ASSESSMENT REPORT

CARMACKS SOUTH COAL PROJECT
REPORT ON 1979 AND 1980 FIELD WORK

Whitehorse Mining District
Yukon Territory

N.T.S. 115-I-1

Lat. 62°05' N
Long. 136°15' W

T. J. Adamson
May, 1981

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By:

T. J. Adamson

CYPRUS ANVIL MINING CORPORATION

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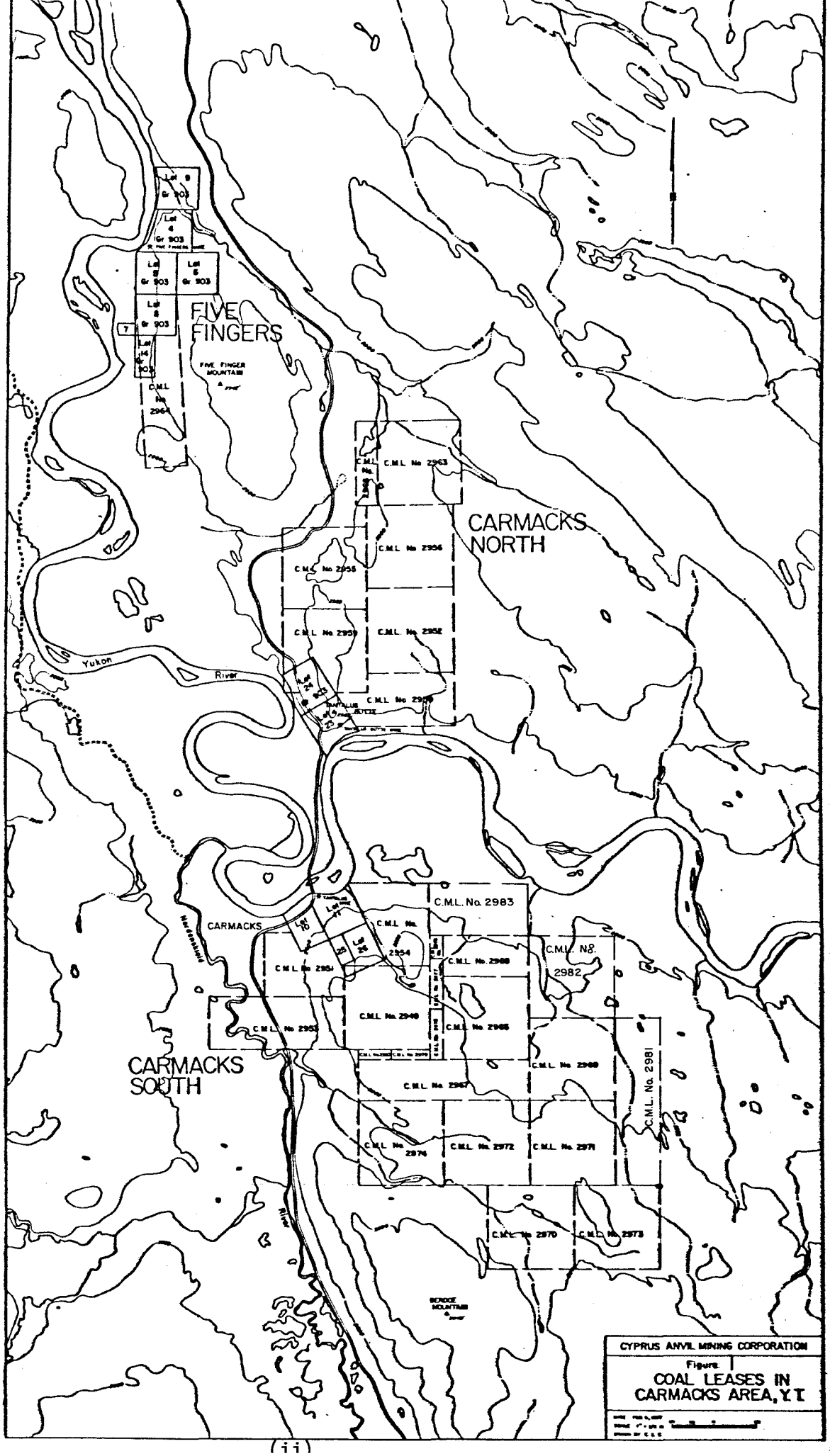
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CYPRUS ANVIL MINING CORPORATION
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CARMACKS SOUTH COAL PROJECT

INTRODUCTION

A substantial amount of exploration work was carried out on the Carmacks South coal leases by Cyprus Anvil Mining Corporation in 1976 and 1977. This work is described in detail in reports titled "Report on Preliminary Evaluation - Carmacks Coal Project", February 1977, by R.P. Hill, and "Report on 1977 Field Program - Carmacks Coal Project", April 1978, by R.P. Hill.

On these coal leases work has been hampered by extensive thick overburden cover. As a result, especially in the southern portion of the leases, geological interpretations were extremely speculative.

During 1979, a program of "down-the-hole-hammer" rotary drilling was initiated on Carmacks South leases in a previously unexplored area of almost total overburden cover. The objectives of this drilling program were to define the Tantalus Formation stratigraphy and investigate the coal potential of a large synclinal structure that was suggested by an earlier (1977) E.M. geophysical survey.

During the summer of 1980, as follow-up to the 1979 drilling, a number of new bulldozer trenches were excavated to expose coal seams for mapping and sampling. At the same time, a number of pre-existing bulldozer trenches were deepened for mapping and sampling purposes.

The 1979 and 1980 fieldwork has resulted in significant changes in the overall geological interpretation on the Carmacks South coal leases.

Presented in this report are the following:-

- A revised geology map (1" = 800') and sections (1" = 200')
- Rotary drill hole logs (holes CS-79-01 through CS-79-32)
- Rotary drill hole electrologs
- Analyses of rotary drill hole coal samples
- Geological sketches of 1980 bulldozer trenches and analyses of trench samples
- geological sketches of selected deepened pre-existing trenches and analyses of trench samples

LOCATION AND ACCESS

The "Carmacks South" block of coal leases are located south of the Yukon River and east of the Nordenskiold River, immediately south of the village of Carmacks, Y.T.

From Carmacks to the area of the leases on which drilling and trenching has been carried out, access is possible on bulldozer trails using four-wheel drive vehicles.

DRILLING

The 1979 down-hole-hammer rotary drilling was carried out under contract by Midnight Sun Drilling Ltd. of Whitehorse, Y.T. using a Schram T64 truck-mounted drill rig.

Footage drilled in the period August 17 - September 24, 1979, in 32 holes, totaled 11,041 feet (3365 m).

Chip samples were logged continuously at the drill site as drilling progressed. As long as the hole was dry, all return from coal seam intersections was collected. Samples from seam intersections greater than about 1 metre were retained for analyses. It was impossible to obtain a representative sample from coal intersections in wet holes.

ELECTROLOGGING

Electrologging of drill holes in which coal seams were intersected was carried out by BPB Instruments (Canada) Ltd. Logging was done in open holes. Some holes could not be logged at all, or to the planned depth because of caving. The suite of logs run included gamma ray, long spacing density, short spacing density, neutron and caliper logs. An attempt to run dipmeter logs was unsuccessful because of design problems with a new dipmeter sonde. Drill hole electrologs are included with this report as Appendix IV.

GEOLOGY (See Maps #1, 2, 3)

The 1979 rotary drilling was successful in defining the overall stratigraphy of the Tantalus Formation in the area drilled. Although no direct dip measurements are possible with rotary drilling, and the attempt to measure dips by an electrolog procedure was unsuccessful, sufficient distinctive units and distinctive contacts were encountered in the succession to define the general structural picture in the area of drilling. All drill holes were wholly within the Tantalus Formation. No holes encountered the underlying Laberge Group.

TABLE OF GEOLOGIC FORMATIONS

Age	Unit	Map Symbol	Thickness	Lithology
Pleistocene & Recent				Glacial and fluvioglacial gravels, sands, silts, volcanic ash
			—Unconformity—	
Eocene or Younger	Carmacks Group	3	up to 610 m	Basaltic, andesitic, dacitic, trachytic, and rhyolitic flow, breccias, tuffs
			—Unconformity—	
Lower Cretaceous and/or U. Jurassic	Tantalus Fm.	2	573 - 775 m	
		2i	33+ m	Conglomerate (quartz and chert pebbles)
		2h	107 - 152 m	Coal measures
		$2h_2$		Mudstone, sandstone, minor coal
		$2h_1$		Mudstone, sandstone, coal, conglomerate, ± felsitic flows or sills
		2g	137 - 198 m	
		$2g_2$		Conglomerate, conglomeratic sandstone, sandstone, minor mudstone, coal
		$2g_1$		Sandstone, conglomerate, mudstone, coal
		2f	24 - 34 m	Gritty mudstone
		2e	21 - 107 m	Quartzose conflomeratic sandstone and sandstone
		2d	20 m	Mudstone
		2c	91 m	Very clean quartz sandstone
		2b	18 m	Conglomerate (quartz & chert pebbles)
		2a	122+ m	Sandstone, conglomeratic sandstone, minor conglomerate
			—Unconformity—	
Lower and Middle Jurassic	Laberge Group	1	up to 2750 m	Sandstone, arkosic sandstone, cobble conglomerate (granite and volcanic cobbles) tuffaceous sandstone, shale

Within the Tantalus Formation, two significant coal members have been identified, that is, unit $2g_1$ and unit 2h.

Coal along the ridge in the northwest portion of the mapped area, and which was investigated by diamond drilling and trenching in 1976, was originally interpreted (Hill 1976/77) as occurring at the top of the Laberge Group. The 1979 drilling indicated that this coal was well within the Tantalus Formation, and at that time was thought to be in unit 2h. Bulldozer trenching in 1980, in trenches on lines 51+00 S, 104+00 S, 112+00 S, 120+00 S, and 124+00 S have now shown that this coal is, in fact, in unit 2g. The coal seams in this area are very lensy with very rapid variations in thickness both along strike and down dip. This is seen on examination of the 1980 geology map, trench sketches, and 1976 drill hole profiles. It is very difficult to correlate individual seams between even closely adjacent drill holes or trenches.

The unit 2g coals intersected in rotary drill hole CS-79-24 were followed up by surface trenching on lines 104+00 S, 112+00S, 120+00 S and 124+00 S. The surface work exposed a seam with a maximum thickness of about 2.1 m rather than the 4+ m that was interpreted from the drill hole intersection. The trenching also showed rapid lensing and extensive faulting in this area. It is probable that drill hole CS-79-24, because of structural complexity, intersected the coal seam at a much smaller angle than had been originally estimated.

The subdivision of unit 2g into units $2g_1$ and $2g_2$ is only possible along the west side of the basin. The two thin dirty coal seams, in an interval of mudstones and coaly mudstones, intersected in rotary drill holes CS-79-12, 4, 6, and 5 are in unit 2g but apparently higher in the sequence then the coal in drill hole CS-79-24.

Unit 2h can only be subdivided into unit $2h_1$ and $2h_2$ in the south area of the rotary drilling. In this area, $2h_2$ is restricted to mudstone, sandstone and minor coal, while unit $2h_1$ includes some comglomerate, more and thicker coal seams and some felsitic volcanic components. These volcanics have had the effect of metamorphosing the adjacent coal seams.

Unit 2h coal seams are generally less than 3 m thick with the vast majority less than 2 m thick. Seams exposed in trench L51S range up to about 3 m thick. The estimated true thickness of some of the 2h seams intersected in the rotary drill holes are probably in error because of undefined local structural complexities.

The unit 2h coal seams, like the unit 2g, coals appear to be very lensy and discontinuous making seam correlation very difficult. This is best illustrated on the Geological Cross Sections (Map #2).

COAL QUALITY

A. Coal in Unit $2g_1$

Analyses of unit $2g_1$ coals have been carried out on samples obtained from 1976 diamond drill holes (C-76-4, 6), from 1979 rotary drill hole CS-79-24, from 1976 trenches 29S, 30S, and from 1980 trenches on lines 112+00 S and 124+00 S.

Rank determination of unit $2g_1$ coals (ASTM method), based on the analyses of unoxidized drill hole samples, all indicate a rank of medium volatile bituminous. The trench samples all indicate a high degree of oxidation relative to the drill hole samples, with high residual moistures, higher volatiles, and lower heating values.

In the area of the 1976 diamond drill holes, the range of ash content (d.b.) in drill hole samples from C-76-4 and C-76-6 is from 22.1% to 51.4%. The ash content of seams exposed in trenches in this same area ranges from 28.4 - 38.6%. As noted earlier, correlation of coal seams along strike between trenches or down dip between trenches and drill holes is difficult with very rapid lensing and pinching of seams indicated.

The best quality of coal, on an as-received basis, from any small mineable blocks thay may possibly be defined in this area is approximately as follows:-

TM	Ash	Btu/lb.	Rank
8 - 10%	30%	9000	MvB

The coal intersected in rotary drill hole CS-79-24 suggested a thick seam of relatively low ash (22.1%), high heating value (11761 Btu/lb.), medium volatile bituminous coal. This seam, exposed in 1980 in bulldozer trenches on lines 104S, 112S, 120S, and 124S was seen at surface to have a maximum thickness of about 7' (2.1 m) with an ash content ranging from 31.9% to 48.9%. The coal exposed in trenches was very oxidized. Extensive faulting and lensing was evident in these trenches. There is no possibility of defining surface mineable reserves in this area.

B. Coal in Unit 2h

Analyses have been carried out on coal samples from seams intersected in the 1979 rotary drill holes. Unit 2h coals have only been exposed on surface in a 1980 trench (TR L51 S) located to the east of 1976 diamond drill hole CS-76-6. A number of analyses have been made of coal seams exposed in this trench.

On the basis of the 1979 rotary drill hole samples, unit 2h coals are seen, throughout the area drilled, to be very high in ash content (most samples in the range 40 - 65% ash, d.b.). The few thin $2h_2$ coals have a rank of medium-low volatile bituminous. In unit $2h_1$, the rank of coals is much higher, ranging from semi-anthracite to meta-anthracite. As was discussed previously, the reason for this high rank is thought to be the influence of some felsic volcanic components within the unit $2h_1$ section in this area. The flat lying area of unit $2h_1$, intersected by rotary holes CS-79-3, 12, and 4, on Section 112+00 S, provides the best coal section from a mining point of view. The average quality of all $2h_1$ seams greater than 1 m thick, from the above three drill holes is as follows (d.b.):-

Ash	Btu/lb.	Rank
45.9%	5940	AN

The best quality seam in this block, only 1.1 m thick, is as follows:-

Ash	Btu/lb.	Rank
28.7%	9867	AN

Sampling and analyses was carried out on 2h coals exposed in trench L51 S. Sample locations are shown on the trench sketch (Map #3). The A.S.T.M. rank of all coals exposed in this trench is medium volatile bituminous. The possibility exists, however, that the trench samples are highly oxidized and the calculated rank may be somewhat lower than the true unoxidized rank. Rank determinations based on vitrinite reflectance are not influenced to any great extent by oxidation. A check of the rank of these coals by reflectance measurements is being made. No volcanic members, thought responsible for the very high rank of unit 2h coals in the area of rotary drilling, were seen in this trench.

The range of ash and heating values for sampled seams, 1.5 - 3 m thick, in TR L51 S, is as follows (d.b.):-

Ash	24.3%	-	38%
Btu/lb.	10325	-	7807

The lowest ash coal occurs in a seam only 1.5 m thick.

The best quality of coal, on an as received basis, that could be mined from a combination of the two thickest seams in this area (3 m, 2.1 m) would be approximately as follows:-

TM	Ash	Btu/lb.	Rank
8 - 10%	31%	8050	MvB

DISCUSSION

The only area of unit $2g_1$ coals that appears to offer any surface mining potential occurs along the ridge in the area of the 1976 diamond drilling. However, as has been indicated, this area is structurally complicated and is cut by a number of faults. It is possible that, with more detailed work, a couple of blocks of coal, about 3 meters thick and each 300 - 400 meters in strike length could be outlined. However, mining these blocks for only 15 meters down dip would result in a stripping ratio well over 10:1 and total mineable reserves only in the order of 55,000 tonnes. The low reserves, high ash of the potential product, high mining cost that would result from the thick massive conglomerate immediately overlying the coal, and the difficult access to the area for a mining operation, all limit the possibility of operating in this area.

As previously mentioned, the unit 2_h coals, defined by the 1979 rotary drilling, have for the most part been very highly meta-morphosed, with the rank of most seams intersected ranging from semi-anthracite to meta-anthracite. This high rank is coupled with very high raw ash contents. Although these coals have not been exposed on surface, the close logging of rotary drill hole chips through the coal seam intervals suggested that the ash is finely divided and was not occurring as discreet waste partings.

Unit 2h, along the east margin of the syncline, between the fault at about line 72+00 S and extending south to about line 115+00 S contains a substantial tonnage of shallowly dipping, near surface, very high ash, anthracitic coal. This reserve block, with a strike length of about 1300 m, aggregate coal thickness of 8 m and with reserves calculated to 200 m down dip (to about 60 m of cover), contains about 3,750,000 tonnes of coal.

The furnaces in the heating plant at Faro, for both space heating and concentrate drying application, consist of spreader stokers with oscillating grates. This arrangement has the ability to burn a wider range of coal than any other stoker, ranging from lignite to semi-anthracite. Some anthracite can be burned in a mixture of up to 25% of total feed. However, as the rank of the coal increases, the amount of ash that can be tolerated in the feed is drastically reduced. It is highly unlikely that even a very sophisticated cleaning plant could upgrade the high rank $2h_1$ coals to an acceptable spreader stoker feed.

CONCLUSION AND RECOMMENDATIONS

Although a significant tonnage of in-situ coal has been defined on the Carmacks South coal leases, very little of it is amenable to utilization at Faro as a raw coal product.

The medium volatile unit 2g and unit 2h coals, along the ridge in the area of the 1976 diamond drilling, are of similar quality. That is, raw coal, on an as received basis, would contain about 30% ash and have a heating value of 8000 - 9000 Btu/lb. The rank of 2h coals in this area may be higher than preliminary analyses have indicated. It is possible that 8500 Btu/lb., 30% ash, medium volatile coal could be utilized at Faro if some major modifications were made to the furnace grates and ash handling system. Burning that quality of coal would increase the ash throughput by a factor of at least 2.5 times. It is understood that with the present furnace arrangement problems arise at ash levels in excess of 20%.

The structural complexity revealed in trench L51 S would indicate a potentially very difficult mining situation in this area. However, if the rank of HvB for this coal is confirmed by further petrographic work, some further exploration along strike to the north and south of this trench may be warranted. An attempt in 1980 to expose the unit 2h interval by bulldozer trenching in a trench along line 30+00 S was not successful because of very deep (7 m +) frozen overburden.

The only area of coal potential on the property not yet investigated occurs on the north-east half of coal lease [illegible]4. Unit 2h, on the east limb of the syncline, [illegible], in this area, dip into the hills [illegible], presenting a dip-slope situation as in the trenched west limb of the syncline and thus presents a less attractive mining possibility [illegible].

Unit $2g_1$ should also sub-crop in the north east half of coal lease 2954. The area is extensively overburden covered with the only outcrop consisting of linear exposures of massive conglomerate. No coal, as float or in place, has been observed in this area. At some point more exploration (drilling) may be justified in this area.

It is suggested that the Faro Engineering Department, through a consultant, determine the range of coal quality that can be utilized at Faro with the present furnaces, and what modifications could be made, at what cost, to burn higher ash and/or higher rank coals.

Respectfully submitted,

T. J. Adamson

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APPENDIX I

Statement of Qualifications

I, Thomas J. Adamson, geologist, with business address at 330 - 355 Burrard Street, Vancouver, British Columbia, and residential address at 3842 West 23rd Avenue, Vancouver, British Columbia, hereby state that:

1. I graduated from the University of British Columbia in 1967 with a B.Sc., majoring in geology.

2. From 1967 to the present, I have been actively engaged as a geologist on mineral and coal exploration programs in British Columbia, Alberta, and the Yukon Territory.

3. From 1972 to the present, I have been employed by Cyprus Anvil Mining Corporation of Vancouver, British Columbia.

4. I personally participated in and supervised all the 1979 and 1980 field work on the Carmacks South Coal Project and have compiled and interpreted all data resulting from this work.

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T. J. Adamson

May, 1981

APPENDIX II

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-01

Coal Lease No.: 2965
Grid Co-ordinates: 112S, 1+10W
Bearing: -
Dip: -90^{o}
Commenced: August 18, 1979
Completed: August 19, 1979
Ultimate Depth: 93.0 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 4.0	0.0- 1.2		Overburden.									
4.0-135.0	1.2- 41.1	2i	Conglomerate; pebbles of white to black chert, white to grey quartzite; matrix of fine-grained, light grey s.s.									
135.0-136.0	41.1- 41.5	$2h_2$	Coaly m.s.									
136.0-150.0	41.5- 45.7	+	Dark grey to black m.s.; some slightly carbonaceous.									
150.0-151.0	45.7- 46.0		Very carbonaceous m.s.									
151.0-155.0	46.0- 47.2		Grey m.s.									
155.0-156.0	47.2- 47.5		Black m.s.									
156.0-161.0	47.5- 49.1		Coaly m.s.									
161.0-173.0	49.1- 52.7		Thinly interbedded grey m.s. and coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-01

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
173.0-190.0	52.7- 57.9	$2h_2$	Massive medium grey m.s.									
190.0-195.0	57.9- 59.4	"	Medium grey, gritty m.s.									
195.0-202.0	59.4- 61.6		Massive dark grey m.s.									
202.0-205.0	61.6- 62.5		Interbedded grey m.s. and coaly m.s.									
205.0-255.0	62.5- 77.7		Massive medium to dark grey m.s. @ 255', 6" coaly m.s.									
255.0-277.0	77.7- 84.4		Interbedded grey m.s. and black carbonaceous m.s.									
277.0-280.0	84.4- 85.3		COAL.									
280.0-285.0	85.3- 86.9		Very carbonaceous m.s.									
285.0-289.0	86.9- 88.1		COAL.	86.9-88.1	1.2	1.2	69.6			0.24		
289.0-293.0	88.1- 89.3		Coaly m.s.									
293.0-297.0	89.3- 90.5		COAL.	89.3-90.5	1.2	1.2	75.5			0.24		
297.0-305.0	90.5- 93.0		Dark grey m.s.									

END OF HOLE 93.0 m.

Estimated Average Dip: 0^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_2$ - 2.4 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-02

Coal Lease No.: 2965
Grid Co-ordinates: 111+70S, 3+00E
Bearing: -
Dip: -90°
Commenced: August 19, 1979
Completed: August 22, 1979
Ultimate Depth: 152.4 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 3.0	0.0- 0.9		Overburden.									
3.0- 25.0	0.9- 7.6	$2h_2$	Brownish-grey, carbonaceous m.s., some slightly gritty.									
		↓										
25.0- 47.0	7.6- 14.3		Dark grey, massive m.s., some slightly carbonaceous, @ 47' coal < 1'.									
47.0- 60.0	14.3- 18.3		Carbonaceous m.s.									
60.0- 83.0	18.3- 25.3		Grey m.s.									
83.0- 87.0	25.3- 26.5		COAL.	25.3-26.5	1.2	1.0						
87.0-140.0	26.5- 42.7		Interbedded brownish-grey, massive m.s. to grey, black, finely laminated m.s.									
140.0-160.0	42.7- 48.8		Massive, dark greyish-brown m.s., tan dust.									
160.0-165.0	48.8- 50.3		Grey m.s.; grey dust.									
165.0-175.0	50.3- 53.3		Brownish-grey m.s., tan dust.									
175.0-177.0	53.3- 53.9		Interbedded thin COAL and black coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-02

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
177.0-182.0	53.9- 55.5	$2h_2$	Grey m.s.									
182.0-183.0	55.5- 55.8	+	COAL or very coaly m.s..									
183.0-188.0	55.8- 57.3		COAL.	55.8-57.3	1.5	1.3	24.4	24.2	51.4	0.53	6,192	MvB
188.0-193.0	57.3- 58.8		Carbonaceous m.s.									
193.0-220.0	58.8- 67.1		Grey m.s.									
220.0-225.0	67.1- 68.6		Grey, fine-grained s.s.									
225.0-232.0	68.6- 70.7		Carbonaceous m.s., a few thin coal beds.									
232.0-243.0	70.7- 74.1		Grey m.s., scattered thin (< 1') s.s. beds.									
243.0-250.0	74.1- 76.2		Interbedded grey m.s. and fine-grained "salt and pepper" s.s.									
250.0-251.0	76.2- 76.5		COAL.									
251.0-253.0	76.5- 77.1		Grey m.s.									
253.0-257.0	77.1- 78.3		COAL.	77.1-78.3	1.2	1.0						
257.0-262.0	78.3- 80.0		Carbonaceous m.s.									
262.0-287.0	80.0- 87.5		Brownish-grey m.s.									
287.0-294.0	87.5- 89.6		COAL.	87.5-89.6	2.1	1.8						
294.0-298.0	89.6- 90.8		Carbonaceous m.s.									
298.0-304.0	90.8- 92.7		Dark grey, massive m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-02

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
304.0-312.0	92.7- 95.1	$2h_2$ +	Interbedded very thin coal and carbonaceous m.s.									
312.0-320.0	95.1- 97.5		Fine-grained, medium grey, white spotted s.s., thin coaly beds.									
320.0-324.0	97.5- 98.8		Black m.s.									
324.0-347.0	98.8-105.8		Dark to medium grey m.s., scattered thin gritty beds.									
347.0-354.0	105.8-107.9	$2h_1$ +	Fine-grained s.s., medium to light grey, slightly conglomeratic with scattered quartz pebbles to 1/8".									
354.0-359.0	107.9-109.4		Coarse-grained s.s.									
359.0-366.0	109.4-111.6		Thinly inberbedded, light grey, siliceous m.s., gritty m.s. and medium-grained quartzose s.s.									
366.0-370.0	111.6-112.8		Carbonaceous m.s.									
370.0-373.0	112.8-113.7		COAL.									
373.0-379.0	113.7-115.5		Grey to black m.s.									
379.0-382.0	115.5-116.4		COAL.									
382.0-410.0	116.4-125.0		Dark grey m.s.									
410.0-420.0	125.0-128.0		Brownish-grey m.s.									
420.0-431.0	128.0-131.4		Course-grained quartzose s.s.; ground up, only sand return.									

DIAMOND DRILL HOLE LOG

Hole No. CS-79-02

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
431.0-435.0	131.4-132.6	$2h_1$	COAL.	131.4-132.6	1.2	1.0						
435.0-439.0	132.6-133.8	↓	Mudstone.									
439.0-440.0	133.8-134.1		Felsite.									
440.0-442.0	134.1-134.7		Black carbonaceous m.s.									
442.0-449.0	134.7-136.9		Very fine-grained, medium grey "salt and pepper" s.s.									
449.0-454.0	136.9-138.4		COAL.	136.8-138.4	1.5	1.3						
454.0-456.0	138.4-139.0		Fine-grained "salt and pepper" s.s.									
456.0-460.0	139.0-140.2		Interbedded coaly m.s., m.s., thin coal.									
460.0-473.0	140.2-144.2		Fine-grained, slightly "salt and pepper" s.s. Note: 473'+ - difficult to log, lots of cave, "blow-out" around casing.									
473.0-474.0	144.2-144.5		COAL.									
474.0-477.0	144.5-145.4		Porphyritic felsite.									
477.0-478.5	145.4-145.8		COAL.									
478.5-480.0	145.8-146.3		Sandstone and mudstone.									
480.0-484.0	146.3-147.5		Carbonaceous m.s.									
484.0-490.0	147.5-149.4		COAL, minor m.s.	147.5-149.4	1.9	1.6						

ROTARY DRILL HOLE LOG

Hole No. 79-CS-02

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
490.0-494.0	149.4-150.6	$2h_1$	Fine-grained, slightly "salt and pepper" s.s.									
		↓										
494.0-500.0	150.6-152.4		Dark grey, fine-grained s.s.									
			END OF HOLE 152.4 m.									
			Estimated Average Dip: 30^{o}									
			Total Estimated True Thickness of Coal in seams >1 m: $2h_2$ - 5.1 m $2h_1$ - 3.9 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-03

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 7+00E
Bearing: -
Dip: -90°
Commenced: August 22, 1979
Completed: August 23, 1979
Ultimate Depth: 152.4 m
Electrologged: 0 - 23.2 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 29.0	0.0- 8.8		Overburden.									
29.0- 33.0	8.8- 10.1	$2h_1$	Mudstone.									
33.0- 35.0	10.1- 10.7		COAL.									
35.0- 36.0	10.7- 11.0		Mudstone.									
36.0- 40.7	11.0- 12.4		COAL.	11.0-12.4	1.4	1.4	50.5	17.1	32.4	0.47	3,185	MvB
40.7- 44.6	12.4- 13.6		Mudstone.									
44.6- 47.9	13.6- 14.6		COAL.	13.6-14.6	1.0	1.0	35.1	16.9	48.0	0.61	5,142	LvB
47.9- 54.5	14.6- 16.6		Mudstone.									
54.5- 57.1	16.6- 17.4		COAL.									
57.1- 70.0	17.4- 21.3		Medium to dark grey, fine-grained, slightly porphyritic sill.									
70.0- 71.0	21.3- 21.6		COAL.									
71.0- 74.0	21.6- 22.6		Mudstone and sandstone.									
74.0- 76.0	22.6- 23.2		COAL.									

ROTARY DRILL HOLE LOG

Hole No. 79-CS-03

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
76.0- 82.0	23.2- 25.0	$2h_1$	Brownish-grey, carbonaceous m.s.									
82.0- 88.0	25.0- 26.8	+	Interbedded m.s., dark grey s.s., thin coal.									
88.0- 89.0	26.8- 27.1		COAL.									
89.0- 94.0	27.1- 28.7		Black m.s.									
94.0-100.0	28.7- 30.5		COAL.	28.7-30.5	1.8	1.8	60.7			0.31		
100.0-104.0	30.5- 31.7		Mudstone.									
104.0-110.0	31.7- 33.5		COAL.	31.7-33.5	1.8	1.8	52.8			0.18		
110.0-118.0	33.5- 36.0		Sandstone.									
118.0-121.0	36.0- 36.9		COAL.	36.0-36.9	0.9	0.9	42.6	6.7	50.7	0.32	3,135	AN
121.0-124.0	36.9- 37.8		Medium grey, fine-grained s.s.									
124.0-131.0	37.8- 39.9		Interbedded m.s., s.s., minor thin coal.									
131.0-138.0	39.9- 42.1		Grey to black m.s.									
138.0-148.0	42.1- 45.1		Brownish grey, muddy s.s.									
148.0-150.0	45.1- 45.7		Mudstone.									
150.0-152.0	45.7- 46.3		COAL.									
152.0-154.0	46.3- 46.9		Mudstone.									
154.0-157.0	46.9- 47.9		COAL.	46.9-47.9	1.0	1.0	61.1			0.33		

ROTARY DRILL HOLE LOG

Hole No. CS-79-03

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
157.0-160.0	47.9- 48.8	$2h_1$	Black mudstone.									
160.0-166.0	48.8- 50.6	↓	Grey-brown, muddy, fine-grained s.s., grading to clean, light grey s.s. by 164'.									
166.0-169.0	50.6- 51.5		Mudstone.									
169.0-172.0	51.5- 52.4		COAL.									
172.0-173.0	52.4- 52.7		Light grey, fine-grained sill.									
173.0-174.0	52.7- 53.0		COAL.									
174.0-177.0	53.0- 53.9		Light to dark grey, fine-grained sill.									
177.0-189.0	53.9- 57.6		COAL.	53.9-56.1 56.1-57.6	2.2 1.5	2.2 1.5	52.5 55.9			0.38 0.26		
189.0-191.0	57.6- 58.2		Black mudstone.									
191.0-198.0	58.2- 60.4		Fine-grained, light grey sill.									
198.0-202.0	60.4- 61.6		COAL.	60.4-61.6	1.2	1.2	44.6	8.5	46.9	0.24	3,202	AN
202.0-204.0	61.6- 62.2		Coaly m.s. or dirty coal.									
204.0-210.0	62.2- 64.0		Brownish, muddy matrix s.s.									
210.0-224.0	64.0- 68.3		Finely laminated, grey to brown m.s.									
224.0-258.0	68.3- 78.6	2g ↓	Fine-grained, brownish "salt and pepper" s.s.									
258.0-312.0	78.6- 95.1		Coarse-grained Tantalus conglomerate.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-03

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
312.0-314.0	95.1- 95.7	2g	COAL.									
314.0-360.0	95.7-109.7	+	Conglomerate.									
360.0-393.0	109.7-119.8		Fine-grained, medium grey, homogeneous "salt and pepper" s.s. Coarser grained with increasing depth.									
393.0-397.0	119.8-121.0		Dark grey-brown, slightly coaly m.s.									
397.0-500.0	121.0-152.4		Conglomerate.									

END OF HOLE 152.4 m.

Estimated Average Dip: 0^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 11.9 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-04

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 12+00E
Bearing: -
Dip: -90°
Commenced: August 24, 1979
Completed: August 25, 1979
Ultimate Depth: 152.4 m
Electrologged: 0 - 61.2 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 8.0	0.0- 2.4		Overburden.									
8.0- 16.0	2.4- 4.9		Coaly overburden.									
16.0- 24.0	4.9- 7.3	$2h_1$	Carbonaceous m.s.									
24.0- 26.0	7.3- 7.9	+	COAL.									
26.0- 27.0	7.9- 8.2		Carbonaceous m.s.									
27.0- 32.0	8.2- 9.8		Felsite.									
32.0- 39.0	9.8- 12.0		Carbonaceous m.s.									
39.0- 47.0	12.0- 14.2		Fine-grained, metamorphosed, calcareous s.s. or felsite.									
47.0- 49.0	14.2- 15.0		COAL.	14.2-15.0	0.8		56.7			0.35		
49.0- 52.0	15.0- 16.0		Felsite.									
52.0- 56.0	16.0- 17.1		COAL.	16.0-17.1	1.1	1.1	28.7	7.4	63.9	0.37	5,382	AN
56.0- 59.0	17.1- 18.0		Felsite.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-04

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
59.0- 65.0	18.0- 19.8	$2h_1$	COAL.	18.0-19.8	1.8	1.7	34.2	8.5	57.3	0.47	4,835	SA
65.0- 66.0	19.8- 20.0	+	Felsite.									
66.0- 71.0	20.0- 21.6		COAL.	20.0-21.6	1.6	1.5	41.4	10.7	47.9	0.44	3,326	SA
71.0- 72.0	21.6- 22.0		Mudstone.									
72.0- 74.0	22.0- 22.6		COAL.	22.0-22.6	0.6		57.3			0.42		
74.0- 75.0	22.6- 23.0		Coaly m.s.									
75.0- 78.0	23.0- 23.8		COAL.									
78.0- 81.0	23.8- 24.7		Felsite.									
81.0- 89.0	24.7- 27.0		COAL.	24.7-27.0	2.3	2.2	41.2	7.7	51.1	0.44	4,489	AN
89.0- 93.0	27.0- 28.5		Coaly m.s.									
93.0-100.0	28.5- 30.6		Felsite.									
100.0-102.0	30.6- 31.2		COAL.	30.6-31.2	0.6		78.9			0.11		
102.0-106.0	31.2- 32.3		Coaly m.s.									
106.0-108.0	32.3- 32.8		COAL.	32.3-32.8	0.5		80.1			0.11		
108.0-112.0	32.8- 34.0		Coaly m.s.									
112.0-121.0	34.0- 36.8		Felsite.									
121.0-122.0	36.8- 37.2		Coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-04

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
122.0-125.0	37.2- 38.0	$2h_1$	Felsite..									
125.0-126.0	38.0- 38.4	↓	COAL.									
126.0-128.0	38.4- 39.0		Felsite.									
128.0-131.0	39.4- 40.0		COAL.									
131.0-133.0	40.0- 40.4		Felsite.									
133.0-141.0	40.4- 43.0		COAL.	40.4-43.0	1.6	1.5	62.7			0.25		
141.0-146.0	43.0- 44.5		COAL, reddish dust.	43.0-44.5	1.5	1.4	51.5			0.35		
146.0-157.0	44.5- 47.8		Porphyritic (feld.), biotitic felsite.									
157.0-165.0	47.8- 50.2		COAL.	47.8-50.2	2.4	2.3	51.4			0.22		
165.0-188.0	50.2- 57.3		Brownish muddy matrix s.s.									
188.0-216.0	57.3- 65.8	2g ↓	Fine-grained muddy matrix "salt and pepper" s.s.									
216.0-248.0	65.8- 75.6		Medium to coarse-grained Tantalus conglomerate.									
248.0-252.0	75.6- 76.8		Fine-grained "salt and pepper" s.s.									
252.0-350.0	76.8-106.7		Tantalus conglomerate to coarse s.s.									
350.0-368.0	106.7-112.2		Medium grey, fine-grained, homogeneous "salt and pepper" s.s.									
368.0-380.0	112.2-115.8		Coarse-grained, quartzose s.s. to fine-grained "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-04

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
380.0-386.0	115.8-117.7	2g	Brown mudstone.									
386.0-409.0	117.7-124.7		COAL, coaly m.s., black m.s. Difficult to log, only black sludge return.	-	-	?	61.7			0.22		
409.0-440.0	124.7-134.1		Brown to black m.s.									
440.0-500.0	134.1-152.4		Tantalus conglomerate.									
			END OF HOLE 152.4 m.									

Estimated Average Dip: 15^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 11.7 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-05

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 17+00E
Bearing: -
Dip: -90°
Commenced: August 25, 1979
Completed: August 26, 1979
Ultimate Depth: 123.1
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 10.0	0.0- 3.0		Overburden.									
10.0- 42.0	3.0- 12.8	2g +	Conglomerate, pebbles, white quartz, grey to black chert.									
42.0- 80.0	12.8- 24.4		Conglomeratic, coarse-grained s.s.									
80.0- 83.0	24.4- 25.3		Gritty m.s.									
83.0- 93.0	25.3- 28.3		Interbedded, fine-grained s.s. and gritty m.s.									
93.0- 99.0	28.3- 30.2		Mudstone.									
99.0-100.0	30.2- 30.5		COAL.									
100.0-101.0	30.5- 30.8		Mudstone.									
101.0-105.0	30.8- 32.0		COAL.									
105.0-106.0	32.0- 32.3		Dirty COAL.	30.8-34.4	3.6	2.8	59.9			0.19		
106.0-113.0	32.3- 34.4		COAL.									
113.0-129.0	34.4- 39.3		Brownish m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-05

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
129.0-133.0	39.3- 40.5	2g	Coaly m.s.									
133.0-135.0	40.5- 41.1	+	COAL.									
135.0-137.0	41.1- 41.8		Mudstone.									
137.0-322.0	41.1- 98.1		Tantalus conglomerate to coarse-grained quartzose s.s.									
322.0-334.0	98.1-101.8		Distinctive reddish-brown, gritty m.s.									
334.0-375.0	101.8-114.3		Conglomerate.									
375.0-380.0	114.3-115.8		Interbedded, coarse-grained s.s. and reddish, gritty m.s.									
380.0-404.0	115.8-121.3		Conglomerate and conglomeratic, coarse-grained quartzose s.s.									

END OF HOLE 121.3 m.

Estimated Average Dip: 38^{o}

Total Estimated True Thickness of Coal in seams >1 m: 2g - 2.8 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-06

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 16+00E
Bearing: -
Dip: -90°
Commenced: August 26, 1979
Completed: August 26, 1979
Ultimate Depth: 68.3 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 12.0	0.0- 3.7		Overburden.									
12.0- 22.0	3.7- 6.7	2g +	Fine-grained to medium-grained, medium grey-brown, muddy matrix, slightly "salt and pepper" s.s.									
22.0-108.0	6.7- 32.9		Conglomeratic s.s.									
108.0-120.0	32.9- 36.6		Gritty, laminated m.s.									
120.0-134.0	36.6- 40.8		Coarse s.s., thin interbedded m.s.									
134.0-142.0	40.8- 43.3		Medium-grained to coarse-grained quartzose s.s.									
142.0-146.0	43.3- 44.5		Fine-grained, brownish, muddy matrix s.s.									
146.0-156.0	44.5- 47.5		Medium-grained, quartzose conglomeratic s.s.									
156.0-166.0	47.5- 50.6		Fine-grained, slightly conglomeratic s.s.									
166.0-170.0	50.6- 51.8		Very dirty COAL.	50.6-51.8	1.2	.94						
170.0-173.0	51.8- 52.7		Thinly interbedded m.s., s.s., coal.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-06

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
173.0-177.0	52.7- 53.9	2g	COAL.	52.7-53.9	1.2	.94	35.0	19.8	45.2	0.51	5,212	MvB
177.0-190.0	53.9- 57.9	↓	Mudstone.									
190.0-224.0	57.9- 68.3		Conglomerate and coarse-grained s.s.									
			END OF HOLE 68.3 m.									
			Estimated Average Dip: 38^{o}									
			Total Estimated True Thickness of Coal in seams >1 m: 1.9 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Drill Hole No. CS-79-07

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 22+00E
Bearing: -
Dip: -90°
Commenced: August 26, 1979
Completed: August 27, 1979
Ultimate Depth: 152.4 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 5.0	0.0- 1.5		Overburden.									
5.0-100.0	1.5- 30.5	2g	Tantalus conglomerate.									
100.0-125.0	30.5- 38.1	2f	Fine-grained, medium brown, gritty m.s. to brown m.s.									
125.0-135.0	38.1- 41.1	↓	Dark grey-brown, gritty m.s.									
135.0-200.0	41.1- 61.0		Massive grey, fine-grained gritty m.s.									
200.0-210.0	61.0- 64.0		Dark reddish-brown m.s.									
210.0-218.0	64.0- 66.4	2e	Interbedded, coarse-grained s.s. and brown m.s.									
218.0-248.0	66.4- 75.6	↓	Conglomeratic s.s., slightly "salt and pepper".									
248.0-280.0	75.6- 85.3		Fine to coarse-grained s.s., slightly conglomeratic, white voluminous dust.									
280.0-285.0	85.3- 86.9		Brown gritty m.s.									
285.0-300.0	86.9- 91.4		Fine to medium-grained s.s., muddy matrix, scattered conglomeratic beds.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-07

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
300.0-303.0	91.4- 92.4	2e	Medium to coarse-grained quartzose s.s.									
303.0-314.0	92.4- 95.7	+	Fine-grained, brownish-grey, muddy matrix s.s., slightly conglomeratic.									
314.0-410.0	95.7-125.0		Fine-grained, grey, slightly "salt and pepper" s.s., scattered thin conglomeratic beds and 365-385 conglomeratic.									
410.0-440.0	125.0-134.1		Interbedded, fine to coarse-grained quartzose s.s.									
440.0-444.0	134.1-135.3		Very fine-grained, dark grey s.s.									
444.0-456.0	135.3-139.0		Interbedded, fine to coarse-grained quartzose s.s.									
456.0-459.0	139.0-140.0		Coarse-grained, quartzose s.s.									
459.0-470.0	140.0-143.3		Interbedded fine to coarse-grained quartzose s.s., some slightly conglomeratic.									
470.0-478.0	143.3-145.7		Conglomeratic, coarse-grained, quartzose s.s.									
478.0-489.0	145.7-149.0		Interbedded, fine to coarse-grained quartzose s.s.									
489.0-500.0	149.0-152.4	2d?	Dark grey m.s., some sections gritty.									
			END OF HOLE 152.4 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-08

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 22+50E
Bearing: -
Dip: -90°
Commenced: August 27, 1979
Completed: August 27, 1979
Ultimate Depth: 39.6 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 7.0	0.0- 2.1		Overburden.									
7.0- 31.0	2.1- 9.4	2g	Conglomerate.									
31.0- 32.0	9.4- 9.8	↓	Muddy matrix s.s.									
32.0-107.0	9.8- 32.6		Conglomerate.									
107.0-128.0	32.6- 39.0		Medium brown, massive, gritty m.s. to m.s.									
128.0-130.0	39.0- 39.6		Dark grey m.s.									
			END OF HOLE 39.6 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-09

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 27+82E
Bearing: -
Dip: -90°
Commenced: August 28, 1979
Completed: August 28, 1979
Ultimate Depth: 152.4 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 59.0	0.0- 18.0		Overburden.									
59.0- 81.0	18.0- 24.7	2e ↓	Fine to medium-grained, massive grey muddy matrix s.s.									
81.0-134.0	24.7- 40.8		Fine to medium-grained clean s.s., some sections with coarse-grained sand sized rounded quartz and chert grains up to 30%.									
134.0-144.0	40.8- 43.9		Slightly conglomeratic, fine to medium-grained grey s.s.									
144.0-240.0	43.9- 73.1		Fine to medium-grained, light to dark grey s.s., some sections with abundant, coarse-grained, rounded sand sized quartz grains to 20%.									
240.0-270.0	73.1- 82.3		Medium to coarse-grained, very quartzose s.s., white dust.									
270.0-295.0	82.3- 89.9		Fine to medium-grained, light to dark grey s.s., some sections with abundant, coarse-grained, rounded sand sized quartz grains to 20%.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-09

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
295.0-308.0	89.9- 93.9	2e	Very fine-grained, brownish, muddy matrix s.s.									
308.0-374.0	93.9-114.0	2d	Dark greyish-brown m.s., massive to finely laminated. Same unit as bottom of Hole No. CS-79-07.									
374.0-443.0	114.0-135.0	2c +	Fine to coarse-grained, very light grey to white, very quartzose s.s., layer rounded quartz grains throughout; voluminous white dust; distinctive.									
443.0-444.0	135.0-135.3		Brown m.s.									
444.0-500.0	135.3-152.4		Fine to coarse-grained, very light grey to white, very quartzose s.s., layer rounded quartz grains throughout; voluminous white dust; distinctive.									
			END OF HOLE 152.4 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Drill Hole No. CS-79-10

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 33+00E
Bearing: -
Dip: -90°
Commenced: August 29, 1979
Completed: August 30, 1979
Ultimate Depth: 135.6 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 7.0	0.0- 2.1		Overburden.									
7.0- 31.0	2.1- 9.4	2d	Dark brown m.s.									
31.0- 45.0	9.4- 13.7	↓	Very dark, greyish-brown m.s.									
45.0- 62.0	13.7- 18.9		Brown, very gritty m.s. to muddy s.s.									
62.0-445.0	18.9-135.6	2c	Very clean, pure, light grey to white quartz s.s., voluminous white dust. 62.0- 64.0: fine-grained; 64.0-315.0: interbedded, fine-grained; medium-grained, coarse-grained; 315.0-445.0: coarse-grained predominates, thin beds fine-grained, medium-grained.									

END OF HOLE 135.6 m.

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Drill Hole No. CS-79-11

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 38+50E
Bearing: -
Dip: -90^{0}
Commenced: August 30, 1979
Completed: September 6, 1979
Ultimate Depth: 178.0 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 6.0	0.0- 1.8		Overburden.									
6.0- 54.0	1.8- 16.5	2b	Typical Tantalus conglomerate.									
54.0- 66.0	16.5- 20.1	2a	Light grey, clean, medium to fine-grained quartzose s.s.									
66.0- 69.0	20.1- 21.0		Fine-grained, brownish muddy matrix s.s.									
69.0- 72.0	21.0- 21.9		Clean, light grey, medium-grained s.s.									
72.0- 75.0	21.9- 22.9		Fine-grained, brownish muddy matrix s.s.									
75.0-186.0	22.9- 56.7		Clean, light grey, medium-grained quartzose s.s.									
186.0-188.0	56.7- 57.3		Dark grey-brown m.s.									
188.0-195.0	57.3- 59.4		Interbedded, fine-grained, light grey s.s., brownish, fine-grained s.s., and dark brown to grey m.s.									
195.0-219.0	59.4- 66.8		Fine-grained, medium to light grey s.s.									
219.0-221.0	66.8- 67.4		Dark brownish-grey, massive m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-11

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
221.0-225.0	67.4- 68.6	2a +	Medium, brownish-grey, finely laminated, gritty m.s.									
225.0-234.0	68.6- 71.3		Massive, gritty m.s.. to muddy, very fine-grained s.s.									
234.0-260.0	71.3- 79.2		Fine-grained, muddy matrix, crumbly s.s.									
260.0-278.0	79.2- 84.7		Interbedded, dark brown, slightly coaly m.s. and brown m.s.									
278.0-292.0	84.7- 89.0		Very fine-grained, brownish-grey s.s.									
292.0-330.0	89.0-100.6		Fine-grained, grey s.s.									
330.0-424.0	100.6-129.2		Light grey, medium-grained s.s.									
424.0-584.0	129.2-178.0		Medium-grained, grey, quartzose s.s., slightly conglomeratic. 454.0-464.0: conglomeratic s.s.									
			END OF HOLE 178.0 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-12

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 9+50E
Bearing: -
Dip: -90°
Commenced: September 6, 1979
Completed: September 8, 1979
Ultimate Depth: 167.0 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 20.0	0.0- 6.1		Overburden; some very coaly layers in overburden.									
20.0- 24.0	6.1- 7.3	$3h_1$	Grey-brown, fine-grained, biotitic sill.									
24.0- 34.0	7.3- 10.4	↓	COAL.	7.3-10.4	3.1	3.1	49.1	8.7	42.2	0.32	3,222	SA
34.0- 43.0	10.4- 13.1		Carbonaceous m.s., thin voluminous, gritty m.s.									
43.0- 52.0	13.1- 15.8		Quartzite.									
52.0- 54.0	15.8- 16.5		Mudstone.									
54.0- 55.0	16.5- 16.8		COAL.									
55.0- 66.0	16.8- 20.1		Porphyritic felsite sill.									
66.0- 66.5	20.1- 20.3		COAL.									
66.5- 82.0	20.3- 25.0		Fine-grained, light grey, porphyritic biotitic sill.									
82.0- 99.0	25.0- 30.2		COAL, thin m.s.	25.0-30.2	5.2	5.2	38.1	7.1	54.8	0.49	4,926	AN

ROTARY DRILL HOLE LOG

Hole No. CS-79-12

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
99.0-105.0	30.2- 32.0	$3h_1$	Coaly m.s.									
105.0-113.0	32.0- 34.4	"	Felsite.									
113.0-114.0	34.4- 34.7		COAL.									
114.0-118.0	34.7- 36.0		Felsite.									
118.0-121.0	36.0- 36.9		COAL.									
121.0-124.0	36.9- 37.8		Muddy s.s., thin coal.									
124.0-134.0	37.8- 40.8		COAL.	37.8-40.8	3.0	3.0	46.9	12.8	40.3	0.32	3,463	lvb
134.0-153.0	40.8- 46.6		Brown, gritty m.s., some coaly.									
153.0-175.0	46.6- 53.3		Dark grey, fine-grained, siliceous, biotitic sill.									
175.0-180.0	53.3- 54.9		Fine-grained s.s.									
180.0-186.0	54.9- 56.7		Conglomerate, grey chert predominates.									
186.0-217.0	56.7- 66.1		Fine-grained, grey-brown "salt and pepper" s.s.									
217.0-221.0	66.1- 67.4		COAL.	66.1-67.4	1.3	1.3						
221.0-227.0	67.4- 69.2		Felsite.									
227.0-229.0	69.2- 69.8		COAL.									
229.0-258.0	69.8- 78.6		Fine-grained, medium grey, porphyritic biotitic sill.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-12

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
258.0-262.0	78.6- 79.9	$3h_1$	Medium brown to black m.s.									
262.0-373.0	79.9-113.7	2g	Conglomeratic s.s. to conglomerate.									
373.0-378.0	113.7-115.2	↓	Dark brown, gritty m.s.									
378.0-386.0	115.2-117.7		Fine to medium-grained, medium grey "salt and pepper" s.s., some very thin coaly beds.									
386.0-400.0	117.7-121.9		Conglomeratic "salt and pepper" s.s. and conglomerate.									
400.0-413.0	121.9-125.9		Conglomerate, grey chert pebbles predominate.									
413.0-418.0	125.9-127.4		Dark brown m.s.									
418.0-469.0	127.4-143.0		Medium-grained "salt and pepper" s.s., increasing in coarseness to conglomerate by 430'.									
469.0-471.0	143.0-143.6		Mudstone.									
471.0-477.0	143.6-145.4		COAL, thin m.s.									
477.0-480.0	145.4-146.3		COAL and m.s ., 50/50%	143.6-145.4	1.8	1.8						
480.0-481.0	146.3-146.6		Mudstone.									
481.0-488.0	146.6-148.7		COAL.	146.6-148.7	2.1	2.1						
488.0-504.0	148.7-153.6		COAL and m.s., 50/50%.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-12

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
504.0-514.0	153.6-156.7	2a	Dark brown m.s. and grey gritty m.s.									
514.0-520.0	156.7-158.5	↓	Gritty m.s.									
520.0-525.0	158.5-160.0		Dark brown m.s.									
525.0-535.0	160.0-163.1		Gritty m.s.									
535.0-545.0	163.1-166.1		Dark brown m.s. and grey gritty m.s.									
545.0-548.0	166.1-167.0		Conglomeratic s.s.									

END OF HOLE 167.0 m.

Estimated Average Dip: 0^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 12.6 m
2g - 3.9 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-22

Coal Lease No.: 2965
Grid Co-ordinates: 112S, 9+50W
Bearing: -
Dip: -90^{o}
Commenced: September 20, 1979
Completed: September 20, 1979
Ultimate Depth: 98.5 m
Electrologged: 0 - 94.5 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 11.0	0.0- 3.4		Overburden.									
11.0- 16.4	3.4- 5.0	$3h_1$	Mudstone, coaly m.s.									
16.4- 22.3	5.0- 6.8	+	COAL, very soft, rotten, ashy.	5.0- 6.8	1.8	1.6						
22.3- 42.7	6.8- 13.0		Mudstone, gritty m.s., some slightly coaly.									
42.7- 52.5	13.0- 16.0		Fine-grained, muddy matrix, light grey s.s.									
52.5- 55.8	16.0- 17.0		Gritty m.s.									
55.8- 56.8	17.0- 17.3		Felsite sill??									
56.8- 59.1	17.3- 18.0		Gritty m.s.									
59.1- 62.3	18.0- 19.0		Mudstone.									
62.3- 64.3	19.0- 19.6		COAL.									
64.3- 66.3	19.6- 20.2		Brown m.s.									
66.3- 69.5	20.2- 21.2		COAL.	20.2-21.2	1.0	0.9	34.7	19.4	45.9	0.51	5,303	MvB

ROTARY DRILL HOLE LOG

Hole No. CS-79-22

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
69.5- 72.2	21.2- 22.0	$2h_2$	Mudstone.									
72.2- 74.1	22.0- 22.6	↓	COAL.									
74.1- 78.7	22.6- 24.0		Mudstone, some coaly.									
78.7- 85.3	24.0- 26.0		Thinly interbedded thin coal, dark m.s., light grey s.s.									
85.3- 88.6	26.0- 27.0		Coaly m.s.									
88.6- 95.1	27.0- 29.0		COAL.	27.0-29.0	2.0	1.8	43.6	17.0	39.4	0.38	3,544	MvB
95.1-101.7	29.0- 31.0		Mudstone.									
101.7-105.0	31.0- 32.0		COAL.	31.0-32.0	1.0	0.9	49.7	10.7	39.6	0.22	2,993	SA
105.0-107.0	32.0- 32.6		Coaly m.s.									
107.0-111.5	32.6- 34.0		COAL.	32.6-34.0	1.4	1.3						
111.5-114.8	34.0- 35.0		White, fine-grained, slightly porphyritic felsite sill.									
114.8-118.1	35.0- 36.0		Coal and coaly m.s.									
118.1-120.7	36.0- 36.8		White, fine-grained, slightly porphyritic felsite sill?									
120.7-121.7	36.8- 37.1		Black m.s.									
121.7-124.3	37.1- 37.9		COAL.	37.1-37.9	0.8	47.8	13.0	39.2	0.44	3,319	LvB	
124.3-128.9	37.9- 39.3		Black coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-22

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
128.9-144.4	39.3- 44.0	$2h_1$	Dark grey m.s., some gritty.									
144.4-147.6	44.0- 45.0	"	Fine-grained, medium grey s.s.									
147.6-170.6	45.0- 52.0		Gritty m.s.									
170.6-196.2	52.0- 59.8		Fine to coarse-grained, quartzose s.s.									
196.2-197.5	59.8- 60.2		Light grey, porphyritic felsite sill.									
197.5-204.7	60.2- 62.4		Fine-grained, muddy matrix s.s.									
204.7-208.0	62.4- 63.4		COAL.	62.4-63.4	1.0	0.9						
208.0-212.6	63.4- 64.8		Intrusive sill??									
212.6-215.9	64.8- 65.8		Dirty COAL.									
215.9-222.4	65.8- 67.8		COAL.	65.8-67.8	2.0	1.8	64.6			0.25		
222.4-243.8	67.8- 74.3		Mudstone, brown to black, some very coaly.									
243.8-244.7	74.3- 74.6		COAL.									
244.7-250.6	74.6- 76.4		Medium grey, fine-grained porphyritic sill.									
250.6-253.9	76.4- 77.4		Dirty COAL.									
253.9-257.5	77.4- 78.5		Medium grey, fine-grained sill??									
257.5-265.7	78.5- 81.0		Brown m.s.									
265.7-275.6	81.0- 84.0	2g	Fine-grained, medium brown-grey, slightly "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-22

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
275.6-282.2	84.0- 86.0	2g	Medium grey, medium-grained, slightly conglomeratic s.s.									
282.2-295.3	86.0- 90.0		Conglomeratic s.s.									
295.3-323.2	90.0- 98.5		Conglomerate.									

END OF HOLE 98.5 m.

Estimated Average Dip: 25^{o}

Total Estimated True Thickness of Coal in seams >1 m: $3h_1$ - 6.5 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-23

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 14+00W
Bearing: -
Dip: -90°
Commenced: September 20, 1979
Completed: September 21, 1979
Ultimate Depth: 104.5 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 6.0	0.0- 1.8		Overburden.									
6.0- 49.0	1.8- 14.9	2g	Coarse-grained Tantalus conglomerate.									
49.0- 51.0	14.9- 15.5	↓	Mudstone to muddy s.s.									
51.0- 55.0	15.5- 16.8		Conglomerate.									
55.0- 59.0	16.8- 18.0		Coarse-grained, conglomeratic s.s.									
59.0- 64.0	18.0- 19.5		Fine-grained "salt and pepper" s.s.									
64.0- 65.0	19.5- 19.8		Dark brown m.s.									
65.0- 70.0	19.8- 21.3		Medium-grained, conglomeratic s.s.									
70.0- 76.0	21.3- 23.2		Dark grey m.s. to gritty m.s.									
76.0- 86.0	23.2- 26.2		Coarse-grained, quartzose s.s.									
86.0- 87.0	26.2- 26.5		Mudstone.									
87.0- 94.0	26.5- 28.7		Fine-grained "salt and pepper" s.s., minor m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-23

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
94.0-114.0	28.7- 34.7	2g ↓	Conglomeratic, medium to coarse-grained quartzose s.s.									
114.0-116.0	34.7- 35.4		Dark brown m.s.									
116.0-164.0	35.4- 50.0		Coarse-grained conglomerate.									
164.0-171.0	50.0- 52.1		Fine-grained, dark grey, slightly "salt and pepper" s.s.									
171.0-180.0	52.1- 54.9		Gritty m.s.									
180.0-191.0	54.9- 58.2		Coarse-grained, light grey, quartzose s.s.									
191.0-198.0	58.2- 60.4		Conglomerate.									
198.0-201.0	60.4- 61.3		Very coarse conglomerate.									
201.0-205.0	61.3- 62.5		Medium-grained, "salt and pepper" s.s.									
205.0-206.0	62.5- 62.8		Dark grey, gritty m.s.									
206.0-209.0	62.8- 63.7		Medium-grained, "salt and pepper" s.s.									
209.0-248.0	63.7- 75.6		Conglomerate.									
248.0-261.0	75.6- 79.6		Conglomeratic, medium to fine-grained, dark grey to brownish s.s.									
261.0-263.0	79.6- 80.2		Dark grey, massive m.s.									
263.0-276.0	80.2- 84.1		Conglomerate.									
276.0-281.0	84.1- 85.6		Black m.s., some slightly coaly.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-23

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
281.0-283.0	85.6- 86.3	2g	Fine-grained, medium grey, slightly "salt and pepper" s.s.									
283.0-291.0	86.3- 88.7		Interbedded, dark m.s. and fine-grained s.s.									
291.0-320.0	88.7- 97.5		Conglomeratic, medium-grained "salt and pepper" s.s.									
320.0-340.0	97.5-103.6		Conglomerate.									
340.0-343.0	103.6-104.5		Conglomeratic, medium-grained "salt and pepper" s.s.									
			END OF HOLE 104.5 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-24

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 17+90W
Bearing: -
Dip: -90°
Commenced: September 21, 1979
Completed: September 21, 1979
Ultimate Depth: 135.3 m
Electrologged: 0 - 70.5 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 8.0	0.0- 2.4		Overburden.									
8.0- 39.4	2.4- 12.0	$2g_2$	Very coarse, Tantalus conglomerate.									
39.4- 52.5	12.0- 16.0	↓	Dark brown, coaly m.s., grading with depth to grey, gritty m.s., very sharp upper contact.									
52.5- 82.0	16.0- 25.0		Conglomerate; sharp contacts.									
82.0- 91.0	25.0- 27.8		Dark brown m.s.									
91.0- 93.0	27.8- 28.3		Medium-grained, dark grey s.s.									
93.0- 95.0	28.3- 29.0		Conglomerate, orange dust.									
95.0-128.0	29.0- 39.0		Conglomerate, grey dust.									
128.0-137.8	39.0- 42.0		Conglomeratic, medium-grained, muddy matrix s.s.									
137.8-146.0	42.0- 44.5		Coarse-grained, clean white quartzose s.s.									
146.0-158.7	44.5- 48.4		Medium-grained, medium grey, slightly "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-24

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
158.7-192.3	48.4- 58.6	$2g_1$	COAL, clean.	48.4-58.6	10.2	4.3	22.1	19.0	58.9	0.49	6,534	MvB
192.3-200.1	58.6- 61.0	+	Dark grey, gritty m.s.									
200.1-213.0	61.0- 64.9		Medium grey, fine-grained s.s.									
213.0-220.0	64.9- 67.1		Coarse-grained, quartzose s.s.									
220.0-226.0	67.1- 68.9		Fine-grained, "salt and pepper" s.s.									
226.0-240.0	68.9- 73.2		Interbedded, fine-grained, "salt and pepper" s.s., fine-grained, dark grey s.s., and dark gritty m.s.									
240.0-250.0	73.2- 76.2		Coarse-grained, light grey, quartzose s.s.									
250.0-259.0	76.2- 78.9		Fine-grained, "salt and pepper" s.s., minor dark m.s.									
259.0-261.0	78.9- 79.6		Dark grey, very fine-grained s.s.									
261.0-262.0	79.6- 79.9		Dark brown m.s.									
262.0-264.0	79.9- 80.5		COAL.									
264.0-270.0	80.5- 82.3		Dark m.s.									
270.0-273.0	82.3- 83.2		Coaly m.s.									
273.0-277.0	83.2- 84.4		COAL.	83.2-84.4	1.2	0.5						
277.0-279.0	84.4- 85.0		Mudstone.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-24

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
279.0-303.0	85.0- 92.4	$2g_1$	Fine to medium-grained, slightly "salt and pepper" s.s., minor dark m.s., minor coarse-grained, quartzose s.s.									
303.0-306.0	92.4- 93.3		COAL.									
306.0-310.0	93.3- 94.5		Coaly m.s.									
310.0-314.0	94.5- 95.7		Conglomeratic, dark grey s.s.									
314.0-330.0	95.7-100.6		Conglomerate.									
330.0-336.0	100.6-102.4		Conglomeratic s.s.									
336.0-355.0	102.4-108.2		Conglomerate, mainly dark grey chert cobbles, minor conglomeratic s.s.									
355.0-370.0	108.2-112.8		Coarse-grained, clean, light grey quartzose s.s.									
370.0-373.0	112.8-113.7		Conglomerate.									
373.0-377.0	113.7-114.9		Grey m.s.									
377.0-380.0	114.9-115.8		Brown m.s.									
380.0-384.0	115.8-117.0		COAL.	115.8-117.0	1.2	0.5		65.7		0.33		
384.0-386.0	117.0-117.7		Coaly m.s.									
386.0-419.0	117.7-127.7		Conglomeratic s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-24

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
419.0-432.0	127.7-131.7	2g	Conglomerate.									
432.0-444.0	131.7-135.3		Conglomeratic, dark grey s.s.									
			END OF HCLE 135.3 m.									
			Estimated Average Dip: 65°									
			Total Estimated True Thickness of Coal in seams >1 m: 2g - 4.3 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Drill Hole No. CS-79-25

Page 1 of 1

Coal Lease No.: 2965
Grid Co-ordinates: 112+00S, 17+60W
Bearing: -
Dip: -90°
Commenced: September 21, 1979
Completed: September 22, 1979
Ultimate Depth: 36.9 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 6.0	0.0- 1.8		Overburden.									
6.0- 23.0	1.8- 7.0	2g ↓	Coarse-grained, Tantalus conglomerate, orange dust.									
23.0- 32.0	7.0- 9.8		Conglomeratic, medium-grained s.s.									
32.0-105.0	9.8- 32.0		Conglomerate.									
105.0-114.0	32.0- 34.7		Coaly m.s., very abrupt upper contact.									
114.0-117.0	34.7- 35.7		Grey gritty m.s.									
117.0-121.0	35.7- 36.9		Coarse-grained conglomerate.									
			END OF HOLE 36.9 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-26

Coal Lease No.: 2978
Grid Co-ordinates: 112+00S, 24+00W
Bearing: -
Dip: -90^{0}
Commenced: September 22, 1979
Completed: September 22, 1979
Ultimate Depth: 32.0 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 18.0	0.0- 5.5		Overburden.									
18.0-105.0	5.5- 32.0	2c	Very clean, white quartzose s.s.; coarse- to medium to fine-grained, slightly yellowish near surface, very clean white with depth, voluminous white dust; recessive; poorly cemented; same unit as intersected in lower Hole CS-79-10.									
			END OF HOLE 32.0 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-27

Coal Lease No.: 2978
Grid Co-ordinates: 112+00S, 20+75W
Bearing: -
Dip: -90°
Commenced: September 22, 1979
Completed: September 22, 1979
Ultimate Depth: 71.3 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 9.0	0.0- 2.7		Overburden, coaly from 2 - 2.3 m.									
9.0- 18.0	2.7- 5.5	2f	Medium grey, medium-grained, slightly "salt and pepper" s.s.									
18.0- 23.0	5.5- 7.0		Dark grey m.s., some gritty.									
23.0- 32.0	7.0- 9.8		Fine to medium-grained, dark grey, muddy matrix s.s., minor m.s.									
32.0- 36.0	9.8- 11.0		Medium-grained, dark grey, slightly conglomeratic s.s.									
36.0- 42.0	11.0- 12.8		Fine-grained, grey-brown s.s.									
42.0- 48.0	12.8- 14.6		Black coaly m.s.									
48.0- 60.0	14.6- 18.3		Interbedded grey to black m.s., gritty m.s., coaly m.s.									
60.0- 62.0	18.3- 18.9		Dark brown m.s.									
62.0- 68.0	18.9- 20.7	2e	Fine to medium grained, light grey, slightly "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-27

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
68.0- 80.0	20.7- 24.4	2e ↓	Medium-grained, clean, light grey s.s., white dust.									
80.0- 82.0	24.4- 25.0		Soft black m.s.									
82.0- 85.0	25.0- 25.9		Brown m.s.									
85.0- 86.0	25.9- 26.2		COAL.									
86.0- 88.0	26.2- 26.8		Dark grey, medium-grained s.s.									
88.0- 95.0	26.8- 29.0		Light grey, medium-grained, "salt and pepper" s.s.									
95.0- 96.0	29.0- 29.3		COAL.									
96.0- 97.0	29.3- 29.6		Dark grey m.s.									
97.0- 99.0	29.6- 30.2		Fine-grained, "salt and pepper" s.s.									
99.0-109.0	30.2- 33.2		Black m.s., some coaly.									
109.0-113.0	33.2- 34.4		Mudstone, some finely laminated.									
113.0-120.0	34.4- 36.6		Medium-grained, clean, light grey, slightly "salt and pepper" s.s.									
120.0-129.0	36.6- 39.3		Coarse-grained, clean quartzose s.s.; gradational with above.									
129.0-145.0	39.3- 44.2		Medium-grained, medium grey s.s., a few thin m.s. beds.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-27

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
145.0-154.0	44.2- 46.9	2e	Medium-grained s.s. with coarse-grained quartzose sand grain to 10%, slightly conglomeratic.									
		↓										
154.0-160.0	46.9- 48.8		Coarse sand size quartzose grain to 50% in medium-grained, "salt and pepper" s.s. matrix.									
160.0-180.0	48.8- 54.9		Fine to medium-grained, medium grey, slightly "salt and pepper" s.s., minor interbeds black m.s., gritty m.s.									
180.0-207.0	54.9- 63.1		Coarse to medium-grained, quartzose s.s., massive to slightly "salt and pepper".									
207.0-220.0	63.1- 67.1		Very fine-grained, medium grey s.s.									
220.0-227.0	67.1- 69.2	2d	Grey m.s., some gritty.									
		↓										
227.0-232.0	69.2- 70.7		Dark grey-brown, massive m.s., not gritty.									
232.0-234.0	70.7- 71.3		Dark grey, gritty m.s.									
			END OF HOLE 71.3 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-28

Coal Lease No.: 2965
Grid Co-ordinates: 90+00S, 3+00E
Bearing: -
Dip: -90^{o}
Commenced: September 22, 1979
Completed: September 23, 1979
Ultimate Depth: 133.5 m
Electrologged: 0 - 114.0 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 32.0	0.0- 9.8		Overburden. Bouldery till to 8.0 m, frozen, coaly silt to bedrock.									
32.0 - 35.0	9.8- 10.7	$2h_2$	Mudstone, some gritty, very rotten, crumbly.									
35.0- 40.0	10.7- 12.2		Fine-grained, muddy matrix, crumbly s.s.									
40.0- 46.0	12.2- 14.0		Grey to dark brown m.s., some slightly coaly.									
46.0- 47.6	14.0- 14.5		Fine-grained, slightly "salt and pepper" s.s.									
47.6- 49.2	14.5- 15.0		COAL.									
49.2- 50.9	15.0- 15.5		"Salt and pepper" s.s.									
50.9- 55.1	15.5- 16.8		Coaly m.s.									
55.1- 56.8	16.8- 17.3		Gritty m.s.									
56.8- 59.1	17.3- 18.0		Gradational to fine-grained, muddy matrix s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-28

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
59.1- 90.2	18.0- 27.5	$2h_2$	Varied m.s., grey to brown, to black to coaly, some gritty.									
90.2- 96.8	27.5- 29.5	+	Interbedded brown m.s. and brown coaly m.s.									
96.8-104.3	29.5- 31.8		Grey m.s.									
104.3-113.2	31.8- 34.5		Coaly m.s., minor grey $\pm$ gritty m.s.									
113.2-120.4	34.5- 36.7		COAL.	34.5-36.7	2.2	2.2	63.5			0.46		
120.4-123.7	36.7- 37.7		Mudstone.									
123.7-126.0	37.7- 38.4		COAL.									
126.0-132.2	38.4- 40.3		Coaly m.s., minor thin coal and gritty m.s.									
132.2-133.5	40.3- 40.7		COAL.									
133.5-139.1	40.7- 42.4		Fine-grained, medium grey, "salt and pepper" s.s.									
139.1-173.2	42.4- 52.8		Dark grey to dark brown m.s., some gritty.									
173.2-183.7	52.8- 56.0		Thinly interbedded m.s., gritty m.s., very fine-grained s.s.									
183.7-185.7	56.0- 56.6		Mudstone and coaly m.s.									
185.7-200.1	56.6- 61.0		Grey gritty m.s.									
200.1-210.0	61.0- 64.0	$2h_1$	Clean, very fine to medium-grained, grey s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-28

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
210.0-229.7	64.0- 70.0	$2h_1$ ↓	Medium to coarse-grained, conglomeratic s.s.									
229.7-252.6	70.0- 77.0		Conglomerate to medium to coarse-grained, conglomeratic s.s.									
252.6-258.5	77.0- 78.8		Abrupt contact to interbedded, dark grey m.s., black m.s., coaly m.s.									
258.5-264.1	78.8- 80.5		Light grey, fine-grained, felsitic sill.									
264.1-267.4	80.5- 81.5		COAL, dirty.	80.5-81.5	1.0	1.0	80.8			0.13		
267.4-280.8	81.5- 85.6		Dark grey m.s., minor coaly m.s.									
280.8-284.4	85.6- 86.7		Dirty COAL.	85.6-86.7	1.1	1.1						
284.4-288.7	86.7- 88.0		Light grey, porphyritic felsite sill.									
288.7-296.6	88.0- 90.4		Interbedded dark grey m.s., thin coal.									
296.6-298.6	90.4- 91.0		COAL or coaly m.s.									
298.6-301.8	91.0- 92.0		Mudstone.									
301.8-305.1	92.0- 93.0		COAL.	92.0-93.0	1.0	1.0						
305.1-308.4	93.0- 94.0		Mudstone.									
308.4-311.7	94.0- 95.0		COAL.	94.0-95.0	1.0	1.0						
311.7-319.9	95.0- 97.5		Light grey, fine-grained, porphyritic, biotitic felsite sill.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-28

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
319.9-321.5	97.5- 98.0	$2h_1$	Coaly m.s.									
321.5-323.8	98.0- 98.7	"	Intrusive sill.									
323.8-328.1	98.7-100.0		COAL.	98.7-100.0	1.3	1.3						
328.1-331.0	100.0-100.9		Intrusive sill.									
331.0-332.7	100.9-101.4		COAL or very coaly m.s.									
332.7-336.0	101.4-102.4		Intrusive sill, fine-grained, light grey.									
336.0-347.1	102.4-105.8		Thinly interbedded m.s., gritty m.s., coaly m.s.									
347.1-351.0	105.8-107.0		COAL.	105.8-107.0	1.2	1.2						
351.0-356.0	107.0-108.5		Light grey, porphyritic felsite sill.									
356.0-358.3	108.5-109.2		COAL.									
358.3-360.0	109.2-109.7		Mudstone.									
360.0-364.2	109.7-111.0		COAL.	109.7-111.0	1.3	1.3						
364.2-368.8	111.0-112.4		Dark grey m.s.									
368.8-377.3	112.4-115.0		Fine-grained, light grey, porphyritic felsite sill.									
377.3-387.1	115.0-118.0		COAL, dirty?, minor m.s.	115.0-118.0	3.0	3.0						
387.1-397.0	118.0-121.0		Black m.s., some coaly.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-28

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
397.0-403.5	121.0-123.0	$2h_1$	Dark brown m.s.									
403.5-413.4	123.0-126.0	+	Dark grey, gritty m.s.									
413.4-429.8	126.0-131.0	2g	Medium grey, fine-grained, "salt and pepper" s.s.									
429.8-438.0	131.0-133.5	+	Conglomeratic, medium-grained, "salt and pepper" s.s.									

END OF HOLE 133.5 m.

Estimated Average Dip: 10^{o}

Total Estimated True Thickness of Coal in seams > 1 m: $2h_2$ - 2.2 m
$2h_1$ - 10.9 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-29

Coal Lease No.: 2965
Grid Co-ordinates: 128+00S, 4+00E
Bearing: -
Dip: -90
Commenced: September 24, 1979
Completed: September 24, 1979
Ultimate Depth: 132.3 m
Electrologged: 0 - 83.0 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 29.0	0.0- 8.8		Overburden.									
29.0- 36.0	8.8- 11.0	2h	Very rotten m.s.									
36.0- 52.0	11.0- 15.8	+	Fine-grained, very muddy matrix slightly "salt and pepper" s.s.									
52.0- 53.8	15.8- 16.4		Dark grey-brown m.s.									
53.8- 57.1	16.4- 17.4		Light grey "salt and pepper" s.s.									
57.1- 74.1	17.4- 22.6		COAL.	17.4-22.6	5.2	3.9	62.8			0.42		
74.1- 75.0	22.6- 22.9		Coaly m.s.									
75.0- 93.5	22.9- 28.5		Brown m.s. to dark grey m.s, thin coal, minor gritty sections.									
93.5-101.7	28.5- 31.0		COAL.	28.5-31.0	2.5	1.9	51.9			1.19		
101.7-105.0	31.0- 32.0		Coaly black m.s.									
105.0-109.0	32.0- 33.2		Grey-brown m.s.									
109.0-111.5	33.2- 34.0		COAL.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-29

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
111.5-144.4	34.0- 44.0	2h +	Fine-grained, muddy matrix s.s. to gritty m.s., finely laminated m.s., minor coaly m.s.									
144.4-150.9	44.0- 46.0		Light grey, muddy matrix s.s.									
150.9-152.2	46.0- 46.4		Mudstone.									
152.2-156.2	46.4- 47.6		Very dirty COAL.									
156.2-160.8	47.6- 49.0		Mudstone.									
160.8-165.7	49.0- 50.5		COAL.	49.0-50.5	1.5	1.1						
165.7-167.3	50.5- 51.0		Coaly m.s.									
167.3-170.1	51.0- 52.0		Gritty grey m.s.									
170.1-177.2	52.0- 54.0		Fine-grained s.s., muddy.									
177.2-178.8	54.0- 54.5		Coaly m.s.									
178.8-183.7	54.5- 56.0		COAL.	54.5-56.0	1.5	1.1	49.4	9.5	41.1	0.18	3,009	SA
183.7-185.4	56.0- 56.5		Black m.s.									
185.4-189.6	56.5- 57.8		Fine-grained, dark grey trap rock, may be sill.									
189.6-191.9	57.8- 58.5		Light grey s.s.									
191.9-195.2	58.5- 59.5		Dark m.s.									
195.2-204.7	59.5- 62.4		COAL.	59.5-62.4	2.9	2.2						

ROTARY DRILL HOLE LOG

Hole No. CS-79-29

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
204.7-241.1	62.4- 73.5	2h ↓	Very fine-grained, brownish-grey s.s., some slightly "salt and pepper", minor m.s., minor thin coal.									
241.1-260.8	73.5- 79.5		Thinly interbedded coal, m.s., felsitic volcanics.									
260.8-265.0	79.5- 80.8		Fine-grained, medium grey, siliceous, slightly porphyritic volcanic.									
265.0-275.0	80.8- 83.8		Thinly interbedded coal, m.s., felsitic volcanics. Difficult to log.									
275.0-278.0	83.8- 84.7		Light to medium grey, fine-grained, porphyritic, quartz eye felsite.									
278.0-284.0	84.7- 86.6		Coaly m.s., minor coal.									
284.0-297.0	86.6- 90.5		Dark grey m.s.									
297.0-302.0	90.5- 92.0		COAL.	90.5-92.0	1.5	1.1						
302.0-303.0	92.0- 92.4		Felsitic volcanic.									
303.0-304.0	92.4- 92.7		COAL.									
304.0-307.0	92.7- 93.6		Mudstone.									
307.0-309.0	93.6- 94.2		Felsitic volcanic.									
309.0-311.0	94.2- 94.8		COAL.									
311.0-313.0	94.8- 95.4		Sandstone?									

ROTARY DRILL HOLE LOG

Hole No. CS-79-29

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
313.0-314.0	95.4- 95.7	2h	COAL.									
314.0-317.0	95.7- 96.6		Light grey, fine-grained, siliceous, quartzose feldspar porphyry, pyritic.									
317.0-320.0	96.6- 97.5		Mudstone.									
320.0-326.0	97.5- 99.4		Light grey, fine-grained, siliceous quartzose feldspar porphyry, pyritic.									
326.0-334.0	99.4-101.8		COAL.	99.4-101.8	2.4	1.8						
334.0-335.0	101.8-102.1		Mudstone.									
335.0-348.0	102.1-106.1		Dirty coal, minor m.s.									
348.0-359.0	106.1-109.4		Dark grey to black m.s.									
359.0-368.0	109.4-112.2		Fine-grained, medium grey, quartz eye porphyry.									
368.0-370.0	112.2-112.8		Mudstone.									
370.0-373.0	112.8-113.7		COAL.									
373.0-377.0	113.7-114.9		Dark grey m.s.									
377.0-387.0	114.9-118.0		Dark grey, very fine-grained s.s. or siliceous m.s.									
387.0-415.0	118.0-126.5	2g	Fine-grained, medium grey, slightly "salt and pepper" s.s.									
415.0-431.0	126.5-131.4		Conglomeratic, fine to medium-grained "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-29

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
431.0-434.0	131.4-132.3	2g	Conglomerate.									
			END OF HOLE 132.3 m.									
			Estimated Average Dip: 40^{o}????									
			Total Estimated True Thickness of Coal in seams >1 m: 2h - 13.1 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-30

Coal Lease No.: 2949
Grid Co-ordinates:
Bearing: -
Dip: -90°
Commenced: September 25, 1979
Completed: September 25, 1979
Ultimate Depth: 19.5 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 8.0	0.0- 2.4		Overburden.									
8.0- 16.0	2.4- 4.9	2e	Coarse-grained, clean, quartzose s.s.									
16.0- 30.0	4.9- 9.1	"	Medium to coarse-grained, slightly conglomeratic s.s.									
30.0- 58.0	9.1- 17.7		Light grey, coarse-grained, clean, quartzose s.s., some conglomeratic with white quartz and white to light grey chert pebbles.									
58.0- 60.0	17.7- 18.3		Medium-grained, "salt and pepper" s.s.									
60.0- 64.0	18.3- 19.5		Medium-grained, white quartzose s.s.									

END OF HOLE 19.5 m.

NOTE: All Tantalus lithologies. Appear to be the varied quartz sand unit which overlies the coarse-grained, very pure white sandstone unit which was intersected in holes CS-79-10 and 20.

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-31

Coal Lease No.: 2949
Grid Co-ordinates:
Bearing: -
Dip: -90^{0}
Commenced: September 25, 1979
Completed: September 25, 1979
Ultimate Depth: 19.8 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 12.0	0.0- 3.7		Overburden.									
12.0- 65.0	3.7- 19.8	2g	Conglomeratic, medium grey, muddy matrix, slightly "salt and pepper" s.s.; conglomeratic pebbles are white and clear quartz; minor grey chert.									
			END OF HOLE 19.8 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-32

Coal Lease No.: 2954
Grid Co-ordinates:
Bearing: -
Dip: -90°
Commenced: September 25, 1979
Completed: September 25, 1979
Ultimate Depth: 56.4 m
Electrologged: 0 - 53.8 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 12.1	0.0- 3.7		Overburden.									
12.1- 13.8	3.7- 4.2	2h	COAL, very weathered, soft.									
13.8- 15.1	4.2- 4.6		Mudstone.									
15.1- 17.1	4.6- 5.2		COAL, very weathered, soft.									
17.1- 32.8	5.2- 10.0		Fine-grained, very muddy matrix s.s., minor m.s., coaly m.s.									
32.8- 34.4	10.0- 10.5		COAL.									
34.4- 35.8	10.5- 10.9		Mudstone.									
35.8- 37.1	10.9- 11.3		COAL.									
37.1- 38.1	11.3- 11.6		Dark grey m.s.									
38.1- 46.3	11.6- 14.1		Dark grey-brown, massive m.s.									
46.3- 47.6	14.1- 14.5		COAL.									
47.6- 61.0	14.5- 18.6		Fine-grained, very gritty m.s., medium grey to brown.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-32

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
61.0- 65.6	18.6- 20.0	2h	COAL.	18.6-20.0	1.4	1.0	43.8	17.6	38.6	0.42	3,462	MvB
65.6- 73.5	20.0- 22.4	+	Massive grey-brown m.s.									
73.5- 78.1	22.4- 23.8		Dark brown to black, slightly coaly m.s.									
78.1- 81.4	23.8- 24.8		Very coaly m.s.									
81.4- 91.9	24.8- 28.0		COAL.	24.8-28.0	3.2	2.3	30.6	21.2	48.2	0.47	5,586	MvB
91.9- 95.1	28.0- 29.0		Very coaly m.s.									
95.1- 98.4	29.0- 30.0		COAL.	29.0-30.0	1.0	0.7						
98.4-101.7	30.0- 31.0		Mudstone.									
101.7-104.3	31.0- 31.8		COAL.									
104.3-105.6	31.8- 32.2		Mudstone.									
105.6-107.0	32.2- 32.6		Very coaly m.s.									
107.0-113.2	32.6- 34.5		Dark grey-brown, massive m.s.									
113.2-116.5	34.5- 35.5		Grey m.s.									
116.5-121.4	35.5- 37.0		Medium gray, gritty m.s.									
121.4-129.6	37.0- 39.5	2h	Very fine-grained, medium grey, hard "salt and pepper" s.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-32

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
129.6-139.4	39.5- 42.5	$2h_1$	Medium-grained, muddy matrix "salt and pepper" s.s.									
		↓										
139.4-185.0	42.5- 56.4		Medium-grained, conglomeratic "salt and pepper" s.s.									
			END OF HOLE 56.4 m.									
			Estimated Average Dip: 45^{o}???									
			Total Estimated True Thickness of Coal in seams > 1 m:									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-13

Coal Lease No.: 2965
Grid Co-ordinates: 120+00S, 12+00E
Bearing: -
Dip: -90°
Commenced: September 8, 1979
Completed: September 9, 1979
Ultimate Depth: 129.2 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 25.0	0.0- 7.6		Overburden. Gravelly till.									
25.0- 35.0	7.6- 10.7		Overburden. Peaty overburden.									
35.0- 50.0	10.7- 15.2	2g	Fine-grained, muddy white matrix s.s.									
50.0- 80.0	15.2- 24.4	↓	Coarse-grained, typical Tantalus conglomerate.									
80.0- 84.0	24.4- 25.6		Medium-grained, light to medium grey, conglomeratic "salt and pepper" s.s.									
84.0- 96.0	25.6- 29.3		Very coarse conglomerate.									
96.0-100.0	29.3- 30.5		Conglomeratic "salt and pepper" s.s.									
100.0-138.0	30.5- 42.1		Coarse-grained conglomerate.									
138.0-146.0	42.1- 44.5		"Salt and pepper" s.s., slightly conglomeratic.									
146.0-176.0	44.5- 53.6		Conglomerate.									
176.0-190.0	53.6- 57.9		Medium to coarse-grained s.s., some conglomeratic.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-13

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
190.0-265.0	57.9-80.8	2g ↓	Conglomerate, minor coarse-grained conglomeratic s.s.									
265.0-275.0	80.8-83.8		Medium-grained s.s. to conglomeratic s.s.									
275.0-291.0	83.8- 88.7		Conglomeratic s.s.									
291.0-424.0	88.7-129.2		Conglomerate.									
			END OF HOLE 129.2 m.									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-14

Coal Lease No.: 2965
Grid Co-ordinates: 118+10S, 6+30E
Bearing: -
Dip: -90°
Commenced: September 10, 1979
Completed: September 10, 1979
Ultimate Depth: 116.7 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 30.0	0.0- 9.1		Overburden.									
30.0- 35.0	9.1- 10.7	$2h_2$ ↓	Fine-grained, medium grey "salt and pepper" s.s.									
35.0- 37.0	10.7- 11.3		Dirty COAL.									
37.0- 43.0	11.3- 13.1		COAL.	11.3-13.1	1.8	1.6						
43.0- 46.0	13.1- 14.0		Sandstone.									
46.0- 53.0	14.0- 16.2		Fine-grained, medium grey "salt and pepper" s.s.									
53.0- 54.0	16.2- 16.5		COAL.									
54.0- 55.0	16.5- 16.8		Mudstone.									
55.0- 59.0	16.8- 18.0		COAL.	16.8-18.0	1.2	1.1						
59.0- 61.0	18.0- 18.6		Brown coaly m.s.									
61.0- 67.0	18.6- 20.4		Brown gritty m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-14

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
67.0- 70.0	20.4- 21.3	$2h_2$	COAL.									
70.0- 73.0	21.3- 22.3	↓	Mudstone.									
73.0- 74.0	22.3- 22.6		COAL.									
74.0- 76.0	22.6- 23.2		Mudstone, coaly.									
76.0- 81.0	23.2- 24.7		Mudstone, grey-brown, some finely laminated.									
81.0- 88.0	24.7- 26.8		COAL, very dirty.	24.7-26.8	2.1	1.9						
88.0- 91.0	26.8- 27.7		Light grey, metamorphosed, calcareous s.s.?									
91.0- 93.0	27.7- 28.3		COAL.									
93.0- 96.0	28.3- 29.3		Sandstone.									
96.0-100.0	29.3- 30.5		Very coaly m.s. to dirty coal.									
100.0-103.0	30.5- 31.4		Grey-brown, massive m.s.									
103.0-104.0	31.4- 31.7		Coaly m.s.									
104.0-109.0	31.7- 33.2		Grey gritty m.s.									
109.0-115.0	33.2- 35.1		Massive-grey brown m.s., some slightly coaly.									
115.0-118.0	35.1- 36.0		COAL.									
118.0-122.0	36.0- 37.2		Interbedded coaly m.s. and coal.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-14

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
122.0-126.0	37.2- 38.4	$2h_2$	COAL.	37.2-38.4	1.2	1.1						
126.0-146.0	38.4- 44.5	↓	Gritty, grey m.s. and non-gritty laminated m.s.									
146.0-160.0	44.5- 48.8	$2h_1$ ↓	Very fine-grained, medium grey, muddy matrix "salt and pepper" s.s.									
160.0-180.0	48.8- 54.9		Dark grey, massive m.s. to brownish, finely laminated m.s.									
180.0-196.0	54.9- 59.7		Fine to coarse-grained, clean quartzose s.s.									
196.0-198.0	59.7- 60.4		Mudstone.									
198.0-204.0	60.4- 62.2		COAL.	60.4-62.2	1.8	1.6						
204.0-209.0	62.2- 63.7		Dirty COAL.									
209.0-221.0	63.7- 67.4		Thinly interbedded thin coal, m.s., s.s., felsite?									
221.0-223.0	67.4- 68.0		COAL and coaly m.s.									
223.0-228.0	68.0- 69.5		Fine-grained, medium grey s.s.									
228.0-232.0	69.5- 70.7		Thinly interbedded coal and m.s.									
232.0-236.0	70.7- 71.9		Light grey felsite.									
236.0-241.0	71.9- 73.5		Dark grey to black m.s.									
241.0-244.0	73.5- 74.4		Felsite.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-14

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
244.0-252.0	74.4- 76.8	$2h_1$	COAL and black m.s.									
252.0-253.0	76.8- 77.1	+	Felsitic feldspar porphyry.									
253.0-256.0	77.1- 78.0		COAL.									
256.0-263.0	78.0- 80.2		Thinly interbedded coal, m.s., felsite; difficult to log.									
263.0-268.0	80.2- 81.7		COAL.	80.2-81.7	1.5	1.4						
268.0-272.0	81.7- 82.9		Sandstone.									
272.0-292.0	82.9- 89.0		??Thinly interbedded COAL, coaly m.s., black m.s., minor s.s., minor felsite.									
292.0-295.0	89.0- 89.9		Felsitic feldspar porphyry.									
295.0-304.0	89.9- 92.7		Felsitic feldspar porphyry, slightly pyritic.									
304.0-305.0	92.7- 93.0		Light grey, clean, massive felsite.									
305.0-313.0	93.0- 95.4		COAL.	93.0-95.4	2.4	2.2						
313.0-324.0	95.4- 98.8		Thinly interbedded coal, coaly m.s., m.s.									
324.0-340.0	98.8-103.6	2g	Brown, fine-grained muddy s.s., slightly "salt and pepper", some gritty m.s.									
340.0-371.0	103.6-113.1	+	Medium-grained, "salt and pepper" s.s., slightly conglomeratic with depth.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-14

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
371.0-383.0	113.1-116.7	2g	Conglomerate.									
			END OF HOLE 116.7 m.									
			Estimated Average Dip: 25^{o}									
			Total Estimated True Thickness of Coal in seams >1m: $2h_2$ - 5.7 m $2h_1$ - 5.2 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-15

Coal Lease No.: 2965
Grid Co-ordinates: 117+87S, 10+60E
Bearing: -
Dip: -90°
Commenced: September 11, 1979
Completed: September 11, 1979
Ultimate Depth: 122.8 m
Electrologged: 0 - 23.8 m (neutron only)

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 25.0	0.0- 7.6		Overburden.									
25.0- 30.0	7.6- 9.1	$2h_1$	Coaly m.s. and dark brown m.s.									
30.0- 37.0	9.1- 11.3	"	Very dirty COAL.									
37.0- 46.0	11.3- 14.0		Light to medium grey, slightly porphyritic felsite.									
46.0- 48.0	14.0- 14.6		COAL.									
48.0- 53.0	14.6- 16.2		Porphyritic (feldspar) felsite.									
53.0- 56.0	16.2- 17.1		COAL.									
56.0- 58.0	17.1- 17.7		Mudstone.									
58.0- 60.0	17.7- 18.3		COAL.									
60.0- 61.0	18.3- 18.6		Felsite.									
61.0- 64.0	18.6- 19.5		COAL, minor coaly m.s.									
64.0- 75.0	19.5- 22.9		Medium grey, very fine-grained, biotitic, slightly pyritic, slightly porphyritic (feldspar) felsite.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-15

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
75.0- 81.0	22.9- 24.7	$2h_1$	COAL.	22.9-24.7	1.8	1.5						
81.0- 86.0	24.7- 26.2	↓	Coaly m.s.									
86.0- 89.0	26.2- 27.1		COAL.									
89.0- 93.0	27.1- 28.3		Dark grey-brown, massive m.s.									
93.0-108.0	28.3- 32.9	2g	Grey, gritty m.s. to fine-grained muddy matrix s.s., slightly "salt and pepper".									
108.0-135.0	32.9- 41.1	↓	Fine to medium-grained, "salt and pepper" s.s.									
135.0-240.0	41.1- 73.2		Conglomerate.									
240.0-260.0	73.2- 79.2		Very fine-grained to fine-grained, slightly "salt and pepper", medium grey s.s.									
260.0-284.0	79.2- 86.6		Medium-grained conglomeratic s.s.									
284.0-403.0	86.6-122.8		Conglomerate, 313-316', thin coal seam interbedded.									

END OF HOLE 122.8 m.

Estimated Average Dip: 30^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 1.5 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-16

Coal Lease No.: 2965
Grid Co-ordinates: 100+00S, 7+00E
Bearing: -
Dip: -90^{o}
Commenced: September 12, 1979
Completed: September 12, 1979
Ultimate Depth: 123.4 m
Electrologged: 0 - 68.2 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 19.0	0.0- 5.8		Overburden.									
19.0- 26.2	5.8- 8.0	$2h_2$	Brown m.s., some finely laminated.									
26.2- 42.7	8.0- 13.0		Fine-grained, grey-brown "salt and pepper" s.s.									
42.7- 45.9	13.0- 14.0		Dark brown m.s.									
45.9- 49.2	14.0- 15.0		Medium-grained "salt and pepper" s.s.									
49.2- 50.2	15.0- 15.3		Mudstone and thin coal.									
50.2- 51.2	15.3- 15.6		Sandstone.									
51.2- 52.5	15.6- 16.0		Dark brown m.s.									
52.5- 56.4	16.0- 17.2		COAL.	16.0-17.2	1.2	1.2	19.9	25.7	54.4	0.42	6,489	MvB
56.4- 65.0	17.2- 19.8		Mudstone.									
65.0- 70.1	19.8- 21.2		Dirty COAL (70%) and m.s.									
70.1- 84.0	21.2- 25.6		Massive brown m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-16

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
84.0-101.7	25.6- 31.0	$2h_1$	Interbedded, gritty m.s. and very fine-grained, dark grey s.s.									
101.7-105.0	31.0- 32.0	↓	Fine-grained "salt and pepper" s.s.									
105.0-113.2	32.0- 34.5		Conglomeratic "salt and pepper" s.s.									
113.2-124.7	34.5- 38.0		Conglomerate.									
124.7-142.4	38.0- 43.4		Dark brown m.s., thin coaly beds.									
142.4-147.6	43.4- 45.0		Dark grey, gritty m.s.									
147.6-154.2	45.0- 47.0		Medium grey, muddy matrix, fine-grained "salt and pepper" s.s.									
154.2-164.0	47.0- 50.0		Dark grey, gritty m.s.									
164.0-174.5	50.0- 53.2		Dark, fine-grained s.s.									
174.5-177.2	53.2- 54.0		COAL.									
177.2-180.4	54.0- 55.0		Dark m.s.									
180.4-183.7	55.0- 56.0		Light grey, fine-grained sill.									
183.7-184.7	56.0- 56.3		COAL.									
184.7-189.3	56.3- 57.7		Light grey, fine-grained sill.									
189.3-190.3	57.7- 58.0		COAL.									
190.3-196.8	58.0- 60.0		Light grey, fine-grained sill.									
196.8-199.1	60.0- 60.7		Coaly m.s.									

ROTARY DRILL HOLE LOG

Drill Hole No. CS-79-16

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
199.1-201.8	60.7- 61.5	$2h_1$	COAL.	60.7-61.5	0.8		62.6			0.15		
201.8-207.3	61.5- 63.2	↓	Light grey, fine-grained sill.									
207.3-209.3	63.2- 63.8		COAL.									
209.3-210.6	63.8- 64.2		Mudstone.									
210.6-217.5	64.2- 66.3		COAL.	64.2-66.3	2.1	2.1	48.6	5.3	46.1	0.24	3,133	MA
217.5-221.5	66.3- 67.5		Black m.s.									
221.5-224.7	67.5- 68.5		COAL.	67.5-68.5	1.0	1.0	35.8	6.9	57.3	0.44	4,879	AN
224.7-231.0	68.5- 70.4		Coaly m.s.									
231.0-232.0	70.4- 70.7		COAL.									
232.0-234.0	70.7- 71.3		Mudstone.									
234.0-237.0	71.3- 72.2		Light grey, fine-grained, intrusive sill.									
237.0-239.0	72.2- 72.8		Coaly m.s.									
239.0-248.0	72.8- 75.6		Light grey, fine-grained, intrusive sill.									
248.0-249.0	75.6- 75.9		COAL.									
249.0-260.0	75.9- 79.2		Fine-grained, light grey, porphyritic, biotitic sill.									
260.0-264.0	79.2- 80.5		COAL, dirty, brownish dust.	79.2-80.5	1.3	1.3						
264.0-265.0	80.5- 80.8		Brown m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-16

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
265.0-286.0	80.8- 87.2	$2h_1$	Brownish-grey, gritty m.s. to muddy s.s.									
286.0-297.0	87.2- 90.5	2g	Fine-grained, grey "salt and pepper" s.s.									
297.0-320.0	90.5- 97.5	↓	Conglomeratic, medium-grained "salt and pepper" s.s.									
320.0-405.0	97.5-123.4		Conglomerate, some thin beds conglomeratic s.s.									
			END OF HOLE 123.4 m.									
			Estimated Average Dip: 10^{o}									
			Total Estimated True Thickness of Coal in seams >1 m: $2h_2$ - 1.2 m $2h_1$ - 4.4 m									

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-17

Coal Lease No.: 2965
Grid Co-ordinates: 100+00S, 10+50E
Bearing: -
Dip: -90°
Commenced: September 13, 1979
Completed: September 13, 1979
Ultimate Depth: 92.4 m
Electrologged: 0 - 64.5 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 44.0	0.0- 13.4		Overburden.									
44.0- 48.6	13.4- 14.8	$2h_1$	Rotten s.s.									
48.6- 50.5	14.8- 15.4	↓	COAL.	16.4-17.6	1.2	1.2						
50.5- 53.8	15.4- 16.4		Light grey, siliceous, porphyritic (feld. lath) intrusion.									
53.8- 57.7	16.4- 17.6		COAL.									
57.7- 60.7	17.6- 18.5		Light grey, fine-grained, slightly porphyritic sill.									
60.7- 62.7	18.5- 19.1		Dirty COAL.									
62.7- 64.3	19.1- 19.6		Intrusive sill?									
64.3- 66.3	19.6- 20.2		COAL.									
66.3- 71.5	20.2- 21.8		Coaly m.s.									
71.5- 72.2	21.8- 22.0		COAL.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-17

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
72.2- 78.1	22.0- 23.8	$2h_1$ ↓	Badly caved, interbedded m.s., s.s., thin coal, possible sill.									
78.1- 84.6	23.8- 25.8		COAL, dirty coal.	23.8-25.8	2.0	1.9						
84.6- 95.8	25.8- 29.2		Light grey, fine-grained porphyritic (feld. lath), biotitic, intrusive sill.									
95.8- 99.1	29.2- 30.2		COAL.	29.2-30.2	1.0	1.0						
99.1-102.4	30.2- 31.2		Coaly m.s.									
102.4-108.3	31.2- 33.0		COAL.	31.2-33.0	1.8	1.7	31.6	6.0	62.4	0.11	5,093	AN
108.3-114.8	33.0- 35.0		Fine-grained, light grey porphyritic sill.									
114.8-135.2	35.0- 41.2		COAL.	35.0-41.2	6.2	5.9	44.0	5.4	50.6	0.15	3,280	MA
135.2-147.0	41.2- 44.8		Fine-grained, light grey porphyritic sill.									
147.0-153.5	44.8- 46.8		COAL.	44.8-46.8	2.0	1.9	40.8	7.9	51.3	0.35	3,461	AN
153.5-167.3	46.8- 51.0		Grey-brown, gritty m.s.									
167.3-173.9	51.0- 53.0	2g ↓	Fine-grained "salt and pepper" s.s.									
173.9-180.4	53.0- 55.0		Conglomeratic, medium-grained "salt and pepper" s.s.									
180.4-244.7	55.0- 74.6		Conglomerate.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-17

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
244.7-268.0	74.6- 81.7	2g	Conglomeratic, medium-grained s.s.									
268.0-303.0	81.7- 92.4	"	Conglomerate.									

END OF HOLE 92.4 m.

Estimated Average Dip: 15^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 13.6 m??

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-18

Ccal Lease No.: 2965
Grid Co-ordinates: 100+00S, 14E
Bearing: -
Dip: -90°
Commenced: September 15, 1979
Completed: September 15, 1979
Ultimate Depth: 37.5 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 13.0	0.0- 4.0		Overburden.									
13.0- 27.0	4.0- 8.2	$2h_1$ ↓	COAL; dirty, oxidized, brownish chert to 20'.	6.1- 8.2	2.1	1.7	44.9	6.8	48.3	0.36	3,427	AN
27.0- 45.0	8.2- 13.7		Medium brown m.s., some slightly coaly.									
45.0- 53.0	13.7- 16.2		Grey-brown, slightly gritty m.s.									
53.0- 74.0	16.2- 22.6	2g ↓	Fine to medium-grained, "salt and pepper" s.s.									
74.0- 93.0	22.6- 28.3		Conglomeratic s.s.									
93.0-123.0	28.3- 37.5		Conglomerate.									

END OF HOLE 37.5 m.

Estimated Average Dip: 35°

Total Estimated True Thickness of Coal in seams >1 m: $2h_1$ - 1.7 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-19

Coal Lease No.: 2965
Grid Co-ordinates: 100+00S, 13+00E
Bearing: -
Dip: -90°
Commenced: September 16, 1979
Completed: September 16, 1979
Ultimate Depth: 47.2 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 5.0	0.0- 1.5		Overburden.									
5.0- 10.0	1.5- 3.0	$2h_1$ +	Very coaly overburden or rotten in-situ coal.									
10.0- 15.0	3.0- 4.6		Dirty coal.	3.0- 4.6	1.6	1.3						
15.0- 17.0	4.6- 5.2		Mudstone.									
17.0- 27.0	5.2- 8.2		Fine-grained, porphyritic (feldspar), biotitic, siliceous intrusive sill.									
27.0- 29.0	8.2- 8.8		Brown m.s.									
29.0- 43.0	8.8- 13.1		Thinly interbedded coal and coaly m.s.; 50/50%.									
43.0- 48.0	13.1- 14.6		COAL, minor m.s.	13.1-14.6	1.5	1.2						
48.0- 68.0	14.6- 20.7		Porphyritic, fine-grained, light grey intrusive sill.									
68.0- 76.0	20.7- 23.2		COAL.	20.7-23.2	2.5	2.1						
76.0- 80.0	23.2- 24.4		Dark grey m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-19

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
80.0- 82.0	24.4- 25.0	$2h_1$	COAL.									
82.0- 83.0	25.0- 25.3	"	Mudstone.									
83.0- 84.0	25.3- 25.6		COAL.									
84.0- 96.0	25.6- 29.3		Dark brownish-grey m.s.									
96.0-103.0	29.3- 31.4	2g	Slightly "salt and pepper", gritty m.s.									
103.0-125.0	31.4- 38.1	"	Fine to medium-grained "salt and pepper" s.s.									
125.0-137.0	38.1- 41.8		Conglomeratic, medium-grained "salt and pepper" s.s.									
137.0-155.0	41.8- 47.2		Conglomerate.									

END OF HOLE 47.2 m.

Estimated Average Dip: 35^{o}

Total Estimated True Thickness of Coal in seams > 1 m: $2h_1$ - 4.6 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-20

Coal Lease No.: 2965
Grid Co-ordinates: 101+00S, 1+00E
Bearing: -
Dip: -90^{0}
Commenced: September 16, 1979
Completed: September 17, 1979
Ultimate Depth: 165.8 m
Electrologged: 0 - 119.5 m

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 6.0	0.0- 1.8		Overburden.									
6.0- 65.6	1.8- 20.0	2i	Very coarse, some rusty weathered, Tantalus conglomerate.									
65.6- 66.6	20.0- 20.3	$2h_2$	COAL.									
66.6 - 81.0	20.3- 24.7	"	Dark brown m.s.									
81.0- 82.0	24.7- 25.0		COAL or coaly m.s.									
82.0- 88.6	25.0- 27.0		Dark brown m.s.									
88.6- 95.1	27.0- 29.0		Dark grey, laminated, gritty m.s.									
95.1-101.7	29.0- 31.0		Brown to black m.s., a few thin (<1') coaly beds.									
101.7-108.3	31.0- 33.0		Medium grey-brown massive m.s.									
108.3-113.2	33.0- 34.5		Grey, gritty m.s.									
113.2-123.0	34.5- 37.5		Dark grey-brown m.s.									
123.0-128.0	37.5- 39.0		Medium grey-brown, gritty m.s., scattered chocolate-brown m.s. and coaly beds.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-20

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
128.0-131.9	39.0- 40.2	$2h_2$	Dark grey, medium-grained s.s.									
131.9-139.8	40.2- 42.6	+	Dark brown to greyish-brown m.s.									
139.8-141.7	42.6- 43.2		COAL.									
141.7-143.4	43.2- 43.7		Mudstone.									
143.4-144.4	43.7- 44.0		COAL.									
144.4-151.6	44.0- 46.2		Brown m.s.									
151.6-153.2	46.2- 46.7		COAL.									
153.2-161.1	46.7- 49.1		Medium to dark brown m.s.									
161.1-168.0	49.1- 51.2		Gritty grey m.s.									
168.0-174.9	51.2- 53.3		Massive brown m.s., two thin (< 1') coal beds.									
174.9-177.2	53.3- 54.0		Gritty, laminated m.s.									
177.2-183.7	54.0- 56.0		Massive, medium grey-brown m.s.									
183.7-185.0	56.0- 56.4		Dark brown m.s.									
185.0-188.3	56.4- 57.6		COAL.	56.4-57.6	1.2	1.2						
188.3-189.3	57.4- 57.7		Mudstone.									
189.3-193.6	57.7- 59.0		COAL.	57.7-59.0	1.3	1.3						
193.6-208.3	59.0- 63.5		Massive m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-20

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
208.3-241.0	63.5- 73.5	$2h_1$	Sandstone to conglomeratic s.s., coarse-grained, clean quartzose s.s. by 230'.									
241.0-275.5	73.5- 84.0		Abrupt contact to dark brown to black m.s., some slightly gritty.									
275.5-288.7	84.0- 88.0		Fine-grained, medium to light grey, muddy matrix s.s.									
288.7-300.2	88.0- 91.5		Fine-grained, medium-grey intrusive, feld. lath., biotite.									
300.2-304.5	91.5- 92.8		Dirty COAL.	91.5-92.8	1.3	1.3						
304.5-309.1	92.8- 94.2		Mudstone.									
309.1-311.0	94.2- 94.8		COAL.									
311.0-318.2	94.8- 97.0		Fine-grained, dark grey to black m.s.									
318.2-323.2	97.0- 98.5		COAL and coaly m.s.	97.0-98.5	1.5	1.5						
323.2-326.1	98.5- 99.4		Light grey, porphyritic intrusive.									
326.1-328.7	99.4-100.2		COAL.									
328.7-329.7	100.2-100.5		Coaly m.s.									
329.7-338.6	100.5-103.2		Fine-grained, medium grey porphyritic intrusive, feld. lath., biotite.									
338.6-343.2	103.2-104.6		Dirty COAL, brownish dust.	103.2-104.6	1.4	1.4						
343.2-345.1	104.6-105.2		Mudstone.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-20

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
345.1-349.1	105.2-106.4	2h$_1$	Dirty COAL and coaly m.s.	105.2-106.4	1.4	1.4						
349.1-372.3	106.4-113.5	↓	Gritty m.s. to muddy matrix, fine-grained s.s.									
372.3-381.9	113.5-116.4		Dark grey m.s.									
381.9-382.3	116.4-116.8		COAL.									
382.3-387.8	116.8-118.2		Mudstone.									
387.8-391.7	118.2-119.4		COAL??									
391.7-393.0	119.4-119.8		Fine-grained, light grey intrusive sill.	118.2-119.4	1.2	1.2						
393.0-439.0	119.8-133.8		?? - difficult to log, closely interbedded m.s., gritty m.s., thin coal, s.s.									
439.0-456.0	133.8-139.0		Sill? of fine-grained, medium grey porphyritic (feld. lath.) biotitic, siliceous igneous rock.									
456.0-460.0	139.0-140.0		COAL?	139.0-140.0	1.0	1.0						
460.0-466.0	140.0-142.0		Interbedded m.s.,s.s., thin coal.									
466.0-470.0	142.0-143.2		Dark grey, gritty m.s.									
470.0-481.0	143.2-146.6	2g	Fine-grained "salt and pepper" s.s.									
481.0-490.0	146.6-149.4	↓	Fine to medium-grained, conglomeratic "salt and pepper" s.s.									
490.0-513.0	149.4-156.4		Conglomerate.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-20

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
513.0-523.0	156.4-159.4	2g	Conglomeratic s.s.									
523.0-544.0	159.4-165.8	+	Conglomerate.									

END OF HOLE 165.8 m.

Estimated Average Dip: 10^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_2$ - 2.5 m
$2h_1$ - 7.8 m

ROTARY DRILL HOLE LOG

Carmacks South Project 1979

Hole No. CS-79-21

Coal Lease No.: 2965
Grid Co-ordinates: 110+80S, 4+50W
Bearing: -
Dip: -90^{o}
Commenced: September 18, 1979
Completed: September 19, 1979
Ultimate Depth: 123.4 m
Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
0.0- 38.0	0.0- 11.6		Overburden.									
38.0- 50.0	11.6- 15.2	$2h_2$	Dark grey-brown m.s.									
50.0- 52.0	15.2- 15.8	+	Gritty m.s.									
52.0- 54.0	15.8- 16.5		Dark grey m.s.									
54.0- 71.0	16.5- 21.6		Grey gritty m.s., some finely laminated.									
71.0- 73.0	21.6- 22.3		Fine-grained, light to medium grey, slightly "salt and pepper" s.s.									
73.0- 97.0	22.3- 29.6		Conglomerate.									
97.0-103.0	29.6- 31.4		Conglomeratic, medium-grained "salt and pepper" s.s.									
103.0-106.0	31.4- 32.3		Conglomerate.									
106.0-110.0	32.3- 33.5		Abrupt contact to massive, dark brown m.s.									
110.0-112.0	33.5- 34.1		Clean, fine-grained quartzose s.s.									
112.0-114.0	34.1- 34.7		Coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-21

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
114.0-118.0	34.7- 36.0	$2h_2$	Mudstone.									
118.0-125.0	36.0- 38.1	↓	COAL.	36.0-38.1	2.1	1.9						
125.0-130.0	38.1- 39.6		Coaly m.s.									
130.0-135.0	39.6- 41.1		Light grey, fine-grained, slightly porphyritic sill.									
135.0-142.0	41.1- 43.3		COAL and coaly m.s.	41.1-43.3	2.2	2.0						
142.0-147.0	43.3- 44.8		Grey m.s.									
147.0-148.0	44.8- 45.1		Coaly m.s.									
148.0-155.0	45.1- 47.2		Grey-brown m.s.									
155.0-170.0	47.2- 51.8	$2h_1$	Very fine-grained, "salt and pepper" s.s.									
170.0-180.0	51.8- 54.9	↓	Conglomeratic, medium-grained, "salt and pepper" s.s.									
180.0-186.0	54.9- 56.7		Medium to coarse-grained s.s.									
186.0-211.0	56.7- 64.3		Conglomeratic, medium-grained, "salt and pepper" s.s.									
211.0-214.0	64.3- 65.2		COAL.									
214.0-215.0	65.2- 65.5		Grey m.s.									
215.0-218.0	65.5- 66.4		COAL.									
218.0-226.0	66.4- 68.9		Dark brown to coaly m.s.									

ROTARY DRILL HOLE LOG

Hole No. CS-79-21

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
226.0-230.0	68.9- 70.1	$2h_1$	COAL.	68.9-70.1	1.2	1.1						
230.0-238.0	70.1- 72.5	↓	Interbedded thin coal, coaly m.s., m.s.??									
238.0-246.0	72.5- 75.0		Dark grey m.s.									
246.0-251.0	75.0- 76.5		?									
251.0-253.0	76.5- 77.1		Coaly m.s.									
253.0-256.0	77.1- 78.0		Medium-grained, slightly conglomeratic s.s.									
256.0-266.0	78.0- 81.1		Black m.s., some coaly, some gritty.									
266.0-283.0	81.1- 86.3		Medium to coarse-grained, quartzose s.s., thin m.s. beds and thin "salt and pepper" s.s. beds.									
283.0-285.0	86.3- 86.9		COAL.									
285.0-292.0	86.9- 89.0		Fine-grained, light grey sill.									
292.0-294.0	89.0- 89.6		COAL.									
294.0-296.0	89.6- 90.2		Coaly m.s.									
296.0-301.0	90.2- 91.7		COAL, minor dirty coal, coaly m.s.	90.2-91.7	1.5	1.4						
301.0-308.0	91.7- 93.9		Fine-grained, medium grey, porphyritic intrusive sill.									
308.0-312.0	93.9- 95.1		COAL, appears very dirty.	93.9-95.1	1.2	1.1						

ROTARY DRILL HOLE LOG

Hole No. CS-79-21

INTERVAL		UNIT	DESCRIPTION	ANALYSES (db)								
Feet	Metres			Interval	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM.	Rank
312.0-337.0	95.1-102.7	$2h_1$ ↓	Fine-grained, light to medium grey, slightly porphyritic (feld. lath.) intrusive sill.									
337.0-339.0	102.7-103.3		COAL.									
339.0-343.0	103.3-104.5		Interbedded thin coal, m.s., s.s.									
343.0-349.0	104.5-106.4		Light grey s.s.???									
349.0-352.0	106.4-107.3		Mudstone.									
352.0-371.0	107.3-113.1	2g ↓	Fine to medium-grained "salt and pepper" s.s.									
371.0-397.0	113.1-121.0		Conglomeratic, medium-grained "salt and pepper" s.s.									
397.0-405.0	121.0-123.4		Conglomerate.									

END OF HOLE 123.4 m.

Estimated Average Dip: 25^{o}

Total Estimated True Thickness of Coal in seams >1 m: $2h_2$ - 3.9 m
$2h_1$ - 3.6 m

APPENDIX III

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-01

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3973 86.9-88.1	2.8	0.8	69.0	--	--	0.24	--	--	13.542	adb
		3.6	67.1	--	--	0.23	--	--	--	arb
			69.6	--	--	0.24	--	--	--	db
3974 89.3-90.5	3.1	0.8	74.9	--	--	0.24	--	--	3.089	adb
		3.9	72.6	--	--	0.23	--	--	--	arb
			75.5	--	--	0.24	--	--	--	db

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-02

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3975	3.9	0.7	24.2	24.0	51.1	0.53	6149	6	8.302	adb
55.8-57.3		4.6	23.3	23.1	49.0	0.51	5909	--	--	arb
			24.4	24.2	51.4	0.53	6192	--	--	db

	DMMF F.C.%	RANK
3975	70.6	MVB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

LIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-03

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3976	3.4	0.9	50.0	16.9	32.2	0.47	3156	1	4.402	adb
11.0-12.4		4.3	48.3	16.3	31.1	0.45	3049	--	--	arb
			50.5	17.1	32.4	0.47	3185	--	--	db
3977	5.5	0.9	34.8	16.7	47.6	0.60	5096	N.A.	1.506	adb
13.6-14.6		6.4	32.9	15.8	44.9	0.57	4816	--	--	arb
			35.1	16.9	48.0	0.61	5142	--	--	db
3978	4.3	1.1	60.0	--	--	0.31	--	--	7.430	adb
28.7-30.5		5.4	57.4	--	--	0.30	--	--	--	arb
			60.7	--	--	0.31	--	--	--	db
3979	3.9	1.0	52.3	--	--	0.18	--	--	20.476	adb
31.7-33.5		4.9	50.3	--	--	0.17	--	--	--	arb
			52.8	--	--	0.18	--	--	--	db
3980	4.7	1.0	42.2	6.6	50.2	0.32	3104	N.A.	4.281	adb
36.0-36.9		5.7	40.2	6.3	47.8	0.30	2958	--	--	arb
			42.6	6.7	50.7	0.32	3135	--	--	db
3981	6.7	1.1	60.4	--	--	0.33	--	--	7.800	adb
46.9-47.9		7.7	56.4	--	--	0.31	--	--	--	arb
			61.1	--	--	0.33	--	--	--	db
1982	7.9	1.0	52.0	--	--	0.38	--	--	31.041	adb
53.9-56.1			47.9	--	--	0.35	--	--	--	arb
			52.5	--	--	0.38	--	--	--	db
3983	6.5	1.0	55.3	--	--	0.26	--	--	8.267	adb
56.1-57.6			51.7	--	--	0.24	--	--	--	arb
			55.9	--	--	0.26	--	--	--	db
3984	11.3	0.9	44.2	8.4	46.5	0.24	3173	N.A.	15.277	adb
60.4-61.6		12.1	39.2	7.5	41.2	0.21	2814	--	--	arb
			44.6	8.5	46.9	0.24	3202	--	--	db

	DMMF F.C.%	RANK
3976	72.8	MVB
3977	85.6	LVB
3980	95.3	AN
3984	92.0	AN

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-04

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3985	5.5	1.0	72.1	--	--	0.11	--	--	14.012	adb
7.3- 7.9		6.4	68.1	--	--	0.10	--	--	--	arb
			72.8	--	--	0.11	--	--	--	db
3986	8.0	1.3	56.0	--	--	0.35	--	--	4.878	adb
14.2-15.0		9.2	51.5	--	--	0.32	--	--	--	arb
			56.7	--	--	0.35	--	--	--	db
3987	7.3	1.0	28.4	7.3	63.3	0.37	5328	N.A.	15.547	adb
16.0-17.1		8.2	26.3	6.8	58.7	0.34	4939	--	--	arb
			28.7	7.4	63.9	0.37	5382	--	--	db
3988	4.9	1.0	33.9	8.4	56.7	0.47	4787	N.A.	10.800	adb
18.0-19.8		5.9	32.2	8.0	53.9	0.45	4552	--	--	arb
			34.2	8.5	57.3	0.47	4835	--	--	db
3989	6.6	0.7	41.1	10.6	47.6	0.44	3303	N.A.	29.583	adb
20.0-21.6		7.3	38.4	9.9	44.4	0.41	3085	--	--	arb
			41.4	10.7	47.9	0.44	3326	--	--	db
3990	4.3	0.6	57.0	--	--	0.42	--	--	5.323	adb
22.0-22.6		4.9	54.5	--	--	0.40	--	--	--	arb
			57.3	--	--	0.42	--	--	--	db
3991	5.7	1.0	40.8	7.6	50.6	0.44	4444	N.A	15.980	adb
24.7-27.0		6.6	38.5	7.2	47.7	0.41	4191	--	--	arb
			41.2	7.7	51.1	0.44	4489	--	--	db
3992	3.5	1.1	78.0	--	--	0.11	--	--	22.196	adb
30.6-31.2		4.6	75.3	--	--	0.11	--	--	--	arb
			78.9	--	--	0.11	--	--	--	db
3993	3.8	0.9	79.4	--	--	0.11	--	--	11.807	adb
32.3-32.8		4.7	76.4	--	--	0.11	--	--	--	arb
			80.1	--	--	0.11	--	--	--	db
3994	4.9	1.1	62.0	--	--	0.25	--	--	52.356	adb
40.4-43.0		5.9	59.0	--	--	0.24	--	--	--	arb
			62.7	--	--	0.25	--	--	--	db
3995	6.2	1.3	50.8	--	--	0.35	--	--	12.640	adb
43.0-44.5		7.4	47.7	--	--	0.33	--	--	--	arb
			51.5	--	--	0.35	--	--	--	db

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD

LIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-04

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3996 7.8-50.2	6.7	1.0	50.9	--	--	0.22	--	--	31.428	adb
		7.6	47.5	--	--	0.21	--	--	--	arb
			51.4	--	--	0.22	--	--	--	db
3997 117.7-124.7	6.1	0.5	61.4	--	--	0.22	--	--	2.728	adb
		6.6	57.7	--	--	0.21	--	--	--	arb
			61.7	--	--	0.22	--	--	--	db

	DMMF F.C.%	RANK
3987	93.4	AN
3988	91.8	AN
3989	87.9	SA
3991	93.4	AN

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-05

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3998 30.8-34.4	2.6	0.6	59.5	--	--	0.19	--	--	45.074	adb
		3.2	58.0	--	--	0.19	--	--	--	arb
			59.9	--	--	0.19	--	--	--	db

Birtley Coal & Minerals Testing

A DIVISION OF GR. AT WEST STEEL INDUSTRIES LTD

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-06

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
3999	3.7	0.5	34.8	19.7	45.0	0.51	5186	4 1/2	11.987	adb
52.7-53.9		4.2	33.5	19.0	43.3	0.49	4994	--	--	arb
			35.0	19.8	45.2	0.51	5212	--	--	db

	DMMF F.C.%	RANK
3999	73.6	MVB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

LIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-12

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4000	5.7	0.8	48.7	8.6	41.9	0.32	3196	N.A.	16.277	adb
7.3-10.4		6.5	45.9	8.1	39.5	0.30	3013	--	--	arb
			49.1	8.7	42.2	0.32	3222	--	--	db
4001	7.2	0.8	37.8	7.0	54.4	0.49	4887	N.A.	40.844	adb
25.0-30.2		7.9	35.1	6.5	50.5	0.45	4535	--	--	arb
			38.1	7.1	54.8	0.49	4926	--	--	db
4002	3.6	0.7	46.6	12.7	40.0	0.32	3439	N.A.	10.517	adb
37.8-40.8		4.3	44.9	12.2	38.6	0.31	3315	--	--	arb
			46.9	12.8	40.3	0.32	3463	--	--	db

	DMMF F.C.%	RANK
4000	91.9	SA
4001	94.3	AN
4002	83.4	LVB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

20 November 1979

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-16

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4003 16.0-17.2	4.6	0.6	19.8	25.5	54.1	0.42	6450	5 1/2	6.556	adb
		5.2	18.9	24.3	51.6	0.40	6153	--	--	arb
			19.9	25.7	54.4	0.42	6489	--	--	db
4004 60.7-61.5	3.3	0.8	62.1	--	--	0.15	--	--	6.507	adb
		4.1	60.1	--	--	0.15	--	--	--	arb
			62.6	--	--	0.15	--	--	---	db
4005 64.2-66.3	4.8	1.1	48.1	5.2	45.6	0.24	3099	N.A.	28.450	adb
		5.8	45.8	5.0	43.4	0.23	2950	--	--	arb
			48.6	5.3	46.1	0.24	3133	--	--	db
4006 67.5-68.5	6.6	0.7	35.5	6.9	56.9	0.44	4845	N.A	6.129	adb
		7.3	33.2	6.4	53.1	0.41	4525	--	--	arb
			35.8	6.9	57.3	0.44	4879	--	--	db

	DMMF F.C.%	RANK
4003	69.7	MVB
4005	98.9	MA
4006	94.5	AN

Birtley Coal & Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-17

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4007	9.3	1.4	31.2	5.9	61.5	0.11	5022	N.A.	12.563	adb
31.2-33.0		10.6	28.3	5.4	55.7	0.10	4555	--	--	arb
			31.6	6.0	62.4	0.11	5093	--	--	db
4008	8.4	1.1	43.5	5.3	50.1	0.15	3244	N.A.	67.696	adb
35.0-41.2		9.4	39.8	4.9	45.9	0.14	2972	--	--	arb
			44.0	5.4	50.6	0.15	3280	--	--	db
4009	5.3	0.8	40.5	7.8	50.9	.035	3433	N.A.	20.825	adb
44.8-46.8		6.1	38.4	7.4	48.1	0.33	3251	--	--	arb
			40.8	7.9	51.3	0.35	3461	--	--	db

	DMMF F.C.%	RANK
4007	95.7	AN
4008	98.2	MA
4009	93.1	AN

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-18

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4010 6.1- 8.2	9.6	2.1	44.0	6.7	47.2	0.35	3355	N.A.	25.795	adb
		11.5	39.8	6.1	42.6	0.32	3033	--	--	arb
			44.9	6.8	48.3	0.36	3427	--	--	db

	DMMF F.C.%	RANK
4010	95.5	AN

Birtley Coal
& Minerals Testing

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-22

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4011	3.1	0.7	3.45	19.3	45.5	0.51	5266	1	10.451	adb
20.2-21.2		3.8	33.4	18.7	44.1	0.49	5103	--	--	arb
			34.7	19.4	45.9	0.51	5303	--	--	db
4012	2.8	0.8	43.3	16.9	39.0	0.38	3516	N.A.	18.837	adb
27.0-29.0		3.6	42.1	16.4	37.9	0.37	3418	--	--	arb
			43.6	17.0	39.4	0.38	3544	--	--	db
4013	3.5	1.1	49.2	10.6	39.1	0.22	2960	N.A.	16.451	adb
31.0-32.0		4.6	47.5	10.2	37.7	0.21	2856	--	--	arb
			49.7	10.7	39.6	0.22	2993	--	--	db
4014	3.6	0.8	47.4	12.9	38.9	0.44	3292	N.A.	8.832	adb
37.1-37.9		4.4	45.7	12.4	37.5	0.42	3173	--	--	arb
			47.8	13.0	39.2	0.44	3319	--	--	db
4015	5.4	0.9	64.0	--	--	0.25	--	--	17.050	adb
65.8-67.8		6.3	60.5	--	--	0.24	--	--	--	arb
			64.6	--	--	0.25	--	--	--	db

	DMMF F.C.%	RANK
4011	74.4	MVB
4012	75.8	MVB
4013	87.6	SA
4014	82.7	LVB

Birtley Coal
& Minerals Testing

A DIVISION OF BRITISH STEEL INDUSTRIES LTD

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-24

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4016	3.2	0.6	22.0	18.9	58.5	0.49	6495	1	54.077	adb
48.4-58.6		3.8	21.3	18.3	56.6	0.47	6287	--	--	arb
			22.1	19.0	58.9	0.49	6534	--	--	db
4017	2.1	0.5	65.4	--	--	0.33	--	--	11.954	adb
115.8-117.0		2.6	64.0	--	--	0.32	--	--	--	arb
			65.7	--	--	0.33	--	--	--	db

	DMMF F.C.%	RANK
4016	77.8	MVB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-28

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4018	4.4	0.8	63.0	--	--	0.46	--	--	12.522	adb
34.5-36.7		5.2	60.2	--	--	0.44	--	--	--	arb
			63.5	--	--	0.46	--	--	--	db
4019	4.7	1.0	80.0	--	--	0.13	--	--	7.994	adb
80.5-81.5		5.7	76.2	--	--	0.12	--	--	--	arb
			80.8	--	--	0.13	--	--	--	db

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-29

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4020	7.2	1.1	62.1	--	--	0.42	--	--	59.755	adb
17.4-22.6		8.2	57.6	--	--	0.39	--	--	--	arb
			62.8	--	--	0.42	--	--	--	db
4021	7.8	0.8	51.5	--	--	1.18	--	--	32.266	adb
28.5-31.0		8.5	47.5	--	--	1.09	--	--	--	arb
			51.9	--	--	1.19	--	--	--	db
4022	5.0	0.9	72.6	--	--	0.31	--	--	6.479	adb
46.4-47.6		5.9	69.0	--	--	0.29	--	--	--	arb
			73.3	--	--	0.31	--	--	--	db
4023	3.8	0.8	53.8	--	--	0.30	--	--	15.618	adb
49.0-50.5		4.6	51.8	--	--	0.29	--	--	--	arb
			54.2	--	--	0.30	--	--	--	db
4024	9.5	0.6	49.1	9.4	40.9	0.18	2991	N.A.	14.757	adb
54.5-56.0		10.0	44.4	8.5	37.1	0.16	2707	--	--	arb
			49.4	9.5	41.1	0.18	3009	--	--	db

	DMMF F.C.%	RANK
4024	90.3	SA

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

CLIENT: CYPRUS ANVIL MINING CORPORATION

SAMPLE: ROTARY DRILL HOLE SAMPLES - CARMACKS SOUTH COAL PROJECT

DRILL HOLE NO.: CS-79-32

LAB.NO.	A.D.M.	MOIST.	ASH%	VOL%	FC.%	S.%	C.V. Cal./gm.	F.S.I.	a.d. Wt. (kg.)	
4025	3.2	0.8	43.4	17.5	38.8	0.42	3434	N.A.	10.818	adb
		4.0	42.0	16.9	37.1	0.41	3324	--	--	arb
18.6-20.0			43.8	17.6	38.6	0.42	3462	--	--	db
4026	2.2	0.5	30.4	21.1	48.0	0.47	5558	1	33.848	adb
		2.7	29.7	20.6	47.0	0.46	5436	--	--	arb
24.8-28.0			30.6	21.2	48.2	0.47	5586	--	--	db

	DMMF F.C.%	RANK
4025	74.5	MVB
4026	72.7	MVB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.

APPENDIX IV

CLIENT : CYPRUS ANVIL MINING

PROJECT : SAMPLES RECEIVED JUNE 4, 1980

LAB NO.	SAMPLE I.D.	ADM%	MOIST	PROXIMATE ASH%	PROXIMATE VM %	PROXIMATE FC %	S %		BTU/LB	FSI	EQUIL. MOISTURE	CALC * BASIS
5.16	TR 30 S	6.5	5.6	26.8	21.7	45.9	0.53		8247	N.A.	10.2	a.d.b.
			11.7	25.1	20.3	42.9	0.50		7711	N.A.		a.r.b.
				28.4	23.0	48.6	0.56		8736	N.A.		d.b.
5.17	TR L112S	14.3	2.2	47.8	19.4	30.6	0.41		5483	N.A.	8.3	a.d.b.
	18+73 -18+79W		16.2	41.0	16.6	26.2	0.35		4699	N.A.		a.r.b.
				48.9	19.8	31.3	0.42		5606	N.A.		d.b.
5 18	TR L124S	13.9	5.9	30.0	23.7	40.4	0.48		7386	N.A.	22.4	a.d.b.
	17+20 -17+24.5W		19.0	25.8	20.4	34.8	0.41		6359	N.A.		a.r.b.
				31.9	25.2	42.9	0.51		7849	N.A.		d.b.

air dried basis - a.d.b.
as received basis - a.r.b.
dry basis - d.b.

Birtley Coal
& Minerals Testing

CLIENT : CYPRUS ANVIL MINING CORP. CARMACKS SOUTH TRENCH SAMPLES

PROJECT: CARMACKS TRENCH L51S received June 26,1980

SL NO.	SAMPLE I.D.	ADM%	MOIST.	PROXIMATE ASH %	V.M.%	F.C.%	S%		BTU/ LB	EQUIL. MOIST. %		CALC BASI
3.	14+ 52- 14+ 61	16.9	4.8	33.9	18.2	43.1	0.32		7715	17.7		a.d.b.
			20.9	28.2	15.1	35.8	0.27		6411	--		a.r.b.
				35.6	19.1	45.3	0.34		8104	--		d.b.

NO.	SAMPLE I.D.	ADM%	MOIST.	PROXIMATE ASH %	V.M.%	F.C.%	S%		BTU/ LB	EQUIL. MOIST.%		CALC BASI
8	14 + 61- 14 + 67	18.3	4.2	25.9	19.0	50.9	0.39		8980	22.4		a.d.b.
			21.7	21.2	15.5	41.6	0.32		7337	--		a.r.b.
				27.0	19.8	53.2	0.41		9374	--		d.b.

	SAMPLE I.D.	ADM%	MOIST.	PROXIMATE ASH %	V.M.%	F.C.%	S%		BTU/ LB	EQUIL. MOIST.%		CALC BASI
9	13 + 91- 14+ 00	14.3	3.7	36.6	18.3	41.4	0.36		7518	14.4		a.d.b.
			17.5	31.4	15.7	35.4	0.41		6443	--		a.r.b.
				38.0	19.0	43.0	0.37		7807	--		d.b.

	DMMF F.C.	Rank
5237	74.5	MvB
5238	75.7	MvB
5239	73.9	MvB

Birtley Coal
& Minerals Testing

A DIVISION OF GREAT WESTERN ELECTRONICS LTD.

CLIENT : CYPRUS ANVIL MINING CORPORATION

PROJECT: Samples received October 3, 1980

CARMACKS SOUTH TRENCH SAMPLES

TRENCH L51S

LAB NO.	SAMPLE I.D.	ADM%	MOIST%	ASH %	VOL%	F.C.%	S%	BTU/LB	EQUIL. MOIST.%	CALC. BASIS
6218	X	16.0	1.5	30.1	18.7	49.7	0.38	9248	7.5	adb
			17.3	25.3	15.7	41.7	0.32	7768		arb
				30.6	19.0	50.4	0.39	9389		db
6219	TR-L 51S 11+42 - 11+65W	16.4	1.8	25.2	18.6	54.4	0.39	9922	6.2	adb
			17.9	21.1	15.5	45.5	0.33	8295		arb
				25.7	18.9	55.4	0.40	10104		db
6220	TR-L 51S 11+97- 12+04 W	11.8	3.9	23.4	17.4	55.3	0.45	9922	7.9	adb
			15.2	20.6	15.3	48.9	0.40	8751		arb
				24.3	18.1	57.6	0.47	10325		db
6221	TR-L 51S 12+ 10- 12+18W	9.4	2.2	32.3	17.5	48.0	0.37	8789	5.8	adb
			11.4	29.3	15.9	43.4	0.34	7963		arb
				33.0	17.9	49.1	0.38	8987		db
6222	TR-L 51S 12+35- 12+4 OW	12.9	4.7	33.6	16.6	45.1	0.34	7793	9.9	adb
			17.0	29.3	14.5	39.2	0.30	6788		arb
				35.3	17.4	47.3	0.36	8177		db
6223	TR-L 51S 12+92W	14.1	0.8	23.6	15.8	59.8	0.14	9280	4.7	adb
			14.8	20.3	13.6	51.3	0.12	7972		arb
				23.8	15.9	60.3	0.14	9355		db

	DMMF F.C.	RANK
6218	76.0	MvB
6219	77.3	MvB
6220	78.0	MvB
6221	77.1	MvB
6222	77.4	MvB
6223	81.7	LvB

Birtley Coal & Minerals Testing

DIVISION OF GREAT WEST STEEL INDUSTRIES LTD

CLIENT : CYPRUS ANVIL MINING

PROJECT : SAMPLES RECEIVED JUNE 4, 1980

TRENCH SAMPLES - CARMACKS NORTH
CARMACKS SOUTH

LAB NO.	SAMPLE I.D.	ADM%	MOIST	PROXIMATE ASH%	PROXIMATE VM %	PROXIMATE FC %	S %		BTU/LB	FSI	EQUIL. MOISTURE	CALC * BASIS
109	TR 16 N Main Seam	3.4	14.9	6.2	29.4	49.5	0.32		9004	N.A.	18.2	a.d.b.
			17.8	6.0	28.4	47.8	0.31		8698	N.A.		a.r.b.
				7.3	34.5	58.2	0.38		10580	N.A.		d.b.
5110	TR 17 N Main Seam	5.4	14.6	5.6	29.8	50.0	0.33		9207	N.A.	17.5	a.d.b.
			19.2	5.3	28.2	47.3	0.31		8710	N.A.		a.r.b.
				6.6	34.9	58.5	0.39		10781	N.A.		d.b.
111	TR 19 N Main Seam	4.6	16.3	6.3	28.1	49.3	0.38		8713	N.A.	18.7	a.d.b.
			20.2	6.0	26.8	47.0	0.36		8312	N.A.		a.r.b.
				7.5	33.6	58.9	0.45		10410	N.A.		d.b.
112	TR 27 N Main Seam	6.5	7.0	9.4	25.9	57.7	0.38		10727	N.A.	9.0	a.d.b.
			13.0	8.8	24.2	54.0	0.36		10030	N.A.		a.r.b.
				10.1	27.8	62.1	0.41		11534	N.A.		d.b.
113	TR 29 S SAMPLE A	3.9	9.0	31.4	21.6	38.0	0.42		6702	N.A.	10.9	a.d.b.
			12.5	30.2	20.8	36.5	0.40		6441	N.A.		a.r.b.
				34.5	23.7	41.8	0.46		7365	N.A.		d.b.
114	TR 29 S SAMPLE B	4.1	9.9	29.0	22.8	38.3	0.44		6824	N.A.	12.8	a.d.b.
			13.6	27.8	21.9	36.7	0.42		6544	N.A.		a.r.b.
				32.2	25.3	42.5	0.49		7574	N.A.		d.b.
5115	TR 29 S SAMPLE C	2.3	8.4	35.4	22.0	34.2	0.40		6082	N.A.	10.8	a.d.b.
			10.5	34.6	21.5	33.4	0.39		5942	N.A.		a.r.b.
				38.6	24.0	37.4	0.44		6640	N.A.		d.b.

* air dried basis - a.d.b.
— as received basis - a.r.b.
dry basis - d.b.

Birtley Coal
& Minerals Testing

YUKON RIVER

CARMACKS

C.M.L. No. 2954
C.M.L. No. 2983
C.M.L. No. 2968
C.M.L. No. 2982
C.M.L. No. 2976
C.M.L. No. 2949
C.M.L. No. 2953
C.M.L. No. 2951
C.M.L. No. 2977
C.M.L. No. 2969
C.M.L. No. 2981
C.M.L. No. 2980
C.M.L. No. 2979
C.M.L. No. 2978
C.M.L. No. 2967
C.M.L. No. 2974
C.M.L. No. 2972
C.M.L. No. 2971
C.M.L. No. 2970
C.M.L. No. 2973

CUT GRID LINES

BL 0 + 00	40 S	-	270 S
BL 20 + 00 W	70 S	-	200 S
BL 20 + 00 E	90 S	-	140 S
BL 40 + 00 E	100 S	-	240 S
L 112 + 00 S	0	-	48 E
L 158 + 00 S	10 W	-	50 E
L 224 + 00 S	0	-	50 E

LEGEND

Eocene or Younger

3 CARMACKS GROUP
Basaltic and andesitic volcanics

Lower Cretaceous and/or Upper Jurassic

2 TANTALUS FORMATION
- 2i Conglomerate (quartz & chert pebbles)
- 2h Coal Measures
  - $2h_2$ Mudstone, sandstone, minor coal
  - $2h_1$ Mudstone, sandstone, conglomerate, coal, felsitic flows or sills
- 2g Conglomerate (quartz & chert pebbles), sandstone, minor mudstone, coal
  - $2g_2$ Conglomerate, conglomeratic sandstone, sandstone, minor mudstone
  - 2g1 Sandstone, conglomerate, mudstone, coal
- 2f Gritty mudstone
- 2e Quartzose, conglomeratic sandstone and sandstone
- 2d Mudstone
- 2c Very clean quartz sandstone
- 2b Conglomerate (quartz & chert pebbles)
- 2a Sandstone, conglomeratic sandstone, minor conglomerate

Lower and Middle Jurassic

1 LABERGE GROUP
Conglomerate (cobbles of dark volcanics, granitic rocks, siliceous dark mudstone, arkose, mudstone, minor coal.

SYMBOLS

- Fault
- Inferred
- Synclinal axis
- Anticlinal axis
- Sedimentary contact
- Access road
- Access cat trail
- Diamond drill hole
- Rotary drill hole
- Outcrop limits
- Bulldozer trench
- cg Conglomerate

CYPRUS ANVIL MINING CORPORATION

CARMACKS SOUTH COAL LEASE AREA

YUKON TERRITORY

GEOLOGICAL MAP

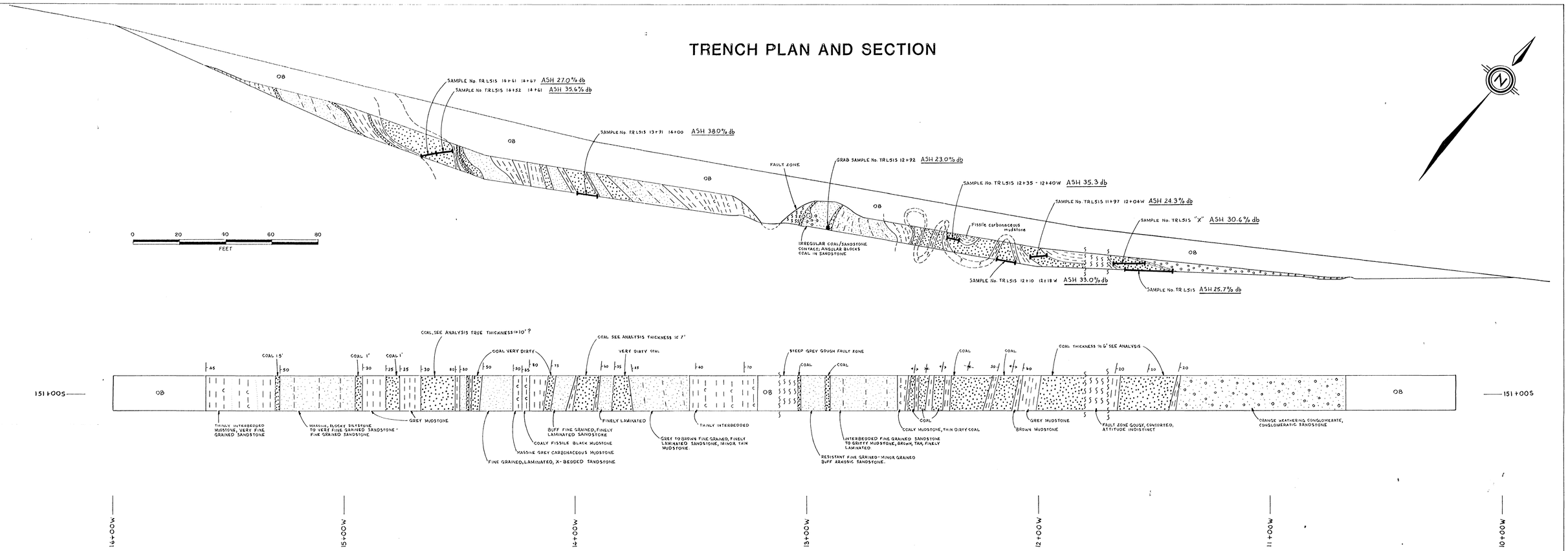
SCALE: 1" = 800'

800 400 0 800 1600 2400

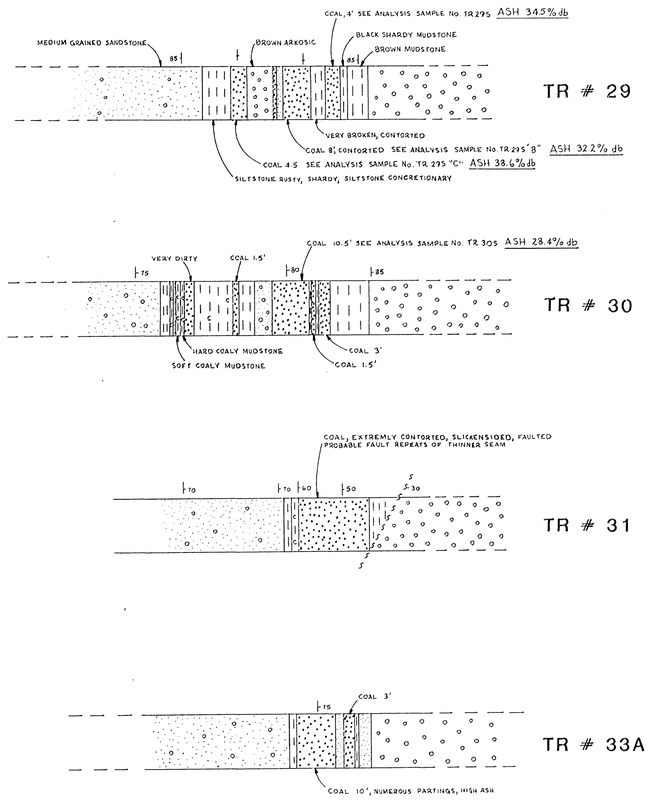
NTS 115-1-1
SURVEY BY TA
DRAWN BY VF

DATE SEPT. 1980

TRENCH PLAN AND SECTION



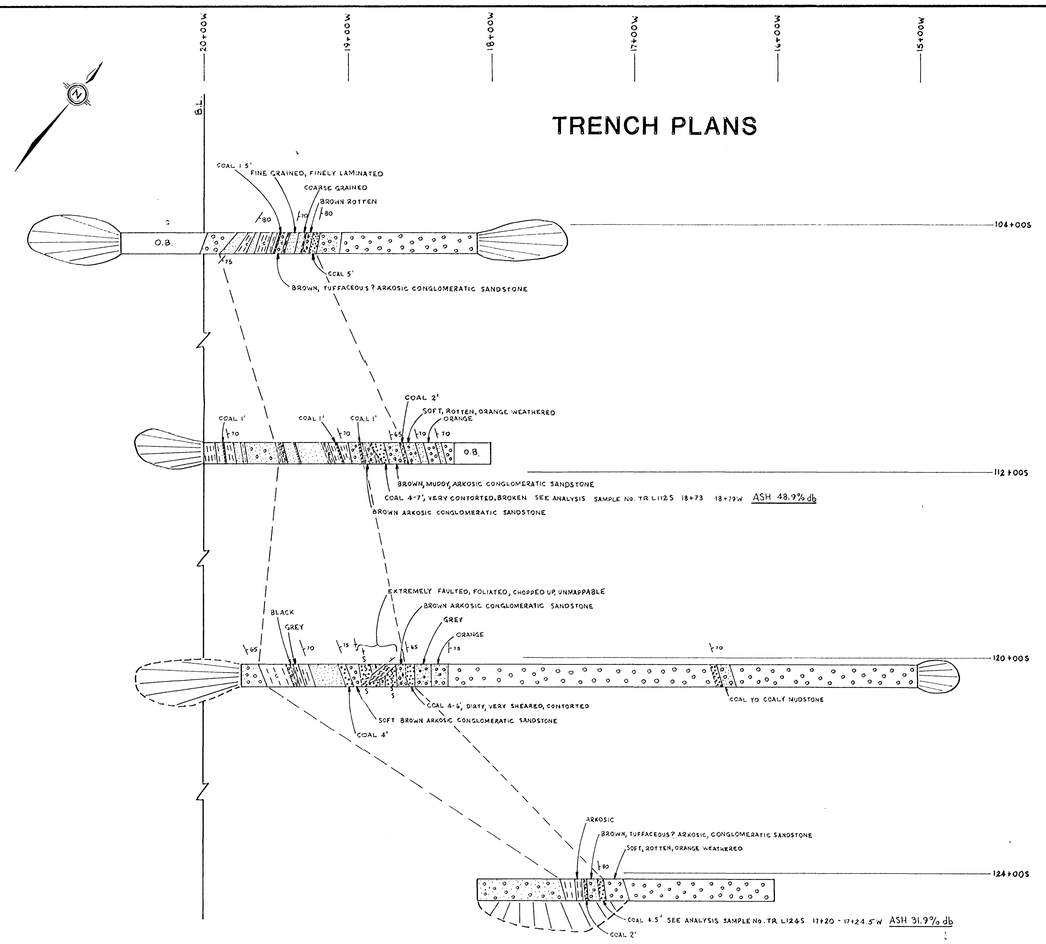
1976 TRENCH PLANS



DEEPENING, REMAPPING OF COAL SECTION EXPOSED IN SOME 1976 TRENCHES

0 20 40
FEET

TRENCH PLANS



SURFACE FOLLOW-UP OF COAL INTERSECTED IN DRILL HOLE CS-79-24

0 50 100
FEET

LEGEND

- OVERBURDEN
- COAL
- CARBONACEOUS MUDSTONE
- MUDSTONE AND SILTSTONE
- GRITTY MUDSTONE
- SANDSTONE
- CONGLOMERATIC SANDSTONE
- CONGLOMERATE
- COAL SAMPLE

CYPRUS ANVIL MINING CORPORATION

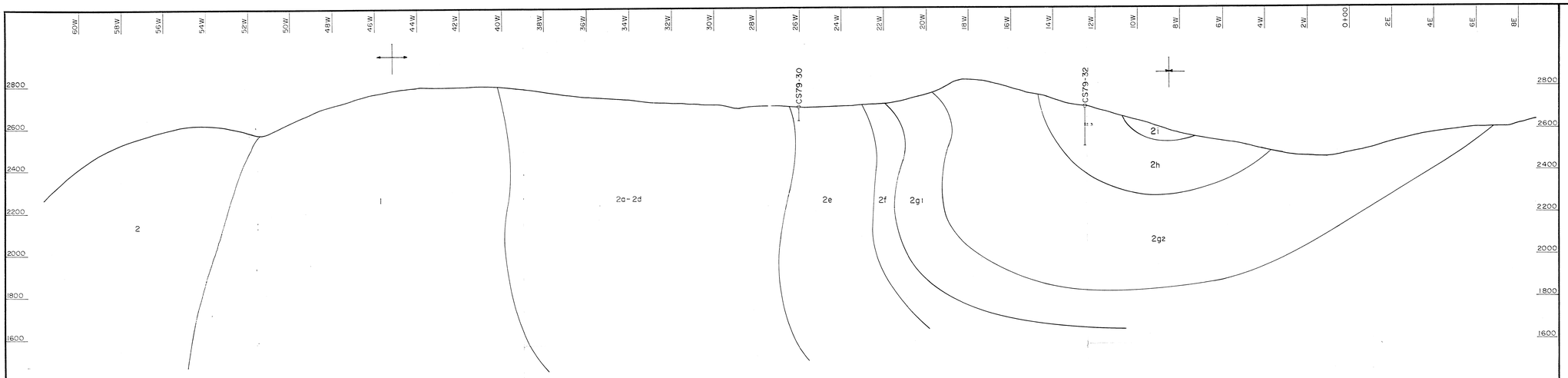
CARMACKS SOUTH

YUKON TERRITORY

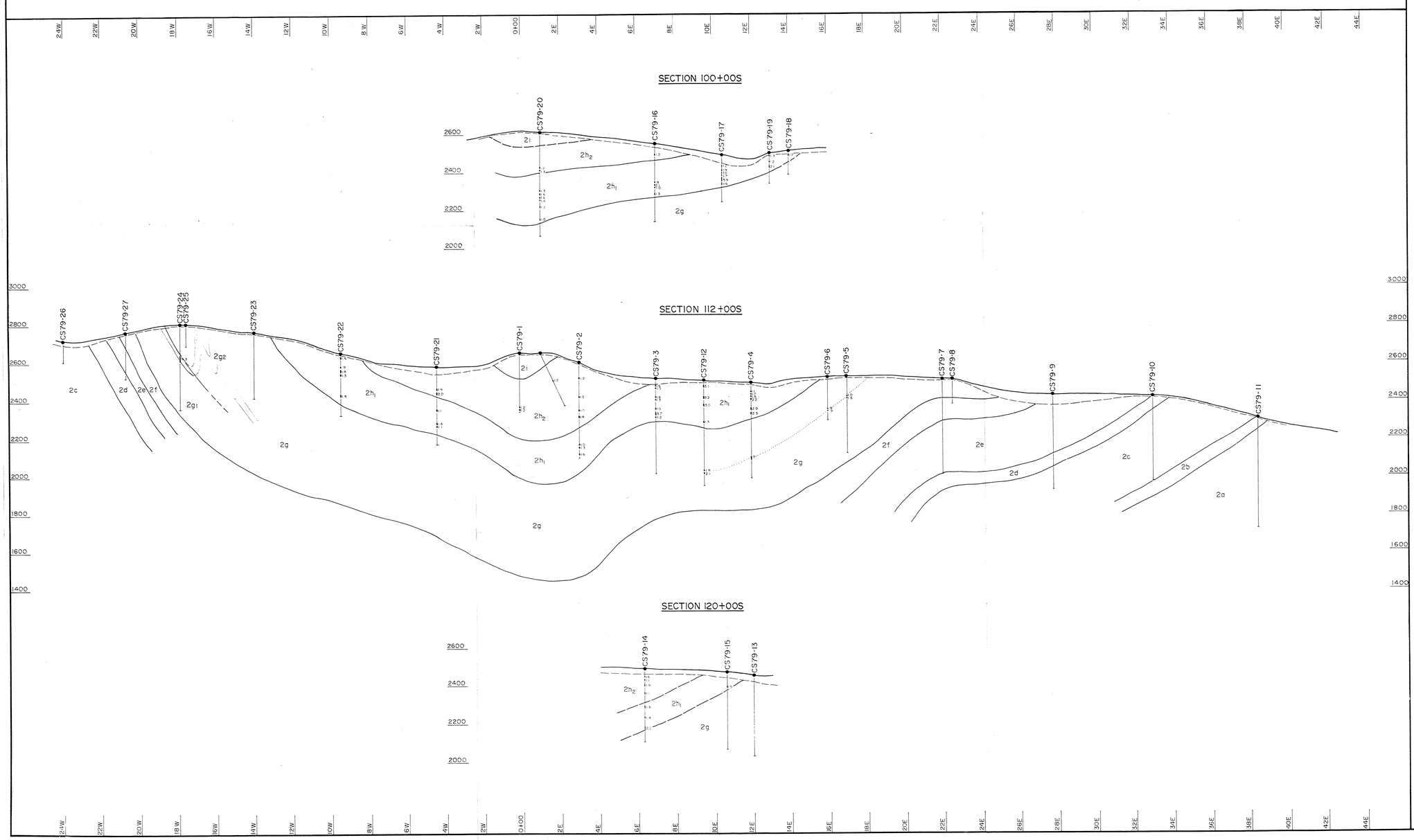
1980 BULLDOZER TRENCHES

N.T.S. 115-I-1
SURVEY BY: T.A
DRAWN BY: V.F

DATE: Sept 1980



SECTION 58+00S



LEGEND

Eocene or Younger

3 CARMACKS GROUP
Basaltic and andesitic volcanics

Lower Cretaceous and/or Upper Jurassic

2 TANTALUS FORMATION
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  - $2h_1$ Mudstone, sandstone, conglomerate, coal, felsitic flows or sills
- 2g Conglomerate (quartz & chert pebbles), sandstone, minor mudstone, coal
  - $2g_2$ Conglomerate, conglomeratic sandstone, sandstone, minor mudstone
  - $2g_1$ Sandstone, conglomerate, mudstone, coal
- 2f Gritty mudstone
- 2e Quartzose, conglomeratic sandstone and sandstone
- 2d Mudstone
- 2c Very clean quartz sandstone
- 2b Conglomerate (quartz & chert pebbles)
- 2a Sandstone, conglomeratic sandstone, minor conglomerate

Lower and Middle Jurassic

1 LABERGE GROUP
Conglomerate (emblems of dark volcanics, granitic rocks, siliceous dark mudstone, arkose, mudstone, minor coal.

FEET 200 0 200 400 600 800
METRES 24 0 24 48 96 144 192 240

CYPRUS ANVIL MINING CORPORATION

CARMACKS COAL PROJECT

YUKON TERRITORY

GEOLOGICAL CROSS SECTIONS

NTS. 115-I-1
SURVEY BY T.A.
DRAWN BY V.F./

DATE ~~MARCH, 1980~~ SEPT, 1980