0	26.7	2.2	N.A.	24.8	46.3	0.42	N.A.	10,036		
	1D	510.0-515.0	18.6	2.2	N.A.	24.9	54.3	0.42	N.A.	11,517		
	1E	515.0-520.5	22.3	2.3	N.A.	18.2	57.2	0.62	N.A.	11,045 9,671	Med. vol. Bituminous	Cairnes
	1F	520.5-525.7	51.4	2.5	N.A.	12.6	33.5	0.42	N.A.	6,025	(varies through seam)	
	1G	525.7-530.7	31.1	2.0	N.A.	14.2	52.7	0.74	N.A.	9,665		
	1H	530.7-535.7	31.6	2.3	N.A.	10.8	55.3	0.68	N.A.	9,739		
FW	1I	578.0.582.0	21.4	1.5	0.6	26.3	50.8	0.29	1/2	11,035 10,356	High vol. B. Bituminous	FW
	1J	582.0.586.0	26.9	1.7		30.4	41.0	0.74	N.A.	9,677		
4 HW12	2438	32.0- 35.0	41.3	0.6	0.1	14.1	44.0	0.56	N.A.	7,445	Low vol. Bituminous	HW12
6 HW2?	2429	190.0-193.5	33.6	2.0	0.3	20.7	43.7	0.57	N.A.	8,708	Med. vol. Bituminous	HW2?
?	2430	265.0-268.5	27.2	7.1	0.3	15.0	50.7	0.40	N.A.	9,672	Low vol. Bituminous	?
?	2431	299.5-302.0	36.9	1.3	0.1	16.6	45.2	0.51	N.A.	8,449	Med. vol. Bituminous	Cairnes-upper
Cairnes	2432	317.0-322.0	27.6	2.1	0.1	25.5	44.8	0.48	N.A.	9,786		
	2433	322.0-327.0	31.1	1.2	0.1	17.8	49.9	0.40	N.A.	9,651 9,189	Med. vol. Bituminous	Cairnes-lower
	2434	327.0-332.0	35.0	1.3	nil	20.5	43.2	0.37	N.A.	8,791		
	2435	332.0-337.0	35.0	2.3	nil	23.2	39.5	0.38	N.A.	8,527		
FW	2436	367.0-371.0	34.6	2.3	0.6	22.7	40.4	0.48	N.A.	8,454 7,451	High vol. B. Bituminous	FW
	2437	371.0-375.5	45.8	1.9	0.1	22.2	30.1	0.36	N.A.	6,559	(varies through seam)	

NOTE: A.S.T.M. Rank Classification on Mineral Matter Free Basis. Coal with 69 per cent or more Fixed Carbon on dry mmf basis classified according to Fixed Carbon.

TABLE 2

Coal Samples Sent To Dr. P.A. Hacqueberd
Geological Survey of Canada, Ottawa, Ontario

Sample No.	Hole No.	From	To	Width
A1522	1	330.5	335.0	4.5
A1523	3	41.0	42.3	1.3
A1524	3	52.0	57.0	5.0
A1525	3	74.5	79.5	5.0
A1526	3	134.1	137.5	3.4
2439	5	30.0	30.8	0.8
2440	5	32.3	32.7	0.4
2441	5	37.0	38.3	1.3
2442	5	75.8	80.8	5.0
2443	5	109.2	110.6	1.4
2444	5	114.5	116.5	2.0
2445	5	128.2	129.9	1.7
2446	5	136.3	137.4	1.1
2447	5	152.1	153.0	0.9
2448	5	159.0	159.8	0.8
2449	5	172.0	174.0	2.0
2450	5	184.2	186.3	2.1
A1501	5	187.3	187.9	0.6
A1502	5	191.3	192.0	0.7
A1503	5	234.9	235.8	0.9
A1504	5	237.0	239.0	2.0
A1505	5	272.0	272.5	0.5
A1506	5	275.7	277.0	1.3
A1507	5	337.5	339.0	1.5
A1508	5	341.5	343.5	2.0
A1509	5	362.0	363.0	1.0
A1510	5	402.8	405.3	2.5
A1511	5	406.6	410.2	3.6
A1512	5	720.4	722.6	2.2
A1513	5	791.4	793.2	1.8
A1514	5	801.4	804.5	3.1
A1515	5	841.8	843.3	1.5
A1516	5	850.0	850.5	0.5
A1517	5	860.8	862.8	2.0
A1518	5	863.7	864.3	0.6
A1519	5	864.7	866.0	1.3
A1520	5	867.0	870.3	3.3
A1521	5	928.5	929.5	1.0

HOLE No.
PAGE 1 OF

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,321,498.55 N ; -189,321.8 E
ELEVATION 2,558.7
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE HQ 0-600 FT
HOLE STARTED 27, AUGUST, 1972
HOLE COMPLETED 6 SEPTEMBER, 1972
LOGGED BY M.P. PHILLIPS

		DIP
	OVERBURDEN - GLACIAL TILL & WEATHERED BED ROCK	
5.0		
	LABERGE SERIES - GREY, COARSE GRAINED WITH OCCASIONAL PARTINGS OF COAL & BLACK SHALE	70°
8.7	SHALE - STRONGLY ARENACEOUS, LAMINATED	
10.0 -45°		70°
16.5	SHALE - VARIES FROM A LIGHT GREY, LAMINATED FINE GRAINED ARGILLACEOUS SANDSTONE TO A DARK, LAMINATED ARENACEOUS SHALE & OCCASIONAL BANDS OF BLACK MASSIVE SHALE WITH COAL PARTINGS.	55°
		30°-55°
33.3 -70°	SANDSTONE	60°
34.2 -70°	SHALE - ARENACEOUS, LAMINATED	
35.0 -70°	SANDSTONE	
38.0 -60°	SHALE - MASSIVE ARENACEOUS	60°
40.2 - 55°	SANDSTONE	
41.0 -55°	SHALE - BLACK, ARENACEOUS, LAMINATED - MASSIVE	
47.0 -70°	SANDSTONE	
48.4 - 65°	SHALE - BLACK MASSIVE ARENACEOUS TOWARDS BOTTOM CONTACT, MINOR COAL PARTINGS	60°
52.3 -65°	SANDSTONE - MINOR, IRREGULAR NARROW ARGILLACEOUS BANDS	60°
55.5 - 55°	SHALE - BLACK, MASSIVE.	
56.5		

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 1
PAGE 2 OF 10

DIP

LABERGE SERIES

62.3 — SHALE - BLACK MASSIVE, IN PARTS SLIGHTLY ARENACEOUS

62.3 — 63.3 COAL PARTINGS COMMON

64.5 — SHALE - SANDSTONE - LIGHT - DARK COLORED, WEAK - STRONGLY ARGILLACEOUS FINE GRAINED SANDSTONE - TRANSITIONAL TO ARENACEOUS, LAMINATED SHALE STRONG X-BEDDING

68.2 — SANDSTONE

70.2 — 65°

73.9 — SHALE - BLACK, MASSIVE, MINOR ARENACEOUS SECTIONS OCCASIONAL PARTINGS OF COAL

80.5 — 70° — 60°

SHALE - LAMINATED, STRONGLY ARENACEOUS

85.5 - 60° GRADATIONAL — 60°

SANDSTONE - GREY, COARSE GRAINED, OCCASIONAL TO 0.2 FT SHALE BAND

89.5 — SHALE - MASSIVE TOP & BOTTOM CONTACTS IN A DARK STRONGLY ARENACEOUS, MASSIVE SHALE

92.3 — 60°

SANDSTONE - LIGHT GREY, MEDIUM GRAINED WITH IRREGULAR NARROW BANDS WITH FINE COAL PARTINGS COAL PARTINGS COMMON UP TO 0.05 FT

97.8 - 55° — SHALE - BLACK, LAMINATED, ARENACEOUS TOWARDS BOTTOM CONTACT

100.0 - 65° — 60

112.0 - 75° — SANDSTONE - ARGILLACEOUS, LAMINATED GRADING INTO COALY SHALE - 0.5 FT, AT BOTTOM CONTACT

113.8 - 75° — COAL PARTINGS COMMON — 75°

115.5 — 65°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

HOLE NO 1

DIP

LABERGE SERIES

125.0 - 70° COAL PARTINGS COMMON

126.3 — —

127.0 — SHALE & COAL - INTERBEDDED

127.3 — — — — — — — — — —

128.6 - COAL - 0.4 FT — SHALE - ARENACEOUS, WEAKLING LAMINATED, UPPER 2.0 FT. GRADING INTO BLACK, MASSIVE WITH MINOR ARENACEOUS BANDS.

137.3 — — — — — — — — — —

SANDSTONE GRLY, FINE-MEDIUM GRAINED WITH COAL PARTINGS

146.0 — — —

SANDSTONE - DARK, FINE GRAINED, ARGILLACEOUS LAMINATED

148.5 - 55° - GRADATIONAL — —

SHALE - BLACK MASSIVE, COAL PARTINGS

150.5 - 60° — — — — — —

SHALE - ARENACEOUS, LAMINATED

152.0 — — GRADATIONAL — — — — — —

153.3 — — NUMEROUS PARTING OF SHALE, ARGILLACEOUS BANDS AND COAL PARTINGS — — —

SANDSTONE

156.4 - GRIT STARTS

162.2 - 55° — —

SHALE - ARENACEOUS, LAMINATED.

163.7 — — — —

165.0 — —

SHALE - STRONGLY ARENACEOUS, LAMINATED WITH BANDS OF FINE GRAINED SANDSTONE TO A DARK, ARENACEOUS, SLIGHTLY LAMINATED

175° - 60° — —

173.1 - 60°

SHALE - BLACK, MASSIVE

175.2 - 65°

SANDSTONE — PARTINGS SHALE COMMON

176.0 — —

SHALE - BLACK, MASSIVE

60°

65°

55°

50°

60°

60°

55°

55°

60°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

HOLE NO 1
PAGE 4 OF 10

		DIP
180.8	SHALE — LABERGE SERIES	
	SANDSTONE — WEAK TO MODERATELY ARGILLACEOUS FAINT BANDS STRONGLY ARGILLACEOUS	70°
186.5 - 65°	SHALE - BLACK, MASSIVE	
189.6	SANDSTONE - CAST SHALE COMMON	
189.6 - 60°	SHALE - VARIES FROM LIGHT COLORED, STRONGLY ARENACEOUS, WEAKLY LAMINATED TO WEAKLY ARENACEOUS MASSIVE TO DARK MASSIVE. BANDS UP TO 0.5 FT OF SANDSTONE IN CENTRE + COAL - 0.2 FT AT TOP CONTACT	60°
198.1 - 60°	SANDSTONE - COARSE GRAINED	60°
199.8 - 50°	SANDSTONE - FINE GRAINED WITH NARROW BANDS AND PARTINGS OF SHALE & ARGILLACEOUS LAMINATED SANDSTONE	
201.8 - 60°	SHALE - BLACK, SLIGHT ARENACEOUS WITH OCCASIONAL LAMINATIONS & NARROW BANDS OF FINE GRAINED, ARGILLACEOUS SLIGHTLY LAMINATED SANDSTONE. OCCASIONAL PARTINGS OF COAL	65°
210.3 - 60°	SANDSTONE - DARK, FINE-MEDIUM GRAINED, MODERATELY ARGILLACEOUS WITH PARTINGS & BANDS OF BLACK ARENACEOUS, LAMINATED SHALE	
214.0	SANDSTONE - LIGHT COLORED, ARGILLACEOUS, WEAKLY LAMINATED BECOMING MORE LAMINATED, GRADING TO SHALE TOWARDS	60°
216.0	GRADATIONAL BOTTOM CONTACT	
	SHALE - BLACK, MASSIVE, WEAK LAMINATED ARENACEOUS	
219.0 - 60°	SANDSTONE - DARK GREY, FINE, STRONGLY ARGILLACEOUS	60°
224.6 - 60°	SHALE - BLACK MASSIVE	
226.0	SANDSTONE - MEDIUM GREY, ARGILLACEOUS PARTINGS	50°
231.0 - 60°	SHALE - BLACK, MASSIVE	
231.6 - 232.7 - 65°	SANDSTONE - STRONG BLACK ARGILLACEOUS CONTACT // TO BEDDING	

HUTSHI GROUP - ANDESITE - DARK GREEN APHANITIC WITH ABUNDANT TO 2MM CHLORITE AND FELDSPAR SPECKLING

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 1
PAGE 5 OF 10

DIP

HUTSHI GROUP - ANDESITE

252.0 — SHALE - BLACK MASSIVE - HIGHLY BROKEN
253.0

258.0 SHALE - BLACK MASSIVE
258.5

271.5 CONTACT GROUND. - 65°?
SANDSTONE - 0.3 FT SHALE TOP CONTACT LABERGE SERIES
273.0 —

SHALE - BLACK, MASSIVE, HIGHLY BROKEN
COAL PARTINGS OCCASIONALLY
PRESENT

280.0 —
COAL BANDS TO 0.2 FT COMMON
281.7 —
SHALE - ARENACEOUS, WEAKLY LAMINATED

50°

289.5 —
SANDSTONE — LIGHT - DARK BANDED GREY, MEDIUM
GRAINED, BLACK SPECKLED
WITH PARTINGS OF COAL

50°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

LABERGE SERIES

	DIP
305.0 - GRIT BANDS BECOME COMMON	40°
CORELOSS - 3.0 FT SHALE — BLACK, MASSIVE WITH COAL PARTINGS	40°
2180 - 40° SANDSTONE — GREY, IN PLACES, BANDED	
3239 - 50° SHALE - ARENACEOUS, LAMINATED.	55°
330.5 COAL - SHALE BANDS COMMON 332.0 SHALE - WITH COAL PARTINGS 333.2 COAL - SHALE BANDS COMMON	60°
335.0 SHALE - WEAK - MODERATELY LAMINATED ARENACEOUS	70°
338.0 SHALE - BLACK MASSIVE	
342.6 COAL	
349.0 SANDSTONE - GREY MEDIUM GRAINED, BLACK SPECKLED AND WEAKLY BANDED	60°
359.0 - 60° SHALE - ARGILLACEOUS, MASSIVE - WEAKLY LAMINATED OCCASIONALLY BLACK MASSIVE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 1
PAGE 1 OF 10

LABERGE SERIES

DIP

SHALE BANDS UP TO 0.3 FT GREY, WEAK LAMINATED FINE GRAINED SANDSTONE MINOR COAL PARTINGS. — 60°

362.6 — SANDSTONE – GREY

368.5 — 60° — SHALE – MASSIVE, ARENACEOUS

372.0 — 65° — SANDSTONE – COARSE GRAINED, MODERATELY ARGILLACEOUS

375.8 — SHALE – BLACK, MASSIVE, HIGHLY BROKEN

378.0 — SANDSTONE – COARSE GRAINED – GRITTY MEDIUM GREY, MODERATELY ARGILLACEOUS WITH SCATTERED IRREGULAR PEBBLE BANDS – PEPPLES TO 0.1 FT IRREGULAR ARGILLACEOUS BANDS COAL PARTINGS AND LENSES OFTEN PRESENT — 60° — 60° — 70°

392.0 — COAL PARTINGS BECOME COMMON, PEBBLE BANDS ABSENT FINER, GRAINED

395.0 — SHALE – BLACK MASSIVE — 60°

395.5 — 55°

405.5 — 60° — SHALE – MODERATE GREY, STRONGLY ARENACEOUS, WEAKLY BANDED — 60°

407.7 — 60° — GRADATIONAL —

SANDSTONE – FINE – COARSE GRAINED, BANDED WITH NARROW GRADATIONAL ARGILLACEOUS LENSES & PARTINGS OF COAL. — 65°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - HOLE NO 1

SANDSTONE LABERGE SERIES

422.0 - 45° — COAL

423.8 — SHALE - BLACK, MODERATE - STRONGLY ARENACEOUS, LAMINATED WITH OCCASIONAL TO 0.2 FT SANDSTONE BAND. GRADES TO BLACK MASSIVE IN LOWER 2 FT.

432.4 - 70° — SANDSTONE

433.8 - 60° — SHALE - ARENACEOUS, LAMINATED

435.0 — SHALE - BLACK, MASSIVE WITH COAL BANDS TO 0.6 FT

437.2 - 60° — SANDSTONE — GREY, FINE GRAINED TO GRITTY WITH ARGILLACEOUS BANDING AND OCCASIONAL NARROW BLACK SHALE BANDS. SANDSTONE X-BEDDED

449.0 - 70° - GRADATIONAL —

SHALE - LIGHT COLORED, STRONGLY ARENACEOUS LAMINATED, MASSIVE BLACK TOWARDS BOTTOM CONTACT

454.3 - 60° —

SANDSTONE

457.0 - 55° — GRADATIONAL

SHALE — LIGHT COLORED, STRONGLY ARENACEOUS LAMINATED.

459.0 -

459.3 - BLACK SHALE - 0.3 FT SANDSTONE — LIGHT GREY, MASSIVE

463.0 - 65° - SHALE - BLACK MASSIVE

465.8 - 60° SHALE - BLACK MASSIVE

467.6 - 0.3 - SHALE - ARENACEOUS, LAMINATED

470.2 - 70° — SHALE - ARENACEOUS, LAMINATED

472.9 - 70° —

474.1 —

475.0 — SHALE - BLACK, SLIGHTLY LAMINATED

476.0 — SANDSTONE - DARK, STRONG ARGILLACEOUS, BLACK SPECKLING

477.0 ANDESITE - 0.3 FT. SHALE - BLACK, MASSIVE TO ARENACEOUS LAMINATED WITH BANDS UP TO 0.5 FT OF COAL - HIGHLY BROKEN

DIP

60°

60°

66°

50°

60°

60°

60°

60°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES:

DIP - -

DIP

SHALE - HIGHLY BROKEN — LABERGE SERIES

482.5 - 60°? — ORIENTATION

HUTSHI GROUP - ANDESITE - PALE GREEN, CHLORITE SPECKLED WITH LENSES & BANDS OF SHALE

489.3 - 70° — SHALE & COAL
489.8 - IRREGULAR

490.3 - 46° IRREGULAR
491.3 - 65° - PARALLEL BEDDING — COAL.

495.4 - 55° — SHALE - INDURATED - COALBANDS TO 1 FT COMMON — LABERGE SERIES — 65°

501.0
INTRUSIVE
502.0

CAIRNES SEAM - COAL

535.7

SHALE - BLACK, MASSIVE, ARENACEOUS — 65°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP - -

HOLE NO 1

DIP

LABERGE SERIES

546.0 - 60° — SANDSTONE - LIGHT - DARK BANDED TO LAMINATED ARGILLACEOUS, FINE GRAINED SANDSTONE

553.0 - BRECCIA ZONE - 0.2 FT.

553.3 - 0-20° IRREGULAR CONTACT - ORIENTATION PARALLEL TO BEDDING

HUTSHI GROUP - ANDESITE

DARK GREEN WITH FINE QUARTZ, FELDSPAR PHENOCRYSTS. STEEP DIPPING QUARTZ, CARBONATE, FELDSPAR FILLED FRACTURES COMMON

565.6 - 10° - CHILLED - ORIENTATION?

SANDSTONE - COARSE GRAINED - GRITTY WITH BLACK SPECKLING

LABERGE SERIES

572.6 - 45° — SHALE - MASSIVE, STRONGLY ARENACEOUS WITH SANDSTONE BANDS

574.0 - 70° — GRADATIONAL — 60°

SANDSTONE - AS PREVIOUS

578.8 - 45° — COAL -

585.5 — SHALE - BLACK MASSIVE

586.0 — SHALE - LAMINATED, ARENACEOUS

587.5 — GRADATIONAL

SANDSTONE LIGHT GREY - FINE GRAINED - GRITTY WEAK - MODERATELY ARGILLACEOUS, BANDED — 60°

60°

1680 D - END OF HOLE

HOLE No. 2
PAGE 1 OF 10

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,321,410.69N ; -188,712.62E
ELEVATION 2609.7
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE HQ 0-600 FT
HOLE STARTED 7 SEPTEMBER, 1972
HOLE COMPLETED 14 SEPTEMBER, 1972
LOGGED BY M.P PHILLIPS.

		DIP
	OVERBURDEN - GLACIAL TILL & WEATHERED BEDROCK	
10.0		
	LABERGE SERIES SHALE - PURPLE, BEDDED - MASSIVE, WEAKLY ARENACEOUS HIGHLY BROKEN	
20.0		40°
	SHALE - PURPLE, ARENACEOUS, MASSIVE WITH MANY LIGHT COLORED STRIPPY PARTING TO NARROW BANDS OF VERY FINE GRAINED SANDSTONE	45°
29.0	FAULT ? - HIGHLY FRACTURED &	
30.0	WEATHERED	
32.0	HIGHLY WEATHERED	
34.5		
36.0	SHALE - PURPLE STRIPPY	
38.5		
48.3	SHALE - PURPLE, STRIPPY	
50.3		
52.0	60°	
	SHALE - INTERLAMINATED PURPLE SANDY SHALE & LIGHT GREY, FINE GRAINED	60°
58.0	SANDSTONE	60°

DRILL HOLE LOG.

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES:

DIP -

LABERGE SERIES

Depth	Description	Dip
60.5 – 62.0	SHALE – Bands of Purple-Grey Interlaminated Shale.	60°
62.0	SANDSTONE – Grey, fine-medium grained. Black shale speckled	70°
		45°
		60°
80.5	Partings & narrow bands of shale	
86.0		
94.3 - 70°	SHALE – Black arenaceous with weak interlaminations of grey fine grained sandstone	60°
101.8 - 65°	SANDSTONE – Fragments & narrow bands of shale	
104.0 - 60°		60°
106.0	Bands from 0.1 to 0.5 ft of sandstone become common.	60°
113.0		65°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 1
PAGE 3 OF 10

DIP

LABERGE SERIES

SHALE -

60°

126.5 - 56° —

SANDSTONE - GREY, FINE TO MEDIUM GRAINED WITH CONTORTED FOLDED NARROW BANDS OF INTERLAMINATED BLACK SHALE & GREY FINE GRAINED SANDSTONE

132.0 - 70° —

70°

PARTINGS & BANDS UP TO 0.3 FT OF GREY FINE GRAINED SANDSTONE COMMON.

70°

141.5 —

SHALE - BLACK, ARENACEOUS WITH WELL SPACED LAMINATIONS & OCCASIONAL NARROW BANDS TO 0.2 FT OF GREY FINE GRAINED SANDSTONE. LAMINATION AV. 0.2 FT INTERVAL

60°

65°

65°

60°

65°

171.0 —

LAMINATIONS & BANDS UP TO 0.3 FT WIDE BECOME COMMON.

60°

60°

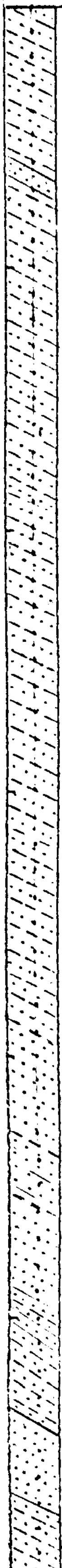
DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES:

DIP -



DIP

LABERGE SERIES

SHALE — 65°

186.3 – 187.0 SANDSTONE – GREY, FINE GRAINED

SHALE – BLACK, ARENACEOUS WITH GREY FINE GRAINED SANDSTONE LAMINATIONS AT 0.1 – 0.2 FT INTERVALS, OCCASIONAL BAND OF GREY FINE GRAINED SANDSTONE — 65°

65°

199.0 – CRUMBLY ALONG BEDDING PLANES — 65°

65°

212.0 — 60°

219.0 - 60°

SANDSTONE – GREY, FINE GRAINED, MASSIVE — 60°

223.5 – 226.0 BANDS & FRAGMENTS UP TO 0.2 FT OF BLACK ARENACEOUS SHALE IN GRITTY SANDSTONE

65°

229.3 - 65° – 230.3 - 55° SHALE - ARENACEOUS, WEAKLY LAMINATED

230.8 - 55° SHALE - ARENACEOUS, LAMINATED — 60°

234.0 - 60° SANDSTONE – COARSE GRAINED WITH MINOR SHALE LENSES & 0.3 FT FINE GRAINED SANDSTONE BOULDER — 60

237.0 - 65° SHALE -

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

HOLE NO 2

		DIP
	LABERGE SERIES - SHALE BLACK ARENACEOUS SHALE WITH LAMINATIONS OF GRLY, VERY FINE GRAINED SANDSTONE, AV 1-2 PER 0.1 FT OCCASIONAL BANDS TO 0.1 FT	60°
		60
		60°
255.0 - 60°	BANDS UP TO 0.3 FT OF GREY FINE GRAINED SANDSTONE BECOME COMMON	
260.0 - 60°	SANDSTONE - FINE GRAINED, GRADING INTO GRITTY	65°
261.3 - 70°	SHALE LAMINATED & SANDSTONE - FINE GRAINED INTERBEDDED	
263.6 - 60°	SANDSTONE - FINE - MEDIUM GRAINED	
265.0 - 65°		
		70°
270.0 - 60°	SANDSTONE - 0.5 FT GREY, FINE GRAINED	
		65°
		65°
285.0 - 60°	BANDS OF GREY, FINE GRAINED SANDSTONE UPTO 0.3 FT PRESENT	60°
289.6 - 60°	SANDSTONE - GREY, FINE GRAINED WITH MINOR BANDS TO 0.2 FT & PARTINGS OF BLACK ARENACEOUS	
293.0	GRADATIONAL SHALE	60°
296.0	SANDSTONE - GREY, MASSIVE, MEDIUM TO COARSE GRAINED CASTS OF BLACK LAMINATED SHALE COMMON	
299.2	SANDSTONE - FINE GRAINED, FINE CHIPS OF SHALE AND COAL	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 2

COORDINATES :

DIP -

		DIP
300.3	LABERGE SERIES –	
301.0	SHALE – INTERLAMINATED	60°
	SANDSTONE – FINE GRAINED, PARTINGS OF SHALE & COAL COMMON	
303.5	SANDSTONE – GREY, MEDIUM GRAINED MASSIVE	
305.2	CASTS OF SHALE	
306.3	COMMON	
309.0	SHALE – LAMINATED	60°
310.0	SANDSTONE – FINE GRAINED, PARTINGS & LENSES	
311.5	OF SHALE COMMON	
	SHALE – LAMINATED WITH BANDS UP TO 1.0 FT OF GREY FINE GRAINED SANDSTONE. SHALE CAST COMMON NEAR TOP CONTACT	60°
315.5	–60°	
	SANDSTONE – SHALE CASTS COMMON	
317.0	–60°	
	SANDSTONE – GREY FINE GRAINED	
322.0	GRADATIONAL	60°
	SANDSTONE – GREY, MEDIUM GRAINED, CARBONATE FILLED FRACTURES	
326.0	–60°	
	SHALE & SANDSTONE INTERBEDDED – BED UP TO 0.5 FT	60°
329.1	–60°	
	SANDSTONE – GREY, FINE – MEDIUM GRAINED OCCASIONAL SHALE CAST	
333.1		60°
334.2	SHALE – MASSIVE, ARENACEOUS IRREGULAR	
	SANDSTONE – GREY, MEDIUM GRAINED LARGE CASTS OF LAMINATED SHALE COMMON	
339.0	–60°	60°
	SHALE – SANDSTONE INTERBANDED – GREY, FINE GRAINED SANDSTONE & INTERLAMINATED GREY, FINE GRAINED SANDSTONE & BLACK ARENACEOUS SHALE – BANDS – 0.1 TO 1.0 FT WIDE	
		55°
		55°
358.5	SHALE – BLACK ARENACEOUS WITH FINE GREY SANDSTONE LAMINATIONS	
355.1		55°
	SANDSTONE – GREY, FINE GRAINED, WITH PARTINGS OF SHALE & MINOR COAL	
358.1	SHALE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - - HOLE NO 2

DIP

SHALE — BLACK ARENACEOUS WITH MANY PARTINGS & NARROW BANDS OF GREY FINE GRAINED SANDSTONE LABERGE SERIES

365.5 —

SANDSTONE - GREY FINE GRAINED

366.5 —

367.5 -60° —

SANDSTONE - GREY, FINE GRAINED WITH NARROW BANDS ~0.2 FT OF LAMINATED SHALE

370.0 -60° —

SHALE — INTERLAMINATED SHALE & FINE GRAINED SANDSTONE. IN PLACES HIGHLY CONTORTED & FRACTURED

374.6 -70° — — — —

SANDSTONE - MEDIUM GRAINED

377.0 -65° — —

SHALE - INTERLAMINATED WITH FINE GRAINED SANDSTONE HIGHLY FRACTURED & CONTORTED

380.0 — —

SANDSTONE - DIRTY GREY COLOR, MEDIUM - COARSE GRAINED, HIGHLY FRACTURED WITH CARBONATE VEINING

385.7 -25° — SANDSTONE — DRAGGED SHALE BANDS

387.8 -45° - FAULT CONTACT ———————————

HUTSHI GROUP - ANDESITE

391.2 -35° - BRECCIATED & FAULTED CONTACT - PARALLEL BEDDING? ——

393.7 -60° — SANDSTONE & SHALE — INTERBANDED, HIGHLY FRACTURED & DRAG FOLDED

SANDSTONE - BROWN, FINE GRAINED - GRITTY WITH OCCASIONAL SHALE BANDS & FRAGMENTS.

398.0 — STRONGLY ARGILLACEOUS

399.7 — —

406.0 - GRADATIONAL — — —

407.0 — CONGLOMERATE — LOOSELY PACKED, FINE - MEDIUM ANGULAR PEBBLE CONGLOMERATE 55°

SANDSTONE - BROWN, STRONGLY ARGILLACEOUS FINE GRAINED, MASSIVE

55°

413.8 — — SANDSTONE - BROWN, MEDIUM TO COARSE GRAINED WITH SCATTERED UP TO 0.05 FT ANGULAR QUARTZ PEBBLES

416.2 — — —

SANDSTONE - GREY, FINE GRAINED

PARALLEL BEDDING

419.5 -60° - CHILLED CONTACT ——— HUTSHI GROUP - ANDESITE

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 2

COORDINATES : DIP - -

DIP

HUTSHI GROUP - ANDESITE

430.5 - 70°

LABERGE SERIES

SANDSTONE - GREY, SLIGHT - MODERATELY ARGILLACEOUS, FINE - MEDIUM GRAINED MINOR, TO 0.05 FT SHALE FRAGMENTS

443.5 - 60° - SHALE - 0.2 FT

445.5 - 60° — — —

SANDSTONE DARK GREY, FINE GRAINED IN PLACES STRONGLY ARGILLACEOUS GRADING TO NARROW INTERLAMINATED SHALE. OCCASIONAL CASTS OF SHALE

60

60°

454.4 - GRADATIONAL — — —

SANDSTONE - GREY FINE - MEDIUM GRAINED

461.0 - GRADATIONAL — — —

SANDSTONE - GREY, COARSE GRAINED WITH NUMEROUS ANGULAR QUARTZ & SHALE PEPPLES TO 1/4 - 1/2 INCH.

470.0 - 65° — —

SANDSTONE - DARK, ARGILLACEOUS, FINE GRAINED WITH FAINT SHALE PARTINGS AND WISPS INTERLAMINATED & NARROW BANDS OF BLACK SHALE

65°

478.2 - 70° —

SHALE - BLACK ARENACEOUS WITH PARTING OF FINE GRAINED SANDSTONE

70°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - HOLE NO 2

		DIP
480.4	SHALE -70°	LABERGE SERIES SANDSTONE - GREY, FINE GRAIN MASSIVE WITH MINOR GRIT BANDS UP TO 1 FT	70°
486.0	SHALE - INTERLAMINATED FINE GRAINED SANDSTONE		60°
488.7	SANDSTONE - DARK BROWN, FINE GRAINED, STRONGLY ARGILLACEOUS WITH NARROW BANDS OF SHALE PARTINGS & SHALE CHIPS		70°
490.8			
493.8 -60°	SHALE - BLACK, ARENACEOUS WITH LAMINATIONS AND OCCASIONAL NARROW BANDS UP TO 0.2 FT OF GREY, FINE GRAINED SANDSTONE		65°
			70°
			70°
			70°
512.0	BANDS UPTO 0.5 FT OF GREY FINE GRAINED SANDSTONE BECOME COMMON		
516.0	SANDSTONE - GREY, MEDIUM GRAINED - GRITTY WITH SCATTER ANGULAR PEBBLES FROM 1/4" - 1/2" WIDTH		70°
522.5 - GRADATIONAL	SANDSTONE - DARK GREY, FINE GRAINED WITH DRAGGED PARTINGS OF BLACK SHALE IN CENTER		70°
525.5 - GRADATIONAL			
534.2 -60°	SHALE - LAMINATED		70
535.0			
536.2 -70°	SHALE - BLACK, LAMINATED, ARENACEOUS WITH BANDS UP TO 0.5 FT OF FINE & MEDIUM GRAINED QUARTZITE		70°
539.0 -70°	SANDSTONE		

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 2

		DIP
	SANDSTONE — BROWN, FINE GRAINED, OCCASIONALLY MEDIUM GRAINED, OFTEN WITH PARTINGS OF BLACK SHALE & COAL P. — LABERGE SERIES	76°
552.0	TRANSITION	65
554.2	SANDSTONE - GREY, FINE - COARSE GRAINED UPTO 2 FT ARGILLACEOUS GRIT BANDS	65°
571.8	GRADATIONAL - GRIT DARK, STRONGLY ARGILLACEOUS, COARSE GRAINED SANDSTONE WITH ABUNDANT ¼" ANGULAR QUARTZ PEBBLES — SANDSTONE - GREY, COARSE GRAINED - GRITTY WITH STRONG FRACTURING & WEATHERING.	
574.2	GRADATIONAL —	
575.5		
576.0	SANDSTONE - WITH COAL & SHALE PARTINGS	
586.0 - 60°	SHALE - BLACK INTERLAMINATED WITH FINE GRAINED SANDSTONE	
587.4 - 60°	SANDSTONE - FINE GRAINED, WITH OCCASIONAL BLACK SHALE PARTING	70°
592.2	SANDSTONE - MEDIUM - COARSE GRAINED WITH SCATTER PEBBLES TO 0.1 FT.	
595.3 - 60°	SANDSTONE - FINE GRAINED WITH 0.1 TO 0.5 FT BANDS WITH COAL & SHALE LAMINATIONS	60°
600.0	END OF HOLE	70

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,321,783.19N ; -130,635.16E
ELEVATION 2,486.3
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE HQ 0-600 FT
HOLE STARTED 14 SEPTEMBER, 1972
HOLE COMPLETED 21, SEPTEMBER, 1972
LOGGED BY M.P. PHILLIPS

DIP

OVERBURDEN - GLACIAL TILL & WEATHERED BEDROCK

12.0 ———

LABERGE SERIES

SHALE - PURPLE, MASSIVE, ARENACEOUS

15.8 - 70° - - -
SANDSTONE - FINE GRAINED, LIGHTLY BANDED

18.0 - 70° - - -
SHALE - PURPLE MASSIVE, ARENACEOUS LIGHT COLORED, LAMINATIONS

21.5 - - - -
SANDSTONE - GREY, MASSIVE, FINE - MEDIUM GRAINED

31.0 - 70° - - -
SHALE - BLACK, HIGHLY BROKEN
32.3 - CONTACT LOST ———

HUTSHI GROUP - ANDESITE - PALE GREEN, APHANITIC, SCATTERED UP TO 5MM QUARTZ FILLED AMYGDALES, HIGHLY WEATHERED

38.7 - 18° ORIENTATION ? ———

LABERGE SERIES

SHALE - BLACK, MASSIVE, 0.3 FT SANDSTONE ON BOTTOM CONTACT
41.0 - - - - -
COAL - SHALE COMMON IN UPPER SECTION
42.3 - - - -
SANDSTONE - STRONGLY ARGILLACEOUS WITH BANDS OF PURPLE SHALE
44.8 - 70° - - -
SANDSTONE
46.0 - - -
SHALE - BLACK MASSIVE
47.5 - - -
SANDSTONE

52.0 - - - - -
COAL SHINY, BLACK ±3 FT RECOVERY

57.0 - 70° - -
SANDSTONE - FINE - MEDIUM GRAINED WITH NARROW BANDS

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - HOLE NO 3

DIP

LABERGE SERIES

61.0 — SANDSTONE - COARSE GRAINED - GRITTY MASSIVE - SLIGHTLY BANDED

70°

70°

74.5 - 70° — — —

COAL

79.5 - CONTACT LOG

SHALE — BLACK, MASSIVE WITH COAL PARTINGS

81.0 — —

SHALE - DARK, STRONGLY ARENACEOUS WITH NARROW BANDS OF SANDSTONE

70°

84.0 - GRADATIONAL

SHALE - BLACK, MASSIVE, OCCASIONAL ARENACEOUS PARTINGS AND COAL PARTING COMMON

80°

87.0 — — —

SANDSTONE - FINE - MEDIUM GRAINED WITH DARK NARROW ARGILLACEOUS BANDS

88.7 — — —

SHALE - BLACK, MASSIVE, COAL AND SANDSTONE PARTINGS

90.5 — — —

SANDSTONE - MEDIUM - COARSE, FAINT ARGILLACEOUS BANDS

92.3 — — — —

SHALE - ARENACEOUS, WEAKLY LAMINATED

70°

95.0 — — — —

SANDSTONE

97.0 — — — — —

SHALE - ARENACEOUS, WEAKLY LAMINATED & BANDED

98.1 - 70° — —

SANDSTONE - COARSE GRAINED

70°

100.7 — —

COAL

102.6 — — —

SANDSTONE & SHALE - ALTERNATING BANDS & PARTING UP TO 1.0 FT, AVERAGE 0.3 FT.

70°

108.2 - 70° — — —

COAL

109.6 — — —

SHALE - ARENACEOUS, WEAKLY LAMINATED

113.3 — COAL - 0.3 FT

SANDSTONE

65°

119.4 — 1' SHALE

COAL - 0.4'

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 3

COORDINATES :

DIP - -

LABERGE SERIES

DIP

121.0 - 55° - SANDSTONE - 0.3 FT.

SHALE - LAMINATED ARENACEOUS, OCCASIONAL COAL PARTING. OFTEN LIGHT COLORED, STRONGLY ARENACEOUS BANDS — 50°

126.0 - SANDSTONE - 0.3 FT.

70°

134.1 — — — COAL

136.5 - SHALE - 0.5'

137.5 — — — 70°

142.6 - 65° SANDSTONE - MEDIUM - COARSE GRAINED, WEAKLY BANDED — 70°

147.0 — — SHALE — ARENACEOUS, MODERATE - STRONGLY BANDED

65°

154.5 — — SANDSTONE - STRONG X-BEDDING, BANDED

157.0 — — SHALE - ARENACEOUS, WEAKLY LAMINATED — 70°

161.0 — — — SANDSTONE - FINE GRAINED, OFTEN TO ARENACEOUS SHALE

60°

166.5 — —

169.5 — — SANDSTONE - FINE GRAINED, OFTEN GRADING TO NAPPOLU BANDS OF STRONGLY ARENACEOUS SHALE — 70°

173.5 — —

179.0 — — SANDSTONE

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 3

COORDINATES :

DIP -

		DIP
	SANDSTONE - GREY, FINE-MEDIUM GRAINED LABERGE SERIES WEAK - MODERATELY ARGILLACEOUS WITH OCCASIONAL NARROW BANDS - PARTINGS OF SHALE	65°
183.7	SHALE - WEAK - MODERATELY ARENACEOUS LAMINATED WITH UP TO 0.8FT BANDS AND PARTING OF COAL	60°
		10°
191.1	SANDSTONE - GREY, MEDIUM GRAINED	
194.1	SHALE - ARENACEOUS, LAMINATED, WITH NARROW BANDS OF COAL & SANDSTONE	70°
197.0	SANDSTONE	
198.0	SHALE - BLACK, MASSIVE, IN PLACES WEAKLY ARENACEOUS, LAMINATED	
200.8	SANDSTONE	70°
202.5	PARTINGS NARROW BANDS OF COAL SHALE - ARENACEOUS LAMINATED, OFTEN STRONGLY ARENACEOUS	
205		75°
211.7	SANDSTONE - DARK, STRONGLY ARGILLACEOUS	
212.6	SHALE - ARENACEOUS, LAMINATED - 0.5 FT COAL, TOP CONTACT	70°
213.7	SANDSTONE	
214.5	SHALE - LAMINATED, ARENACEOUS	
215.8	SANDSTONE - BROWN, MODERATELY ARGILLACEOUS	
217.8	SHALE - ARENACEOUS, WEAK - MODERATELY ARGILLACEOUS WEAK - MODERATELY LAMINATED, RARE PARTING OF COAL	75°
		60°
224.8	SANDSTONE - GRITTY	
228.3		65°
237.0	STRONGLY ARENACEOUS	75°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES: DIP - [illegible]

HOLE NO 3

Depth	Description	DIP
240.0	SANDSTONE - WEAKLY ARGILLACEOUS BANDED — LABERGE SERIES	60°
242.0	SHALE - WEAK-STRONGLY ARENACEOUS LAMINATED	
245.6	SANDSTONE - PARTINGS SHALE COMMON	
247.8	SHALE - ARENACEOUS, WEAKLY LAMINATED MINOR NARROW BANDS OF SANDSTONE	55°
255.2	SANDSTONE - LIGHT GREY, MEDIUM GREY MINOR PARTINGS & BANDS OF SHALE	10°
259.5	SHALE - ARENACEOUS, GRADING TO ARGILLACEOUS SANDSTONE, WEAKLY LAMINATED	
262.0	SANDSTONE - GREY, WEAK-STRONGLY ARGILLACEOUS MINOR SHALE BANDS	
266.8	SHALE - LIGHT COLORED, STRONGLY ARENACEOUS GRADING INTO ARENACEOUS LAMINATED	70°
269.0	SANDSTONE - GREY COARSE GRAINED - GRITTY WITH ARGILLACEOUS BANDS & NARROW BANDS & PARTINGS OF COAL	70°
276.3	SHALE - ARENACEOUS, LAMINATED	70°
279.0	SANDSTONE - ARGILLACEOUS, PARTING OF SHALE & COAL	
282.9 – 283.8	SHALE - BLACK, PARTINGS OF COAL	
285.4 – 287.0	SHALE - ARENACEOUS, LAMINATED, OCCASIONAL PARTINGS OF SANDSTONE	70°
288.5 – 290.0	SHALE - ARENACEOUS, LAMINATED PARTING OF ARENACEOUS SHALE COMMON	70°
293.8	SHALE - ARENACEOUS, WEAKLY LAMINATED	
296.8	SANDSTONE - LIGHT GREY, GRITTY	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - - HOLE NO 3

		DIP
	SANDSTONE — LABERGE SERIES	
301.3	**SHALE** - DARK, ARENACEOUS, MASSIVE GRADING TO LIGHT STRONGLY ARENACEOUS LAMINATED, OCCASIONAL NARROW BANDS OF SANDSTONE PARTING OF COAL COMMON.	65°
		70°
311.4	SANDSTONE	
312.6	**SHALE** - MASSIVE, ARENACEOUS, BLACK, WHITE SPECKLING	70°
314.6		
322.0	**SHALE** - ARGILLACEOUS, MASSIVE - WEAKLY LAMINATED, COAL PARTINGS COMMON.	70°
325.9	**SANDSTONE** - COARSE GRAINED, GRADATION FINE GRAINED ARGILLACEOUS TOWARDS BOTTOM	70°
329.8	**SHALE** - DARK COLORED, WEAK TO LIGHT STRONGLY ARENACEOUS, LAMINATED OCCASIONAL COAL PARTINGS & IRREGULAR NARROW SANDSTONE BANDS	70°
339.6	**SANDSTONE** — BLACK SHALE PARTINGS COMMON	65°
340.1		
346.0	**SANDSTONE** - LIGHT GREY, FINE GRAINED.	70°
347.7	**SHALE** - LIGHT STRONGLY ARENACEOUS - DARK WEAK ARENACEOUS, LAMINATED	70°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP - -

HOLE NO 3

		DIP
	SHALE - SEE PAGE 6 — LABERGE SERIES	70°
362.0	SANDSTONE - LIGHT GRY, FINE - MEDIUM GRAINED	
367.8	SHALE - BLACK SLIGHTLY ARENACEOUS TO LIGHT COLORED, STRONGLY ARENACEOUS LAMINATED SHALE WITH PARTINGS OF SANDSTONE, OCC. GRADING TO IRREGULAR ARGILLACEOUS SANDSTONE BANDS	65°
371.3		
372.5	SANDSTONE - GREY, FINE GRAINED	70°
375.6 - 70°	SANDSTONE	
377.0		70°
380.8	SANDSTONE - LIGHT GREY, MEDIUM GRAINED COAL PARTINGS COMMON	
396.3 - 50°	SHALE - BLACK MASSIVE WITH COAL PARTINGS	
397.5 - GRADATIONAL	SHALE - ARENACEOUS, WEAKLY LAMINATED - MASSIVE.	65°
406.7	SANDSTONE - MEDIUM - COARSE GRAINED WITH SHALE PARTINGS	65°
411.3	SHALE - MASSIVE WEAKLY ARENACEOUS TO STRONGLY ARENACEOUS MASSIVE - WEAKLY LAMINATED	65°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP -

		DIP
	SHALE - LABERGE SERIES	70°
423.8	SANDSTONE - MASSIVE, MEDIUM - COARSE GRAINED, OCCASIONAL SHALE PARTINGS	
434.3	TRANSITION - FINE GRAINED, ARGILLACEOUS SANDSTONE	
435.7	SHALE - DARK MODERATE - STRONGLY ARENACEOUS LAMINATED SHALE	65°
		70°
445.5	SANDSTONE - WEAK - STRONGLY ARGILLACEOUS, LAMINATED WITH NARROW BANDS OF BLACK SHALE	
		70°
457.0	SHALE - DARK MASSIVE SLIGHTLY ARENACEOUS WITH IRREGULAR BANDS OF LAMINATED, STRONGLY ARENACEOUS SHALE GRADING TO ARGILLACEOUS SANDSTONE.	
460.3	SANDSTONE	70°
462.7		70°
		70°
475.0	SANDSTONE - FINE - MEDIUM GRAINED WEAKLY BANDED	70°
478.4	SHALE - MASSIVE ARENACEOUS	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP : -

		DIP
	SANDSTONE - DARK, MASSIVE, STRONGLY ARGILLACEOUS. LABERGE SERIES	
486.0	SANDSTONE - LIGHT GREY, MEDIUM GRAINED	
487.0	SHALE - ARENACEOUS, LAMINATED	
489.5	SANDSTONE - ARGILLACEOUS BANDING, HIGHLY WEATHERED 492.0 - 496.0 FT.	60°
496.0	SHALE - ARENACEOUS WEAKLY LAMINATED WITH COAL PARTING, GRADING TO MASSIVE TOWARDS BOTTOM CONTACT	60°
500.5	GRADATIONAL. SANDSTONE - LIGHT GREY FINE-MEDIUM GRAINED WITH ARGILLACEOUS BANDING IN UPPER SECTION. OCCASIONAL SHALE & COAL PARTINGS	
513.0	SHALE - DARK-LIGHT, ARENACEOUS, WEAK-STRONGLY LAMINATED WITH COAL PARTINGS.	80°
518.5	SANDSTONE - LIGHT GREY, OCCASIONAL SHALE-COAL PARTING	70°
522.0	SHALE - MASSIVE, SLIGHTLY ARENACEOUS	
523.3	SANDSTONE - GREY, MASSIVE WITH ARGILLACEOUS BANDING TOWARDS BOTTOM CONTACT.	
527.0	SHALE - MASSIVE, ARENACEOUS	
527.5		
530.0	SHALE - MASSIVE, ARENACEOUS	
531.0		
532.0	SANDSTONE - STRONGLY ARGILLACEOUS, LAMINATED	
	SHALE - ARENACEOUS, WEAKLY LAMINATED, MASSIVE TOWARDS BOTTOM CONTACT WITH COAL PARTINGS.	70°
539.0	GRADATIONAL SANDSTONE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP° -

HOLE NO 3
PAGE 10 OF 10

		DIP
	SANDSTONE — GREY COARSE GRAINED WITH ARGILLACEOUS BANDS & PARTINGS COMMON — LABERGE SERIES	70°
5[illegible]	SANDSTONE - COARSE GRAINED - GRITTY HIGHLY WEATHERED ALONG FRACTURES	
5594	SHALE - ARENACEOUS LAMINATED	60°
563.2	SANDSTONE - DARK WITH BLACK SHALE SPECKLE	
565.7		
566.0	SHALE - BLACK, ARENACEOUS	
567.3	SANDSTONE - FINE-MEDIUM GRAINED ARGILLACEOUS & BLACK SPECKLED	
	SHALE - BLACK ARENACEOUS, MASSIVE	
570.0	SANDSTONE - DARK FINE GRAINED, ARGILLACEOUS	
571.7	SHALE - BLACK, ARENACEOUS, MASSIVE OCCASIONALLY WEAKLY LAMINATED	60°
577.2		
578.0	SANDSTONE - DARK COLORED, BLACK SHALE SPECKLED	
581.2	~70°? CHILLED CONTACT	
	HUTSHI GROUP - ANDESITE PALE GREEN BORDER, DARK GREEN CHLORITE SPECKLED WITH NUMEROUS CARBONATE FILLED FRACTURES	
600.0	END OF HOLE.	

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,321,629.36N; -191,156.44E
ELEVATION 2402.9
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE HQ 0-82.0 FT
HOLE STARTED 22 SEPTEMBER, 1972
HOLE COMPLETED 27, SEPTEMBER, 1972
LOGGED BY M.P PHILLIPS

		DIP
19.3	HUTSHI GROUP ANDESITE - DARK GREY WITH BLEACHED BORDERS, APHANITIC WITH OCCASIONAL FINE WHITE FELDSPAR PHENOCRYSTS	
24.3 - CONTACT LOST	LABERGE SERIES -	
	SANDSTONE - DARK COLORED, MEDIUM GRAINED WITH NUMEROUS BLACK CARBONACEOUS SHALE FRAGMENTS & BANDS ~1-3"	45°
29.0 — HIGHLY WEATHERED TO SAND		
32.0 CONTACT LOST		
	COAL - CRUMBLY, DULL BLACK WITH PARTINGS & NARROW BANDS OF BLACK SHALE	
35.0 CONTACT LOST		
	SHALE - DULL BROWN-BLACK, SLIGHTLY ARENACEOUS WITH LENSES OF DARK COLORED CARBONACEOUS SANDSTONE UP TO 0.2 FT. SHEARED?	
44.5		
	SANDSTONE - DARK COLORED, FINE TO MEDIUM GRAINED SANDSTONE WITH UP TO 0.5 FT BANDS OF BLACK SHALE - HIGHLY BROKEN & SLICKENSIDED @ 30° COMMON	30°?
51.0 — SLIGHTLY ARENACEOUS		"
	SHALE - BLACK MASSIVE SHALE IN PARTS SLIGHTLY ARENACEOUS	
54.0 —		

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES:

DIP: --

HOLE NO 4

PAGE 2 OF 2

DIP

LABERGE SERIES - SHALE - DARK COLORED

MASSIVE SLIGHTLY SANDY SHALE WITH OCCASIONAL TO 0.2 FT DARK COLORED SANDSTONE

74 OF 1' BLACK, SANDY SHALE - HIGHLY CRUMBLY

NO RECOVERY.

820 - END OF HOLE - ABANDONED

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,321,290.80N ; -191,208.83E
ELEVATION 2457.7
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE HQ 0-434.0 FT NQ 434-1205 FT
HOLE STARTED 29, SEPTEMBER, 1972.
HOLE COMPLETED 13, OCTOBER, 1972
LOGGED BY M.P. PHILLIPS

DIP

OVERBURDEN - GLACIAL TILL & WEATHERED BEDROCK

20.0

LABERGE SERIES

SANDSTONE - DARK COLORED, GRITTY BLACK SPECKLED WITH OCCASIONAL NARROW BANDS OF BROWN SHALY COARSE GRAINED SANDSTONE — 60°

28.2 -60° CONTACT — SHALE - SANDY, WEAKLY LAMINATED
29.2 -60° CONTACT —
30.0 -60° — SANDSTONE - DARK BROWN, MEDIUM GRAINED — 60°
30.8 — COAL
32.0 -60° — SHALE - BLACK MASSIVE & ARENACEOUS
32.7 -60° — COAL - SANDSTONE & 0.4 FT COAL
SANDSTONE - BROWN, FINE-MEDIUM GRAINED, IN PLACES STRONGLY ARGILLACEOUS & LAMINATED — 70°
37.0 -60°
38.3 -55° — COAL - NARROW BANDS & PARTINGS OF BLACK SHALE
SANDSTONE - BROWN, ARGILLACEOUS, MEDIUM-COARSE GRAINED
41.3 -70° — — — SANDSTONE - GREY, COARSE GRAINED TO GRITTY — 70°
44.0

SHALE - BLACK MASSIVE TO ARENACEOUS MASSIVE, LAMINATED ARENACEOUS SHALE & COAL PARTINGS TO 0.2 FT COMMON — 70°
46.0 COAL - 0.2 FT
46.9 COAL 0.1 FT
49.8 COAL - 0.6 FT
50.8 - COAL - 0.1 FT — SANDSTONE
52.6 -55° —
53.1 COAL 0.1 FT — 65°
55.4 —
55.5-40° — COAL
57.7-40° COAL
SANDSTONE
62.1-60° - COAL 0.3 FT
63.7 - 60° —
SANDSTONE
65.3 -60° —
66.8 — —
67.9 — — COAL BANDS TO 0.2 FT
69.1 — COAL

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - - HOLE NO 5

		DIP
70.5	COAL	
	LABERGE SERIES	
71.5	-70° CONTACT - -	
	SANDSTONE	75°
75.2	-75° CONTACT - COAL - 0.2 FT. DULL, SANDY	
75.8	- - -	
77.0	COAL - DULL SANDY.	
	SHALE - BLACK - COAL PARTINGS	75°
78.4	-75° CONTACT	
	COAL - DULL BLACK, PARTINGS & BANDS OF BLACK SHALE	
80.8	-75° CONTACT	
81.5	- COAL - 0.2 FT.	
	SANDSTONE - DARK, X BEDDED, LAMINATED ARGILLACEOUS, FINE GRAINED SANDSTONE	70°
85.0	-70° CONTACT	
	SANDSTONE - LIGHT GREY, COARSE GRAINED -GRITTY, FELDSPATHIC SANDSTONE. PALE PARTINGS OF ARENACEOUS SHALE	65°
		70
		70°
101.3	- - SHALE PARTINGS & FINE SHALE PARTICLES IN SANDSTONE	
104.2	-60° CONTACT - COAL PARTING	
	SANDSTONE - SHALE PARTICLES IN SANDSTONE COMMON	70°
106.0	-60° SHALE - INDURATED	
106.7	-45°-70° CHILLED CONTACT	
	ANDESITE - PALE GREEN ANDESITE WITH ALTERED CHLORITE & FELDSPAR PHENOCRYSTS. XENOLITH TO 0.3 FT	
109.2	-70° CHILLED CONTACT	
	COAL	
110.6	-70° - -	
	SANDSTONE - GREY TO BROWN, CLEAN TO ARGILLACEOUS MEDIUM-COARSE GRAINED, OCCASIONAL BANDS OF BLACK SPECKLING	70°
113.0	-70°	
114.0	SHALE - BLACK MASSIVE	
114.5	SANDSTONE	
	COAL - DULL BLACK.	
116.5	SHALE - ARENACEOUS WEAKLY LAMINATED	
117.0	SANDSTONE - DARK, BLACK SHALE SPECKLING	
118.3	-60° CONTACT	
118.9	-70° CHILL CONTACT - PARALLEL BEDDING	
	HUTSHI GROUP - ANDESITE	
121.3	-70° CHILLED CONTACT PARALLEL BEDDING.	
122.3	SHALE - LOST	
123.0	-70° CHILLED	
123.5	-40° - - - SHALE	
128.4	-40° CHILLED CONTACT	
	SHALE - BLACK MASSIVE SHALE, PARTINGS OF COAL COMMON, AND NARROW BANDS OF LIGHT COLORED, ARENACEOUS	65°
128.2	- -	
128.3	° COAL	

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 5
PAGE 3 OF 17

COORDINATES : DIP :

		DIP
	LABERGE SERIES - SHALE	
132.5 – 133.0 – COAL		
		60°
186.3 – 187.4 – COAL		
139.1 – SHALE - LAMINATED, ARENACEOUS		
141.0 – SANDSTONE WITH NARROW BANDS OF BLACK SHALE		
192.0 – BLACK SHALE & SANDSTONE WITH 0.4 FT COAL		
143.3 –		60°
	SANDSTONE – MEDIUM GREY, MEDIUM TO COARSE GRAINED WITH SHALE FRAGMENTS & PARTINGS OF ARGILLACEOUS MATERIAL	
145.5 - 60° CHILLED CONTACT PARALLEL TO BEDDING – ANDESITE – BLEACHED		
148.6 - 60°		
149.8 - 60°	SHALE - BLACK MASSIVE SHALE	70°
152.1 – 153.0 – COAL		
154.0 - 70°	SANDSTONE - DARK GREY COARSE GRAINED TO GRITTY ARGILLACEOUS CROSS-BEDDED SANDSTONE	70°
159.0 - 60° 159.8 – COAL		
		65°
164.3 - 65°	SHALE - LAMINATED & CROSS BEDDED ARENACEOUS SHALE WITH BANDS OF BLACK SHALE WITH PARTINGS AND BANDS UP TO 0.2 FT OF COAL.	70°
171.5		
COAL – PARTINGS & BANDS OF BLACK SHALE 179.0 –		65°
176.5 - 65°	SANDSTONE - LIGHT GREY GRITTY SANDSTONE	70°
182.2 - 80°	SHALE - BLACK, MASSIVE SHALE WITH PARTING AND BANDS UP TO 0.4 FT OF COAL	65°
186.3 - 60°	SANDSTONE - LIGHT TO DARK GREY MEDIUM - COARSE GRAINED SANDSTONE WITH ARGILLACEOUS AND SHALE BANDS	60°
187.3 - 0.6 FT COAL		

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 5
PAGE 4 OF 17

DIP

LABERGE SERIES - SANDSTONE

131.3 - 40° COAL
192.6

194.4 - 40°

SHALE - BLACK MASSIVE WITH OCCASIONAL ARENACEOUS PARTINGS · BEDDING 0-30°

197.0 — SANDSTONE & SHALE - INTERBEDDED & INTERLAMINATED - BEDDING 0-30°

199.5 —

SHALE - BLACK MASSIVE

203.0 - GRADATIONAL — —

SHALE - DULL DARK GREY, ARENACEOUS WEAKLY LAMINATED SHALE BEDDING - 0 - 20°

242.0 — SHALE - BLACK MASSIVE WITH 0.1FT. COAL PARTING ON BOTTOM CONTACT.

213.4 - 50° —

214.8 - COAL - 0.4 FT SANDSTONE - IN PARTS ARGILLACEOUS WITH NARROW BANDS OF SHALE

216.8 — — — — SANDSTONE - ARENACEOUS SHALE GRAD CHANGE TO DARK, FINE GRAINED ARGILLACEOUS SANDSTONE

222.0 - 35° — — — SHALE - DARK GREY, MODERATELY ARENACEOUS WEAKLY LAMINATED

224.0 - 20° — — — SANDSTONE - LIGHT GREY, IN PARTS WEAKLY ARGILLACEOUS WITH PARTINGS OF COAL

228.5 - 10° — — SHALE - BLACK MASSIVE TO ARENACEOUS WEAKLY LAMINATED

232.0 - 10° — SANDSTONE - DARK GREY, STRONGLY, ARGILLACEOUS

234.9 - 10-20° —

COAL - PARTINGS & BANDS OF BLACK SHALE

235.8 —

SHALE - BLACK MASSIVE

237.0 — — —

COAL - 30°? - BANDS OF BLACK SHALE COMMON

238.0 — —

SHALE - INTERLAMINATED STRONGLY ARENACEOUS SHALE & BLACK MASSIVE SHALE

246.0 -

SHALE - BLACK MASSIVE - STRONG SLICKENSIDED FRACTURES & BEDDING PLANES

40°

30°

50°

35°

10°

25°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES: DIP - HOLE NO 5

DIP

LABERGE SERIES

SANDSTONE - LIGHT TO MEDIUM GREY, COARSE GRAINED TO GRITTY, WEAK TO BANDS STRONGLY ARGILLACEOUS SANDSTONE

SHALE

250.2 - SHALE - BLACK MASSIVE WITH QUARTZ GRAINS FAULT?

251.2 - - SANDSTONE - CRUMBLY

252.0

IN PART CRUMBLY - WEATHERED - FAULTZONE?

255.0

65°

60°

263.6 - SHALE - DARK DULL GREY, LAMINATED ARENACEOUS SHALE WITH OCCASIONAL UP TO 0.5 FT BLACK MASSIVE SHALE BAND'S

50°

60°

272.8 - COAL - 0.5 FT - PARTING OF SHALE.

SANDSTONE - COARSE GRAINED, WEAK TO STRONGLY ARGILLACEOUS

274.0 - - - SHALE - BLACK, MASSIVE, IN PARTS ARENACEOUS

275.7 - -

60°

COAL - PARTING & BANDS OR BLACK SHALE

277.0 - - SANDSTONE - IRREGULAR TO 0.3 FT ARGILLACEOUS BANDS AND OCCASIONAL UP TO 0.5 FT BANDS OF BLACK SHALE WITH GRIT FRAGMENTS

282.0 - - SHALE - DULL DARK GREY, WEAKLY LAMINATED ARENACEOUS OCCASIONAL NARROW BANDS BLACK MASSIVE SHALE

30°

287.0 - -

60°

SANDSTONE - GREY, MEDIUM GRAINED OCCASIONAL PARTINGS & NARROW BANDS OF BLACK SHALE & COAL

288.5 - - - SHALE - ARENACEOUS, WEAKLY LAMINATED

290.0 - - -

292.3 - SHALE - ARENACEOUS, LAMINATED

293.0 -

65°

295.4 - -

296.1 - - SHALE - ARENACEOUS, LAMINATED

297.0 - - 30°

SHALE - ARENACEOUS, LAMINATED.

297.5 - - 30°

299.4 - 60°

SHALE - STRONGLY ARENACEOUS, LAMINATED.

40°

30°

304.5 - - - - SHALE - BLACK, MASSIVE, NUMEROUS SLICKENSIDES ALONG BEDDING(?)

310.0

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 5

COORDINATES :

DIP - :

LABERGE SERIES

		DIP
	SANDSTONE - INTERBEDDED & BANDED GREY SANDSTONE, ARGILLACEOUS FINE - MEDIUM GRAINED SANDSTONE AND ARGILLACEOUS LAMINATED SHALE	40°
314.1	- GRADATIONAL -	
	SANDSTONE - GREY, GRITTY WITH BANDS TO 0.3 FT STRONGLY ARGILLACEOUS.	55°
		50°
320.0	COAL - TWO 0.3 FT BANDS IN BLACK MASSIVE SHALE AND ARENACEOUS	
322.0	LAMINATE SHALE	
333.6	SHALE - BLACK, MASSIVE ARENACEOUS WITH SCATTERED GRITS	
	SANDSTONE - DARK GREY, MODERATELY ARGILLACEOUS	60°
327.3	30° - SHALE - ARENACEOUS - LAMINATED	
328.2	- 50° -	50°
329.8	SHALE - BLACK, MASSIVE	
330.5	- 50° -	
	SHALE - BLACK, MASSIVE, OCCASIONAL NARROW ARENACEOUS BANDS	
332.5	SHALE - ARENACEOUS, WEAK - MODERATELY LAMINATED.	55°
337.0	-	
337.5	SHALE - BLACK, MASSIVE, PARTINGS OF COAL	
	COAL - DULL BLACK.	
339.0	-	
	SHALE - BLACK, MASSIVE - PARTINGS OF SANDSTONE	
341.5	-	
	COAL - PARTING OF SHALE	40°
343.5	- SHALE - ARENACEOUS, WEAKLY LAMINATED.	
344.0	- 45° -	
	SANDSTONE - GREY, COARSE GRAINED, PARTINGS OF ARENACEOUS SHALE	70°
347.6	- SHALE - ARENACEOUS, LAMINATED, NARROW BANDS OF SANDSTONE TO 0.3' COMMON TOWARDS BOTTOM	50°
350.5	- SHALE - ARENACEOUS, LAMINATED AND SANDSTONE INTERBEDDED.	50°
353.5	- SANDSTONE - GREY, COARSE GRAINED GRITTY	40°
357.7	- 45° - SHALE - BLACK, MINOR PARTINGS OF ARENACEOUS SHALE	35°
362.0	COAL - DULL, ARGILLACEOUS	
368.0	- SHALE - ARENACEOUS, LAMINATED, X-BEDDED	35°
366.2	SANDSTONE	
367.2	COAL - 0.5 FT	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP -

HOLE NO 5

DIP

LABERGE SERIES -

SHALE - ARENACEOUS, LAMINATED, X-BEDDED
OCCASIONAL BANDS UP TO 1 FT. BLACK
MASSIVE AND ARENACEOUS MASSIVE

40°

0°

20°

287.4 — SHALE - BLACK, MASSIVE, SLICKENSIDES COMMON

390.0 — SANDSTONE - GREY, MEDIUM GRAINED, NARROW
ARGILLACEOUS BANDS

35°
60°

393.3 - 45° - FAULT? —
SHALE - SANDSTONE BRECCIA FRAGMENTS - 0.5 FT. WIDE ZONE

SHALE - BLACK MASSIVE, BROKEN, SLICKENSIDES COMMON
OCCASIONAL DARK ARGILLACEOUS
QUARTZITE BAND

398.3 — SHALE & SANDSTONE - INTERBEDDED, ARENACEOUS COARSE
GRAINED SHALE AND SANDSTONE

0
20°

402.8 - 80° —

COAL - DULL BLACK, OCCASIONAL
PARTINGS OF SHALE AND
ARENACEOUS SHALE

20°

405.3 — SANDSTONE - 0-10°

406.6 —

10°

410.2 - 10° ? CONTACT —

SANDSTONE - GREY, MEDIUM - COARSE GRAINED, OCCASIONAL
PARTINGS OF COAL

10°

416.4 - 6-10° —

SHALE - BLACK MASSIVE - HIGHLY BROKEN, 0.5 FT COAL UPPER CONTACT

420.0 — FAULT ZONE ? - HIGHLY FRACTURED & BROKEN ROCK

421.0 — SANDSTONE

424.0 — SHALE - BLACK MASSIVE - HIGHLY BROKEN

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP - -

HOLE NO 6.

		DIP
	CORE LOSS - 6 FT. LABERGE SERIES	
432.0	SHALE - BLACK, MASSIVE	
434.5 - 30°	SANDSTONE - GREY, MEDIUM GRAINED, OCCASIONAL COAL AND ARGILLACEOUS PARTING.	10°
442.0	SHALE - BLACK, MASSIVE - HIGHLY BROKEN	0
443.8 - 30°		30°
447.0 - 30°	SHALE - BLACK, MASSIVE	
448.1 - 26°		25°
449.6	SANDSTONE - ABUNDANT SHALE GRAINS	35°
454.2	WEATHERED SANDSTONE - FAULT — AFTER 454.2 - NARROW BANDS - 0.1 FT OF BLACK SHALE COMMON	
456.0 - 457.5 - 30°	SHALE - BLACK, MASSIVE - STRONG SLICKENSIDES ON BEDDING, OCCASIONAL NARROW BAND OF COAL AND SANDSTONE	30°
463.0	SANDSTONE - ARGILLACEOUS TOWARDS BOTTOM CONTACT	30°
466.0	SHALE - BLACK, MASSIVE, SLIGHT ARENACEOUS PARTING OF COAL	
469.0 - 45°	IRREGULAR CONTACT SANDSTONE - BLACK, ARGILLACEOUS MATERIAL ABUNDANT, PARTINGS & NARROW BANDS OF BLACK SHALE COMMON	39°
473.5	SHALE - INTERBEDDED BLACK SHALE & COAL	30°
476.0	SANDSTONE - DARK COLORED, STRONGLY ARGILLACEOUS	50°
478.6 - 30°	SHALE - BLACK, MASSIVE, OCCASIONAL PARTING OF COAL.	
485.0	ARENACEOUS PARTINGS.	50°
486.5		
489.0 - 30° & 50° CNTS	ANDESITE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

HOLE NO 6

DIP

SHALE — LABERGE SERIES

492.8 - 70° CNT - ORIENTATION? ——

ANDESITE - PALE GREEN, APHANITIC

496.0 - CONTACT LOST ——

CORE LOSS - 496.0 - 502.0 - 3.5 FT.

SANDSTONE

SHALE - BLACK, MASSIVE, HIGHLY BROKEN, OCCASIONALLY ARENACEOUS PARTINGS

507.0 — SANDSTONE - DARK GREY, STRONGLY ARGILLACEOUS

508.4 - 30°

SANDSTONE - LIGHT - DARK GREY FINE TO COARSE GRAINED WITH NARROW BANDS STRONGLY ARGILLACEOUS, HIGHLY FRACTURED

511.0 STRONGLY WEATHERED - FAULT?

512.0

512.9 - 90° SHALE - 0.4 AND STRONGLY ARGILLACEOUS SANDSTONE

515.4 - 50°

50°

520.8 —

522.0 SHALE - BLACK MASSIVE

SHALE - ARENACEOUS, LAMINATED

SANDSTONE - GREY, MEDIUM GRAINED, MASSIVE SANDSTONE WITH OCCASIONAL FRAGMENTS & PARTINGS OF COAL

524.5 - 45° - GRADATIONAL

45°

30°

522.2 - 35° —

SHALE - ARENACEOUS, WEAKLY LAMINATED & ARGILLACEOUS FINE GRAINED DARK SANDSTONE

545.0 —

SANDSTONE - DARK, FINE GRAINED, ARGILLACEOUS

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - - HOLE NO 6

DIP

SANDSTONE - AS PREVIOUS LABERGE SERIES -

554.2 - 30°

SHALE - BLACK, MASSIVE, MINOR SANDSTONE FRAGMENTS

556.7 —

SANDSTONE - LIGHT - DARK, WEAK - MODERATELY ARGILLACEOUS SANDSTONE

558.8 - 10° - FAULT ?

559.3 — SHALE — BLACK, MASSIVE WITH UP TO 0.1 FT SANDSTONE FRAGMENTS

561.0 - 0.8 FT BRECCIA - SANDSTONE FRAGMENTS IN BLACK SHALE

563.7 - 0.3' BRECCIA - SANDSTONE FRAGMENTS IN BLACK SHALE.

565.0 — BRECCIA ZONE — MAINLY BLACK SHALE WITH SANDSTONE FRAGMENTS AND MINOR BRECCIATED SANDSTONE

569.5' — BRECCIA ZONE - UP TO 0.3 FT SANDSTONE FRAGMENTS IN BLACK SHALE

576.3 — BRECCIA ZONE - BLACK, MASSIVE SHALE WITH OCCASIONAL SANDSTONE FRAGMENT

576.5 — SHALE - ALTERNATING BANDS UP TO 2 FT OF BLACK MASSIVE AND ARENACEOUS, LAMINATED SHALE, OCCASIONAL BRECCIA FRAGMENTS TO 580 FT.

30°

30°

588.6 — SHALE - ARENACEOUS, LAMINATED

590.0 — SANDSTONE - BLACK SHALY MATRIX

591.3

SANDSTONE — LIGHT TO DARK GREY, FINE GRAINY SANDSTONE WITH IRREGULAR, MODERATE - STRONG ARGILLACEOUS SANDSTONE BANDS, OCCASIONAL PATCHES & LENSES OF COAL & SHALE, IN PLACES 'CRUMBLY ALONG' FRACTURE

40°

35°

15°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - [illegible]

HOLE NO (-
PAGE 11 OF 17

DIP

LABERGE SERIES -

AFTER 610.0 FT. GRITTY BANDS BECOME COMMON. 30°

30°

635.0 - GRADATIONAL - END OF GRIT BANDS.
SANDSTONE - LIGHT TO DARK, MEDIUM TO COARSE GRAINED, WEAK - STRONGLY ARGILLACEOUS MODERATE FRACTURING COAL & BLACK SHALE PARTING LENSES COMMON OFTEN DRAGGED. 30

641.0 - GRADUALLY CHANGE TO STRONGLY ARGILLACEOUS DARK COLORED

25?

651.0 - 10° - - - -
SHALE - MASSIVE ARENACEOUS.

655.1 - 30°? IRREGULAR to PARALLEL BEDDING? - CHILLED CONTACT

HUTSHI GROUP - ANDESITE - PALE GREEN GRADUALLY DARKER IN COLOR TOWARDS CENTER, CHLORITE & QUARTZ - FELDSPAR FILLED AMYGDALES COMMON. FAIR CARBONATE - FELDSPAR VEINING.

DRILL HOLE LOG.

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

DIP

HUTSHI GROUP - ANDESITE

688.7 - 60° —
689.5 - 80° — SHALE - BLACK MASSIVE

693.3 - 0.3' SHALE - BLACK MASSIVE

706.0 - 80° CHILLED CONTACT -
709.0 - SHALE - BLACK MASSIVE, SLIGHT ARENACEOUS
BRECCIA - 0.6 FT - FAULT?
SANDSTONE - COARSE GRAINED - GRITTY
STRONGLY WEATHERED

LABERGE SERIES

712.0 - 45° — — — —
SHALE - BLACK, MASSIVE, PARTINGS OF COAL
ARENACEOUS AT UPPER CONTACT.

716.0 —
SANDSTONE
717.7 — SHALE - ARENACEOUS, WEAKLY LAMINATED, MINOR, MASSIVE

719.5 - 50° — SHALE — BLACK, MASSIVE, NUMEROUS PARTINGS OF COAL
720.4 - 50 —
COAL - BLACK

722.6 - 40° — — — — —
SANDSTONE — GREY, GRITTY, OCCASIONAL
PARTING OF COAL, GRAINS TO 1/4 INCH

55°

50°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP -

HOLE NO 6

		DIP
	LABERGE SERIES	
742.0 - 50°	0.5 SHALE - ARENACEOUS, LAMINATED	
745.0 - 50°	SHALE - MASSIVE, SLIGHT ARENACEOUS	50°
746.0 -		
747.7 - 50°	GRADATIONAL —	
748.6 - FAULT	SHALE - BLACK, MASSIVE & ARENACEOUS	
	SANDSTONE - LIGHT - MEDIUM GREY, MODERATELY ARGILLACEOUS, OCCASIONAL PARTING OF COAL.	45°
753.5 - 30°	SLICKENSIDE	
754.6 - 60°	SHALE	
756.0 - 20°	SLICKENSIDE - 0.7' SHALE	
		50°
762.0 - 60°	SHALE - ARENACEOUS, LAMINATED, STRONG SLICKENSIDES	
764.0 -		
767.0 -	SHALE - ARENACEOUS, SLIGHTLY LAMINATED.	35°
770.0 - 50°		
773.5 - 60°	SHALE - STRONGLY ARENACEOUS	
778.0 -		45°
781.0 - 70°	SHALE - BLACK MASSIVE	
782.0 -	SHALE - ARENACEOUS, LAMINATED	55°
783.1 - 60°		
789.5	SHALE - ARENACEOUS, WEAKLY LAMINATED	
790.1 - 60°		

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP :

HOLE NO 6
PAGE 14 OF 17

LABERGE SERIES

		DIP
790.5	SHALE - BLACK MASSIVE, COAL PARTINGS	
791.4	COAL - SHALE PARTING COMMON	
793.2 -70°	SHALE - ALTERNATING BANDS - TO 1 FT OF BLACK MASSIVE SHALE WITH COAL PARTINGS & BANDS TO .2 FT AND ARENACEOUS, WEAKLY LAMINATED	
799.7 -70°	SANDSTONE	
801.4 -55°	COAL	
804.5? -55°	SHALE - BLACK - GREY, MASSIVE, HIGHLY BROKEN	
808.0 -65°	SHALE - STRONGLY ARENACEOUS, LAMINATED, BANDS OF FINE GRAINED SANDSTONE	65°
810.7 -65°	GRADATIONAL	
	SANDSTONE - FINE GRAIN, IRREGULAR NARROW ARGILLACEOUS BANDS	
813.0 -70°	PARTINGS OF COAL	
	SHALE - MASSIVE, ARENACEOUS, 0.5 FT BLACK SHALE WITH COAL PARTINGS ON BOTTOM CONTACT	
815.0	SANDSTONE - GREY, COARSE GRAINED - GRITTY WITH PARTINGS OF BLACK, ARENACEOUS SHALE	
821.8 -30°	SHALE - MASSIVE ARENACEOUS	50°
826.8 -30°	SHALE - ARENACEOUS, LAMINATED	50°
829.1 -50°	SHALE - BLACK, MASSIVE	
837.4	SANDSTONE - WEAK - STRONGLY ARGILLACEOUS	50°
838.4	SHALE - BLACK, MASSIVE, OCCASIONALLY ARENACEOUS MINOR COAL PARTINGS	
841.8	COAL	
843.3	SANDSTONE - WEAK TO STRONGLY ARGILLACEOUS	
844.5		
845.3 -60°	SHALE - BLACK, MASSIVE & ARENACEOUS	
	SANDSTONE & SHALE - BLACK, MASSIVE & ARENACEOUS LAMINATED	
847.2	SANDSTONE	45°
849.0	SHALE - BLACK MASSIVE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP - -

HOLE NO 6

DEPTH / DESCRIPTION	DIP
COAL - 0.5 FT	
LABERGE SERIES	
850.5	
SANDSTONE - DARK, STRONGLY ARGILLACEOUS GRADING INTO ARENACEOUS SHALE, MINOR COAL PARTINGS IN PLACES	60°
853.3 - 50°	
SANDSTONE - ARGILLACEOUS BANDS TOWARDS BOTTOM CONTACT	
856.8 - 60°	
SHALE - ARENACEOUS, WEAKLY LAMINATED WITH NARROW BANDS OF BLACK MASSIVE	
860.8	
COAL - SHALE PARTING & NARROW BANDS COMMON	
862.8	
863.7 — SHALE - BLACK MASSIVE WITH COAL PARTINGS	
864.3 — COAL	
SANDSTONE - 0.4 FT	
COAL	
866.0	
867.0 — SHALE - ARENACEOUS	
COAL - BANDS OF BLACK MASSIVE SHALE UP TO 0.2 FT COMMON	
870.3 - 60°	
SHALE - LIGHT COLORED, ARGILLACEOUS, FINE GRAINED SANDSTONE & LAMINATED ARENACEOUS SHALE	65°
	[illegible]
880.0	55°
COAL PARTING BECOME COMMON	
882.1	
SANDSTONE - STRONGLY ARGILLACEOUS, DARK, GRADING INTO LIGHT COLORED, MEDIUM - COARSE GRAINED	
884.8 - 0.6 FT SHALE - BLACK MASSIVE 70°	
886.5 - 70°	70°
SHALE - DARK, MASSIVE, WEAK - MODERATELY ARENACEOUS, COAL PARTINGS COMMON	
891.5 - 70° COAL	
[illegible]	70°
SANDSTONE - GREY TO LIGHT [illegible] [illegible] ARGILLACEOUS	
[illegible] SHALE - [illegible] FT	70°
901.4	
SHALE - LIGHT TO DARK COLORED, INTERLAMINATED, ARGILLACEOUS FINE GRAINED SANDSTONE & ARENACEOUS SHALE AND LAMINATED ARENACEOUS SHALE	65°
	65°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP - -

LABERGE SERIES

912.4 - 70° — — —

SANDSTONE - GREY, OCCASIONAL NARROW, ARGILLACEOUS BANDS

915.3 - 45° — — — —

926.3 - 65° — —

SANDSTONE — COAL & BLACK SHALE PARTINGS COMMON

927.8 - 55° —

928.5 —

929.5 — COAL

SHALE — BLACK, MASSIVE, SLIGHTLY ARENACEOUS MINOR NARROW COAL BANDS

SANDSTONE — GREY TO LIGHT BROWN MODERATELY ARGILLACEOUS, FINE - MEDIUM GREY SANDSTONE WITH IRREGULAR NARROW ARGILLACEOUS BANDS & PARTINGS COAL PARTINGS & LENSES COMMON

933.5 - 50° — SANDSTONE

934.0 - 40° —

935.1 - 50° — SHALE - BLACK MASSIVE WITH COAL PARTINGS GRADING INTO ARENACEOUS LAMINATED

937.0 - 70° — — —

938.3 - 55° — SHALE - BLACK, MASSIVE, SLIGHTLY ARENACEOUS, NARROW BANDS OF COAL

941.0 - 70° — — —

SHALE - BLACK MASSIVE WITH COAL PARTINGS & ARENACEOUS, LAMINATED

944.4 - 60° — —

946.1 - 55° — —

946.7 - 45° — — SHALE - BLACK MASSIVE WITH 0.2 FT COAL BAND

[illegible] SHALE - LAMINATED, [illegible] ARENACEOUS LAMINATED

950.6 - 60° —

SHALE - BLACK, MASSIVE, SLIGHT ARENACEOUS LAMINATED

957.0 - 70° — — —

959.8 - SHALE - 0.4 FT BLACK, MASSIVE

961.6 - 60° — —

SHALE - LIGHT COLORED, STRONGLY ARENACEOUS LAMINATED, MINOR BLACK SHALE WITH COAL PARTINGS

965.0 - 60° — —

966.4 - 70° — —

967.5 - 70° — SHALE - BLACK MASSIVE - 0.3 FT COAL ON UPPER CONTACT

968.2 —

SHALE - ARENACEOUS, LAMINATED

DIP

1

70°

65°

70°

55°

55°

60°

55°

65°

60°

60°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES :

DIP - -

HOLE NO 6

LABERGE SERIES

		DIP
967.2 - 75°	SHALE	
972.8 - 70°	SHALE - ARENACEOUS, WEAKLY LAMINATED	75°
974.1 - 65°		
978.5 - 70°	BLACK, MASSIVE, COAL PARTINGS	70°
979 p		
981.5 - 70°	SHALE - BLACK, MASSIVE WITH COAL PARTINGS GRADING INTO ARENACEOUS LAMINATED	65°
984.1 - 70°		
986.3 - 65°	SHALE - ARENACEOUS, WEAKLY LAMINATED	70°
989.8		
991.2 - 70°	SHALE - 0.3 FT	70°
993.6	SHALE - BLACK, SLIGHTLY ARENACEOUS WITH BANDS OF ARGILLACEOUS FINE GRAINED GREY SANDSTONE, MINOR PARTINGS OF COAL.	
995.8		
998.3 - 70°	SHALE - BLACK, MASSIVE WITH BANDS GRADATION MASSIVE TO WEAKLY LAMINATED ARENACEOUS	70°
1005 - END OF HOLE		

DRILL HOLE LOG
ARJAY KIRKER RESOURCES LTD.
NORDENSKIOLD COAL AREA

COORDINATES 22,322,503.29N ; -191,009.45E
ELEVATION - 2381.2
DIP -50°
AZIMUTH 040°
SCALE 1.5 ins. = 10.0 ft.

CORE SIZE NQ 0-548 FT.
HOLE STARTED 13 OCTOBER, 1972
HOLE COMPLETED 21 OCTOBER, 1972
LOGGED BY M.P. PHILLIPS

		DIP
	OVERBURDEN - GLACIAL TILL & WEATHERED BEDROCK	
131.0		
132.8	CONGLOMERATE	
135.0		
135.5	MUD	
	LABERGE SERIES SANDSTONE - LIGHT GREY, COARSE GRAINED TO GRITTY WITH BANDS UP TO 2 FT OF LIGHT BROWN FINE GRAINED, OCCASIONAL PARTINGS & FRAGMENTS OF BLACK SHALE & COAL	75°
		75°
148.2 - 75°	SHALE - BLACK, MASSIVE, HIGHLY BROKEN	
149.5		
151.0	SHALE - LIGHT - DARK GREY, LAMINATED & BEDDED SHALE & FINE GRAINED SANDSTONE	50°
154.2	SHALE - BLACK MASSIVE	
155.5	SANDSTONE - BROWN, MODERATELY ARGILLACEOUS, FINE - MEDIUM GRAINED WITH PARTINGS & WISPS OF BLACK SHALE	55°
161.8	SHALE - BLACK, MASSIVE, MINOR 0.2 FT BANDS OF BROWN ARGILLACEOUS SANDSTONE	
168.3	SANDSTONE - LIGHT GREY, COARSE GRAINED TO GRITTY, PARTINGS, NARROW BANDS AND LENSES OF COAL	60°
171.3		
171.8	SHALE - BLACK MASSIVE	
175.0		
174.5	SHALE - BLACK, MASSIVE	45°
178.8	SHALE - BLACK MASSIVE	

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 6

		DIP
181.7	SHALE - BLACK MASSIVE HIGHLY BROKEN	LABERGE SERIES - SANDSTONE	
183.7	SHALE - BLACK MASSIVE		55°
188.0	SANDSTONE - GREY, FINE GRAINED WITH MODERATE LAMINATIONS & NARROW BANDS OF BLACK SHALE		
190.0	CONTACT LOST		
	COAL - DULL BLACK.	- SANDSTONE - DARK BROWN TO BLACK, VERY FINE GRAINED, WEAK TO MODERATELY LAMINATED ARGILLACEOUS SANDSTONE	
193.5	- CONTACT LOST		
195.2	SHALE - BLACK MASSIVE HIGHLY BROKEN		50°
197.3			45°
			60°
			75°
214.3	SANDSTONE - PARTINGING & LENSES OF COAL	AFTER 214.3 - BECOMES STRONGLY ARGILLACEOUS AND DARKER IN COLOR, LAMINATIONS NOT PROMINENT	60°
215.2	COAL - 0.3 FT DULL BLACK		
216.0	IN A BLACK SHALE		
218.0	- GRADATIONAL CONTACT SHALE - BLACK MASSIVE		65°
220.0	GRADATIONAL CONTACT		
221.0	- GRADATIONAL CONTACT SHALE - BLACK MASSIVE THIN SANDSTONE LAMINATIONS		
222.4			65°
			60°
233.0	- CHILLED IRREGULAR CONTACT @ 70° PARALLEL TO BEDDING	HUTSHI GROUP - ANDESITE DARK GREEN FINE GRAINED INTRUSIVE WITH CHLORITE AND ALTERED FELDSPAR SPECKING. CHLORITE & CALCITE FILLED FRACTURES 0-30°	

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

DIP

HUTSHI GROUP - ANDESITE

265.0 CONTACT GROUND.

LABERGE SERIES - SANDSTONE & SHALE

LIGHT GREY TO BLACK, INTERLAMINATED VERY FINE GRAINED, WEAK TO MODERATE ARGILLACEOUS SANDSTONE AND BLACK ARENACEOUS SHALE STRONGLY X-BEDDED.

COAL - DULL BLACK IN PLACES SANDY.

268.5 — SHALE - BLACK MASSIVE, MINOR PARTINGS OF COAL

269.0 —

270.0 — SANDSTONE - DARK COLORED, MEDIUM GRAINED WITH FRAGMENT OF BLACK SHALE X-BEDDED — 36°

SHALE - BLACK, MASSIVE COAL PARTINGS

271.3 — GRADATIONAL — 70°

276.0 — —

SHALE - BLACK MASSIVE

278.5 — — — — 15°

282.8 BANDS TO 0.8FT OF GREY SANDSTONE

284.2 65° — — — — — — — — — —

SANDSTONE - LIGHT GREY, MEDIUM GRAINED TO GRITTY SANDSTONE OCCASIONAL PARTING OF ARENACEOUS SHALE — 70°

288.1 — — PARTINGS AND LENSES OF COAL AND SHALE

289.7 — — 70°

296.0 COAL PARTINGS

296.9 - 60° — — — — — — — — — —

SHALE - BLACK, WEAKLY BEDDED

299.5 - CONTACT GROUND

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

HOLE NO 6

PAGE 1 OF 3

COORDINATES :

DIP - -

		DIP
302.0	COAL - BLACK SHALE WITH PARTINGS AND BANDS OF BLACK SHINY COAL	LABERGE SERIES - SANDSTONE GREY, MEDIUM GRAINED SANDSTONE WITH OCCASIONAL PARTINGS & WISPS OF BLACK SHALE & COAL
304.6	SANDSTONE - BROWN, MEDIUM GRAINED, MODERATE TO STRONGLY ARGILLACEOUS WEAK LAMINATED	
305.0	SHALE - BLACK, MASSIVE	70°
306.0	SHALE & SANDSTONE - INTERBEDDED	60°
	SHALE - BLACK MASSIVE, OCCASIONAL ARENACEOUS LAMINATIONS	
308.5		
		50°
313.0 - 55°		
	SHALE - BLACK, MASSIVE	
315.0 - 55°		
315.0	SHALE - BLACK MASSIVE	
316.5		
317.0	CONTACT LOST	
	CAIRNES SEAM - COAL	50°
		50°
		55°
		55°
337	CONTACT LOST	
338.2	SANDSTONE - MEDIUM TO DARK GREY WEAK TO STRONG ARGILLACEOUS LAMINATED, X-BEDDED, FINE GRAINED SANDSTONE, PARTINGS OF COAL	SANDSTONE - GREY, ALTERNATING NARROW BANDS OF COARSE GRAINED & GRITTY SANDSTONE PARTINGS AND LENSES OF BLACK COAL COMMON SANDSTONE X BEDDED 35-60°
		65°
		50°
		60°
		55°

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 6

DIP

LABERGE SERIES - SANDSTONE - AS PAGE 5

56°

367.0 - 45° CONTACT

COAL

50°

371.0

PARTINGS & NARROW BANDS OF SHALE

375.5 - 45° CONTACT

ARENACEOUS SHALE

376.0

SHALE - BLACK MASSIVE

383.0 - 65° CONTACT

SANDSTONE - BROWN, MEDIUM TO COARSE GRAINED ARGILLACEOUS SANDSTONE

60°

387.6 - 45° CONTACT

SANDSTONE & SHALE - INTERLAMINATED AND INTERBANDED BLACK, SLIGHTLY ARENACEOUS SHALE AND GREY, FINE GRAINED SANDSTONE X-BEDDING AND SLUMPING FEATURES COMMON. SANDSTONE BANDS 0.1 TO 0.5 FT AV 0.2 FT

55

55°

50°

55°

55°

414.5 - 50° CONTACT

SANDSTONE - GREY, FINE GRAINED

417.0 - 56° CONTACT

BANDS OF SANDSTONE - GREY, FINE GRAINED BECOME LESS COMMON.

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES : DIP -

HOLE NO 6
PAGE 6 OF 8

DIP

LABERGE SERIES - SANDSTONE & SHALE AS PAGE 5; GREY FINE GRAINED SANDSTONE LAMINATION NOT AS COMMON

424.6 – CONTACT LOST
SANDSTONE - MEDIUM GREY GRITTY.
425.6 45° CONTACT

50°

55°

436.0 ——————————————————

BANDS UP TO 0.5 FT OF GREY FINE GRAINED SANDSTONE BECOME COMMON

55°

55°

446.4 - 60° CONTACT
SANDSTONE - FINE TO COARSE GRAINED BANDS WITH BLACK SHALE CASTS AND BANDS FROM 449.5

451.2 - 50° CONTACT
ALTERNATING BANDS OF BLACK SHALE WITH LAMINATIONS OF GREY SANDSTONE AND GREY FINE GRAINED SANDSTONE UP TO 0.5 FT

55°

454.0 - 60° CONTACT ——————————————————

SANDSTONE - GREY FINE GRAINED - OCCASIONALLY COARSE GRAINED, BLACK SPECKLED SANDSTONE, MINOR BLACK SHALE BANDS TO 0.1 FT AND UP TO 2 FT BANDS WITH BLACK SHALE LAMINATION CASTS OF BLACK SHALE SOMETIMES PRESENT

55°

60°

65°

60°

478.6 - 60° —————————————————— SANDSTONE & SHALE

DRILL HOLE LOG

ARJAY KIRKER RESOURCES LTD

DIVISION MOUNTAIN COAL PROSPECT

COORDINATES: DIP- HOLE NO 6

	DIP
LABERGE SERIES - SANDSTONE & SHALE BLACK, SLIGHTLY ARENACEOUS SHALE WITH MODERATE-NUMEROUS LAMINATIONS & BANDS UP TO 0.5 FT OF GREY FINE GRAINED SANDSTONE X-BEDDING & SLUMPING COMMON	55°
	60°
	55°
493.0 - 55° CONTACT --- SANDSTONE - GREY, FINE-MEDIUM GRAINED 497.4 - 55° CONTACT ---	55°
496.3 - 60° CONTACT --- SANDSTONE 497.2 - 60° CONTACT ---	
	65°
	65
	65°
510.0 ---- SANDSTONE - GREY, MEDIUM GRAINED BLACK SPECKLED SANDSTONE	60
516.0 - 65° CONTACT + - SHALE WITH SANDSTONE CASTS	65°
518.0 - 65° -- SANDSTONE - GREY, FINE-MEDIUM GRAINED WITH MINOR PARTINGS & LOAD CASTS OF BLACK SHALE 519.7 - SHALE 520.2 ---	60°
522.2 - 60° ------ GREY, FINE GRAINED SANDSTONE BANDS RARE-ABSENT AND LAMINATIONS NOT PROMINENT	60°
	60°
	45°
	65°
	65°

DRILL HOLE LOG

ARJAY KIRKER RESOURSES LTD
DIVISION MOUNTAIN COAL PROSPECT

COORDINATES:

DIP -

5410

LABERGE SERIES - SANDSTONE & SHALE

DIP
65°
70°

5480 END OF HOLE

136°15' 10' 05' 136°00'

RED RIDGE COAL OUTCROP

TERRITORIAL COAL LICENCE No. 11
TERRITORIAL COAL LICENCE No. 10

RED RIDGE

RIVER

80+00N

CUB MOUNTAIN

SEE FIG. 3

0+00

Teslin Cr.

To Braeburn 14 miles

BASELINE

DIVISION MOUNTAIN

140+00S

NORDENSKIOLD

Creek

Klusha

TERRITORIAL COAL LICENCE No. 10
TERRITORIAL COAL LICENCE No. 12

4000 3000 3400 3500 2500 2300 2700 3300

20'

LEGEND

- ACCESS TRAILS
- TRENCHING
- TERRITORIAL COAL BOUNDARY
- SYNCLINE

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GEOLOGICAL

61°15' 136°15' 10' 05' 61°15' 136°00'

FIG. 2

ARCHER, CATHRO & ASSOCIATES LTD.

LOCATION OF NORDENSKIOLD COAL AREA

NORDENSKIOLD COAL AREA
ARJAY KIRKER RESOURCES LTD.
TERRITORIAL COAL EXPLORATION
LICENCE No. 10

SCALE IN MILES
0

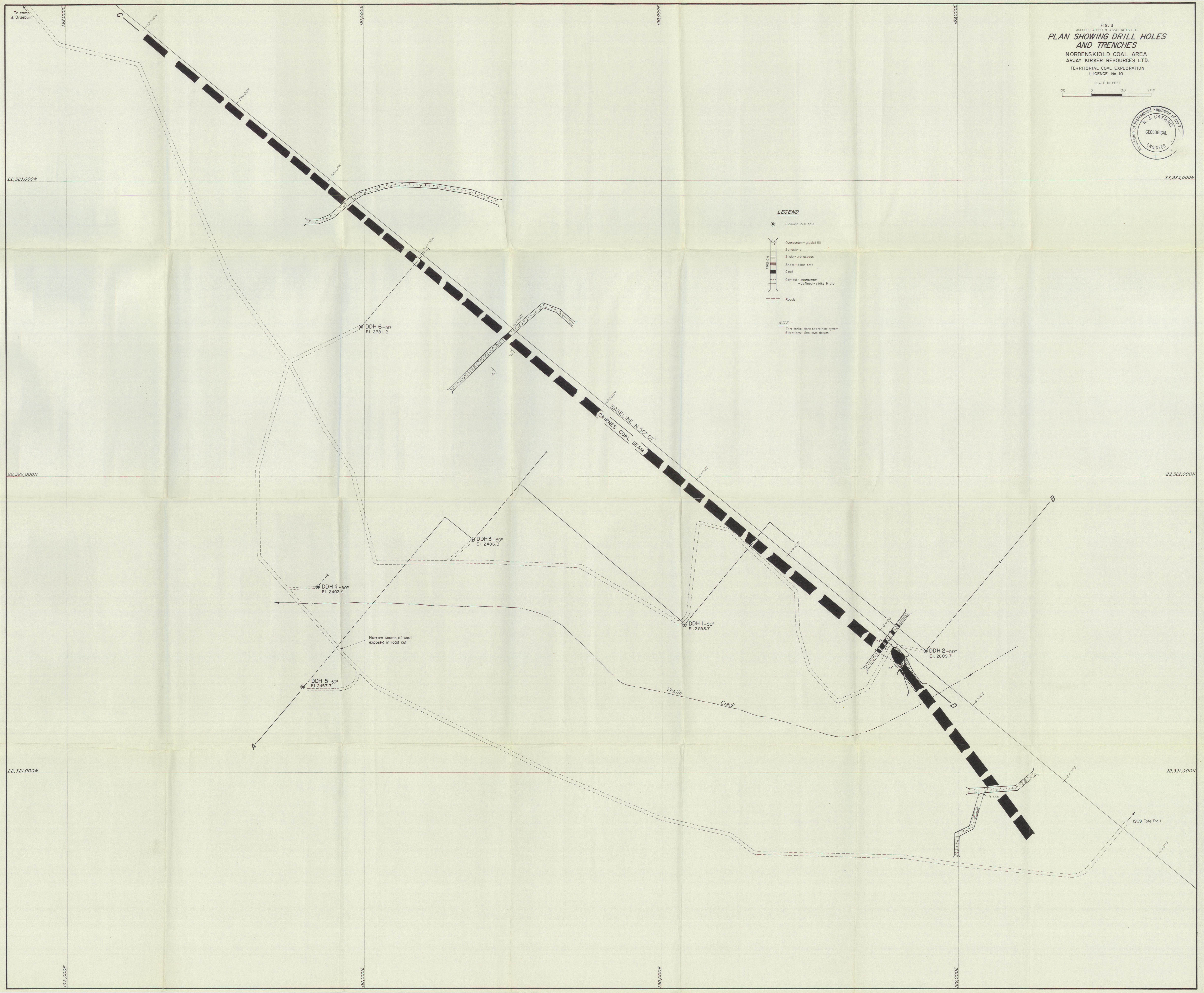

FIG. 3
ARCHER, CATHRO & ASSOCIATES LTD.
PLAN SHOWING DRILL HOLES AND TRENCHES
NORDENSKIOLD COAL AREA
ARJAY KIRKER RESOURCES LTD.
TERRITORIAL COAL EXPLORATION
LICENCE No. 10
SCALE IN FEET
100 0 100 200
Association of Professional Engineers of the Y
R. J. CATHRO
GEOLOGICAL
ENGINEER
LEGEND
Diamond drill hole
TRENCH
Overburden – glacial till
Sandstone
Shale – arenaceous
Shale – black, soft
Coal
Contact – approximate
" – defined – strike & dip
Roads
NOTE :-
Territorial plane coordinate system
Elevations- Sea level datum
To camp & Braeburn
192,000E
191,000E
190,000E
189,000E
22,323,000N
22,322,000N
22,321,000N
BASELINE N 50° 07'
CAIRNES COAL SEAM
DDH 6 -50°
El. 2381.2
DDH3 -50°
El. 2486.3
DDH 4 -50°
El. 2402.9
DDH 1 -50°
El. 2558.7
DDH 2 -50°
El. 2609.7
DDH 5 -50°
El. 2457.7
Narrow seams of coal exposed in road cut
Teslin Creek
1969 Tote Trail
A
B
C
D

S 40° W

DDH 1

N 40° E

2500'

2400'

2300'

2200'

2100'

AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault
		Core loss

CAIRNES SEAM

BASELINE

600 ft.

Association of Professional Engineers of the Yukon Territory
R. J. CATHRO
GEOLOGICAL
ENGINEER

FIG. 4

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION DDH 1

NORDENSKIOLD COAL AREA
ARJAY KIRKER RESOURCES LTD.
TERRITORIAL COAL EXPLORATION
LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

20 0 20 40

FIG. 5

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION DDH 2

NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION

LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

20 0 20 40

Association of Professional Engineers of the Yukon Territory
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GEOLOGICAL
ENGINEER

S 40° W

N 40° E

DDH 2

2600'

2500'

2400'

2300'

2200'

CAIRNES SEAM

BASELINE

AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault
		Core loss

600 ft

S 40° W

DDH 3

N 40°E

2400'

2300'

2200'

2100'

AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault
		Core loss

600 ft.

CAIRNES SEAM

BASELINE

Association of Professional Engineers of the Yukon Territory
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GEOLOGICAL
ENGINEER

FIG. 6

ARCHER, CATHRO & ASSOCIATES LTD

CROSS-SECTION DDH 3

NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION

LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

20 0 20 40

FIG. 7

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION DDH'S 4&5

NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION

LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

20 0 20 40

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GEOLOGICAL
ENGINEER

S 40°W

DDH 5

DDH 4

N 40°E

PROJECTED 160 ft S.E.

1025 ft

82 ft

2400'

2300'

2200'

2100'

2000'

1900'

1800'

1700'

M 00+8

AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault
		Core loss

FIG. 8

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION DDH 6

NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

20 0 20 40

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GEOLOGICAL
ENGINEER

2400'

S 40° W

DDH 6

N 40° W

2300'

2200'

CAIRNES SEAM

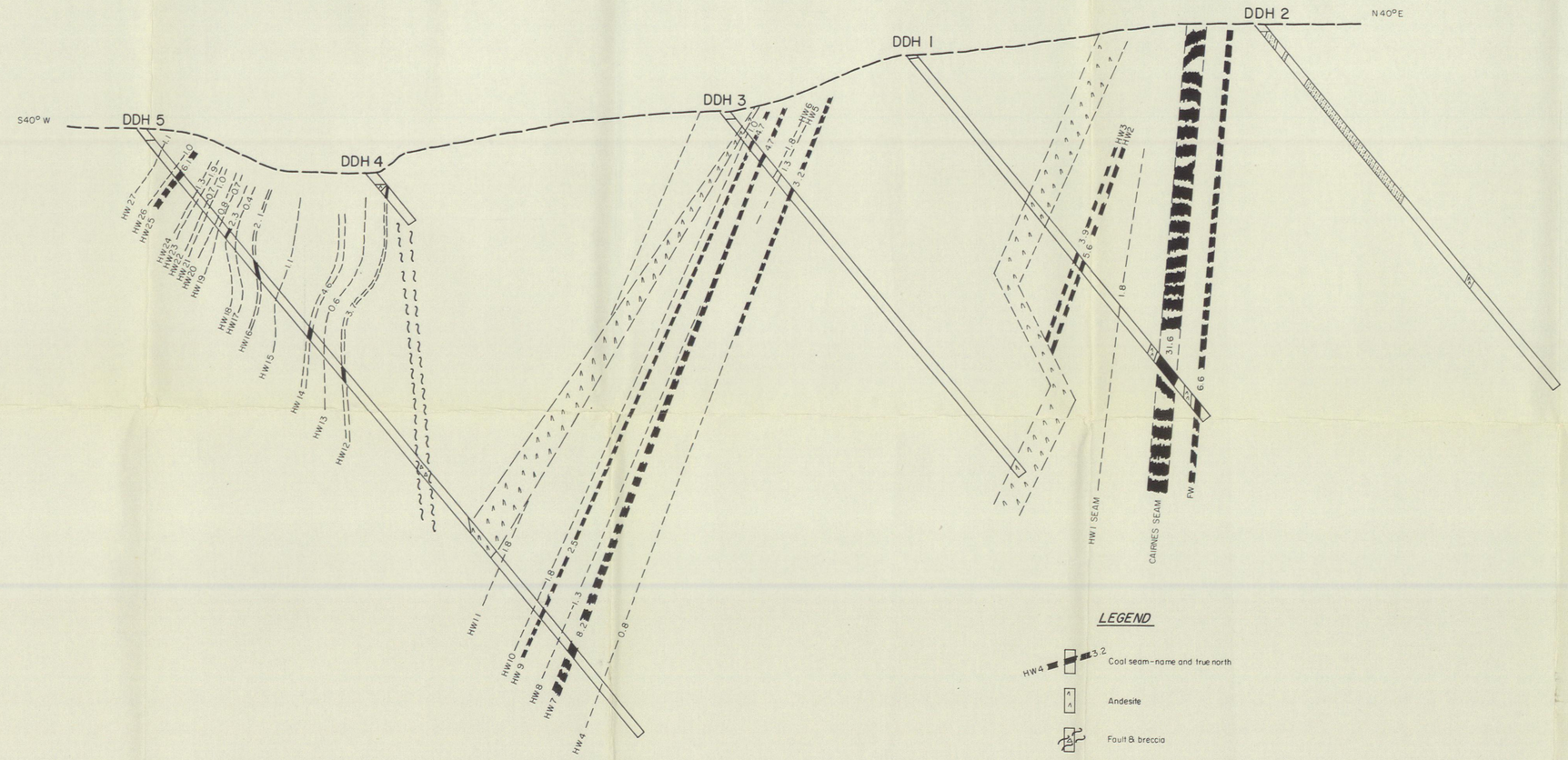
BASELINE

2100'

2000'

548 ft.

AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault
		Core loss



LEGEND

- Coal seam - name and true north
- Andesite
- Fault & breccia
- Stripy shale
- Sandstone & shale

NOTE - Section looking N50° W

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GEOLOGICAL
ENGINEER

FIG. 9

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION A-B

NORDENSKIOLD COAL AREA
ARJAY KIRKER RESOURCES LTD.
TERRITORIAL COAL EXPLORATION
LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

100 0 100 200

28+00N 24+00N 20+00N 16+00N 12+00N 8+00N 4+00N 0+00 4+00S

2700' 2600' 2500' 2400' 2300' 2200' 2100' 2000' 1900' 1800' 1700' 1600' 1500' 1400' 1300' 1200' 1100' 1000' 900'

DDH 1

TESLIN CREEK

ASSUMED BASE OF WEATHERING

DDH 6

BASE OF GLACIAL TILL

BEDROCK

15.4 CAIRNES SEAM

6.5 FW SEAM

31.6 CAIRNES SEAM

6.6 FW SEAM

BLOCK 1

LENGTH 1000 ft
WIDTH 15 ft
DEPTH 1200 ft
S.G. 23 Cu ft/ton

TONNAGE = $\frac{1000 \times 15 \times 1200}{23}$ = 782,608 = 782,500

BLOCK 2

LENGTH 500 ft
WIDTH 20 ft
DEPTH 1200 ft
S.G. 23 Cu ft/ton

TONNAGE = $\frac{500 \times 20 \times 1200}{23}$ = 521,782 = 521,750

BLOCK 3

LENGTH 1000 ft
WIDTH 30 ft
DEPTH 1200 ft
S.G. 23 Cu ft/ton

TONNAGE = $\frac{1000 \times 30 \times 1200}{23}$ = 1,565,217 = 1,565,250

TOTAL TONNAGE

BLOCK 1	=	782,500
BLOCK 2	=	521,750
BLOCK 3	=	1,565,250
TOTAL		2,869,500

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GEOLOGICAL
ENGINEER

FIG. 10

ARCHER, CATHRO & ASSOCIATES LTD.

VERTICAL LONGITUDINAL SECTION C-D ILLUSTRATING CAIRNES SEAM COAL RESERVES

NORDENSKIOLD COAL AREA

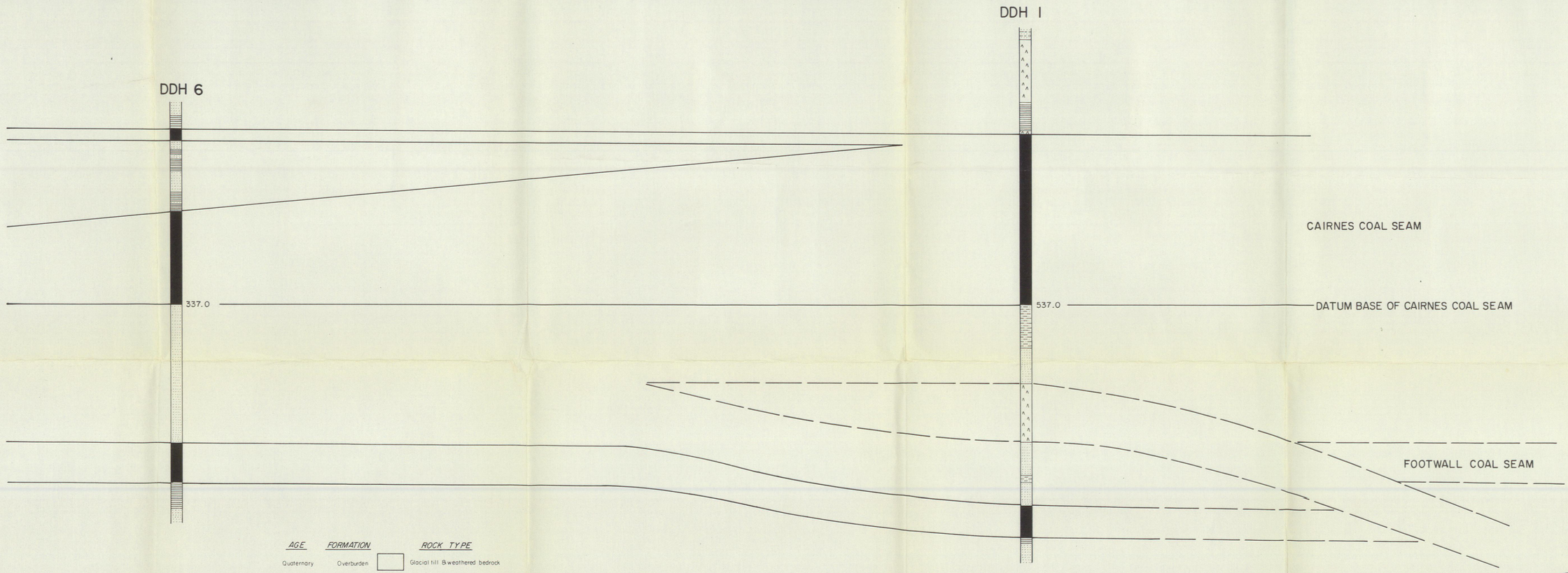
ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)

100 0 100 200

24+00N 20+00N 16+00N 12+00N 8+00N 4+00N 0+00



AGE	FORMATION	ROCK TYPE
Quaternary	Overburden	Glacial till & weathered bedrock
Cretaceous	Hutshi Group	Andesite
Jurassic	Laberge Series	Sandstone
		Conglomerate
		Shale – black soft
		Shale – laminated arenaceous
		Shale – massive arenaceous
		Coal
		Fault breccia
		Fault

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GEOLOGICAL ENGINEER

FIG. 11

ARCHER, CATHRO & ASSOCIATES LTD.

COLUMNAR SECTION DDH'S CAIRNES & FOOTWALL COAL SEAMS

NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION LICENCE No. 10

SCALE IN FEET

HORIZONTAL

100 0 100 200

VERTICAL

10 0 10 20