

CONTENTS

1. Report on Explorations - Nordenskiold Area
Licences No. 10, 11 and 12.
2. Report on Explorations - Carmacks Area
Licences No. 15, 16 and 17.
3. Geological Report - Carmacks Area
by R.J.Kirker, P.Geol.
4. Maps
 - i) Geological - Nordenskiold Area
 - ii) Geological - Carmacks Area
 - iii) Topographical - Nordenskiold Carmacks Area

R

060582

TESLIN EXPLORATION LTD.

1971

REPORT ON EXPLORATIONS FOR COAL

in the

CARMACKS AND NORDENSKIOLD AREAS

YUKON, TERRITORY

by: J.F.Hlavay, P.Eng.

TESLIN EXPLORATION LTD.

REPORT ON COAL EXPLORATION - 1971

NORDENSKIOLD AREA - YUKON

INTRODUCTION:

Teslin Exploration Ltd. undertook to continue coal exploration work started in 1970 on Licenses #10, #11 and #12 situated about 50 miles North West of Whitehorse. An amount of \$3,500.00 was budgeted to conduct further exploration of these areas in 1971. The purpose of the expenditure was:

1. To explore further for the coal outcrops reported by Cairnes (Memoir #235) on Red Ridge and Cub Mountain which were not discovered by us during our 1970 exploration program.
2. To test the Division Mountain outcrops by the use of Induced Polarization surveys to determine if this technique could be used successfully to locate other coal seams in the license areas.

On August 4th a D6 bulldozer was moved to Braeburn Lake to repair the tote road which had been built from Braeburn to the Division Mountain outcrops in 1970, but which was now impassable and needed repairs in several sections. This was done by the bulldozer as it moved to the permit areas.

LICENSE NO. 10:

The bulldozer reached the Division Mountain outcrops on August 6th and proceeded to clear two lines along which the Induced Polarization Surveys were to be conducted. Line No. 1 was cleared across the strike of the coal seam and extended from Seam A for a distance of 1000 feet to the North East. Line No. 2 was 800 feet long and cleared parallel to and approximately 1800 feet South East of Line No. 1. The location of these lines is shown on Drawing No. 1 attached. An Induced Polarization survey crew consisting of four men and equipment with a portable McPhar Frequency Unit took readings along both lines. However the results were not encouraging as they could not be used to delineate the coal seams even where they were known to exist in Trench No. 3. Since the operator could not explain why the coal seams were not indicated by the readings, it was decided to abandon further surveying. The results of the survey are plotted on the attached graph.

A sample of coal was obtained from Seam G in Trench No. 3 from near the ground surface. A report of the analysis of this sample is attached.

LICENSE NO. 11:

A reconnaissance was made on foot over the N. E. face of Red Ridge to search for the coal outcrop reported by Cairnes. This outcrop had been searched in 1970 without success, however, after obtaining and studying Cairnes original notes, it was determined that

the outcrop was located somewhere to the South East of the position indicated on the map included in Memoir #235. A search of the suspected area was successful and the coal outcrop was found to be exposed in a gully near elevation 2250 feet and about 14,000 feet North West along strike from the Division Mountain outcrops, as indicated on the attached map of the Nordenskiold Coal Area. The outcrop is steeply dipping to the South West and the number and size of seams could not be determined by visual observation. Good samples of coal could not be obtained by hand, thus none were taken. The location is not suitable for trenching and sampling will have to be done by tunnelling or drilling. While searching for this outcrop R. J. Kirker took measurements of the strata exposed on the east face of Red Ridge and the results of this survey are shown on the attached profile.

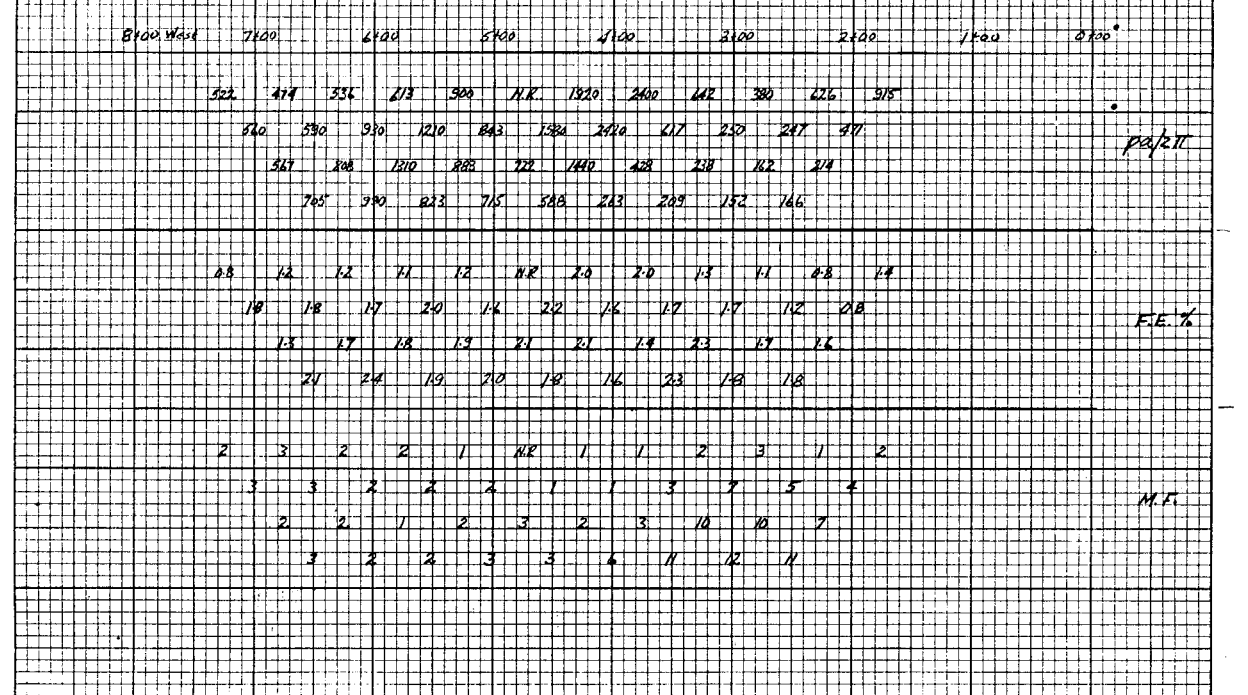
LICENSE NO. 12:

A reconnaissance on foot was made on the South East slope of the Cub Mountain near the North East corner of the permit area to prospect for coal showings reported by Cairnes in gopher holes. Several holes were examined but there was no indication of coal in any of them. A check was also made in the Corduroy Mountain area but again signs of coal were not evident.

LINE No 1



LINE No 2



INDUCED POLARIZATION SURVEY
 H² Polar Frequency Unit
 215 KW. 0.3 CPS & 50 CPS
 by Brian E. Walcott & Assoc. Ltd.
 Scale 1" = 100' August 1971
 NORDENSRJOLD COAL AREA - YUKON
 TEST IN EXPLORATION LTD.

STRATIGRAPHIC SECTION
EXPOSED ON EAST FACE OF RED RIDGE

NORDENSKIOLD RIVER AREA, YUKON

Geology by R. J. KIRKER

*CONGLOMERATE - rusty weathering -
with chert and volcanic pebbles
to 3" in diameter.
massive - dip 60° ± S.W.*

*SANDSTONE - grey weathering, poorly sorted,
fine to coarse grained, ferruginous,
dip 60° S.W.*

COVERED

*ANDESITE - light brown, ferruginous
SANDSTONE - grey, poorly sorted,
with white quartz grains - stucco like
COAL and carbonaceous shale
SILTSTONE - brown, slabby, hard*

COVERED

Nordenskiold
River ↘

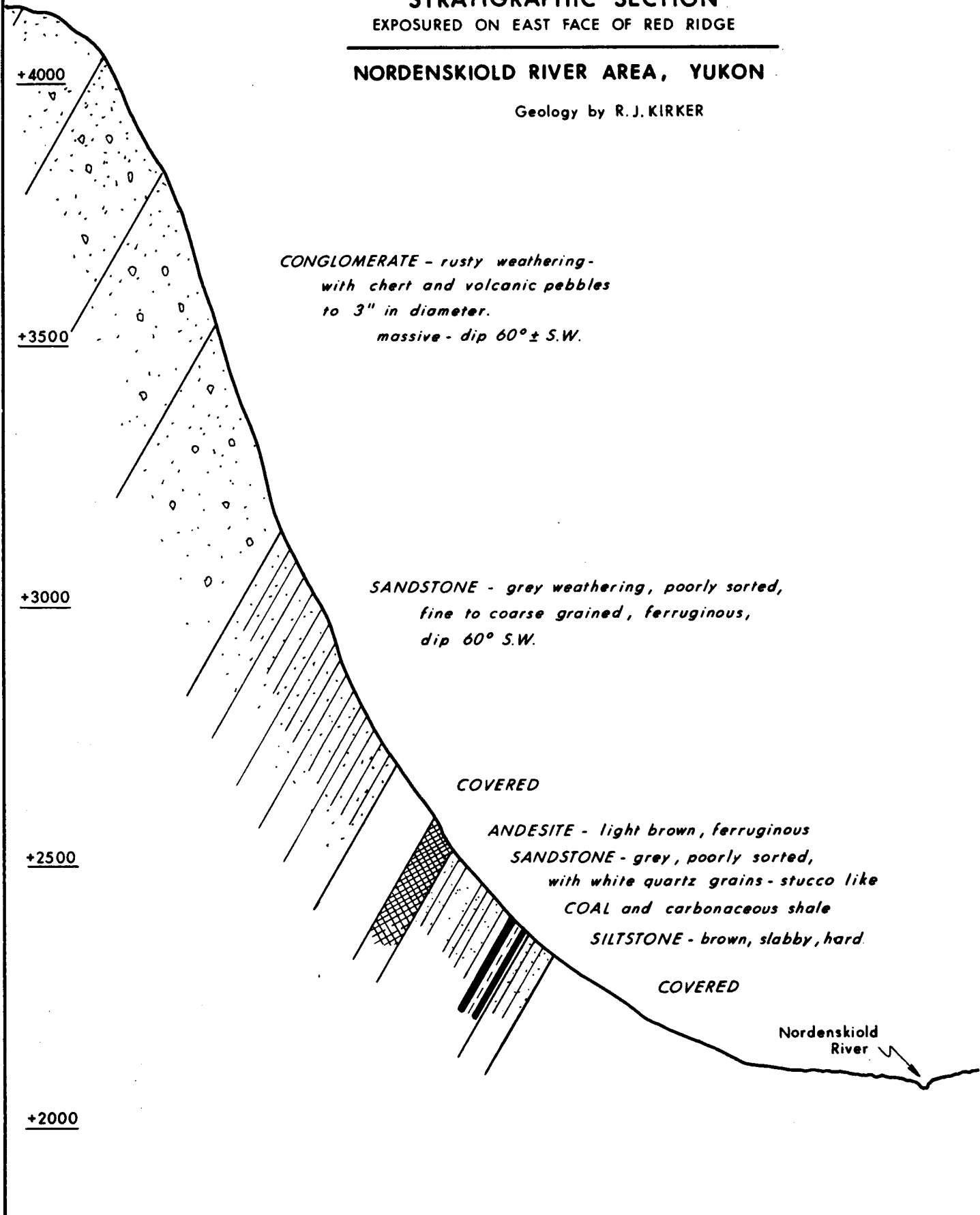
+4000

+3500

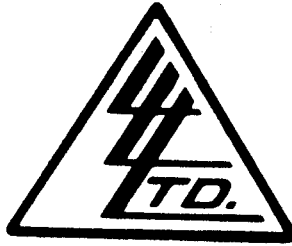
+3000

+2500

+2000



To: TESLIN EXPLORATION LTD.
 Suite P - 5840-4th St. S.E.
 Calgary, Alberta.
 Mr. J. Hlavay



File No. 4578
 Date September 16th 1971
 Samples Coal

**Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.**

SAMPLE No.	Received H2O %	Inherent H2O %	Vol. Matter %	Ash %	Fixed Carbon %	S %	F.S.I.
Seam "G" # 12705	15.7	4.29	28.50	32.14	35.07	.41	N.A.

**I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES**

Rejects Retained one month.
 Pulps Retained one month
 unless specific arrangements
 made in advance.

C. L. McIsaac

Licensed Assayer of British Columbia

TESLIN EXPLORATION LTD.

REPORT ON COAL EXPLORATION - 1971

CARMACKS AREA - YUKON

INTRODUCTION:

Teslin Exploration Ltd. undertook to explore for coal in License Areas #15, #16 and #17 which are located around the Village of Carmacks.

R. J. Kirker, P. Geol. was retained to propose an exploration program and he recommended the following:

1. Photo-geological study from available government air photos.
2. Surface geological study to verify photo interpretation and pick diamond drill hole sites.
3. Diamond drill holes to test the top 600 feet of the Laberge series and to determine lateral continuity of the 4.5 foot seam of the old Five Fingers mine.

This proposal was accepted and an amount of \$23,000.00 was budgeted to carry out the program.

The photo-geological and geological study was undertaken by Mr. Kirker and his findings are detailed in the attached report. During his field trips, Mr. Kirker selected the location of diamond drill Hole #1 near the old Five Fingers mine and supervised the construction of the trail from the highway to that site. He also scouted the general area for proposed diamond drill Hole #2 located about three miles South East of Carmacks.

It was intended to start drilling Hole #1 on about July 29th. However difficulties arose with selection of a drill site as explained in Mr. Kirker's report, and the drill rig and bulldozer which was available then had to be released. Subsequently attempts to acquire the services of both a drill rig and bulldozer at the same time were consistently foiled until late in September, and as a result Hole #1 was not spudded until October 15th.

DIAMOND DRILL HOLE NO.1:

This drill hole site was located approximately 4000 feet south of the old Five Fingers Mine at elevation 1900 feet. Ground reconnaissance indicated that construction of an access trail due west from the Dawson Highway to the drill site, a distance of about $1\frac{1}{2}$ miles, was not feasible due to steep hills and thus a longer but easier route was selected from a point on the highway south of Five Fingers Mountain, thence westerly and northerly on the west side of the mountain roughly along the 2200 foot contour. The distance from the highway to the site by this route is about $3\frac{1}{2}$ miles. A D6 bulldozer started trail construction on September 30th and when this was completed on October 5th it assisted in moving the drill rig from the highway to the site.

During trail construction, sandstone bedrock was uncovered about 3000 feet south and 200 feet higher than the intended drill location but at the selected drill site there was no visible rock outcrops and therefore the hole had to be spudded in overburden. It was estimated that this overburden would be in the order of 30 to 40

feet thick. Contract for diamond drilling had been let to Artic Diamond Drilling Ltd. of Whitehorse who mobilized, moved in and set up a Longyear 38 drill between October 5th and 15th. Drilling began on October 15th with NQ size bit at an angle of -70 degrees east. As drilling progressed it developed that the overburden was much deeper than originally estimated, being 118 feet thick, and required continuous casing. It also developed that the sandstone formation encountered from 118 feet to 188 feet was badly fractured and squeezing, and it too required continuous casing. At 188 feet the casing could no longer be set and the hole was abandoned. A small amount of sandstone core was recovered from 118 feet to 188 feet but there was no indication of coal in the core.

DIAMOND DRILL HOLE NO. 2:

Following abandonment of Hole No.1 the drill was moved to Hole No. 2. It was located about 2.5 miles southeast of the old Tantulus mine in License Area #17. The location was prepared by a D7 bulldozer which had been moved to the site on October 25th. Access to the location was gained along an existing trail which originates at the highway about 2 miles south of Carmacks then curves northerly, easterly and southerly for a distance of two miles then by a newly constructed trail south easterly for a distance of about one mile. The terrain is steep and the drilling rig move-in was aided by the bulldozer.

It was intended to drill Hole No. 2 as close to the westerly edge of the Laberge outcrops (as mapped by Bostock) as possible. However detailed examination of the proposed area revealed no outcrops thus the location was selected about 2000 feet south westerly where rock outcrops were in evidence. This move was made to avoid a possible repetition of the difficulties encountered due to deep overburden in Hole No. 1.

Hole No. 2 was spudded November 1st at elevation 2600 feet and bedrock was encountered at a depth of 17 feet. The hole was drilled using an NQ bit at an angle of -60 degrees East. Casing was set in the overburden and drilling progressed without difficulty to total depth of 310 feet. A total of 262 feet of core was recovered and four coal seams were encountered as shown on the attached log prepared by R. G. Hilker, Consulting Geologist.

A portion of the core missing from 182 to 190 feet is believed to have been coal which was washed out during the drilling operation. It is believed also that this seam is probably 2 to 4 feet in thickness.

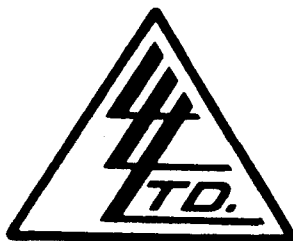
A sample of coal from between 182 to 190 feet was analyzed by Loring Laboratories Ltd. and the results of this analysis are attached. Location of the drill holes and trails are shown on the map accompanying the Geological report of R. J. Kirker.

R.G. MILKER
CONSULTING GEOLOGIST
WHITEHORSE YUKON TERRITORY

PROPERTY _____	Claim No. _____	Strike _____	Lot. _____	Hole No. <u>2</u>
Date _____ 19 _____	Section No. _____	Dip _____	Dep. _____	Total Depth <u>310 ft</u>
Logged By _____	Plan No. _____	Level _____	Elev. _____	Page No. <u>5</u>

FOOTAGE		Rec.	ROCK CLASSIFICATION EPID. DIOP. GARN. SERP. QTZ/SIL. ACTINO. TREMO. CHLO. CRYSTALLINE. SHEARING. VEINS. FRACTURING. FOLIATION. GRAIN SIZE, TEXTURE	MINERALIZATION		ASSAY DATA						
From	To			TYPE	%	SAMPLE NO.	WIDTH	RECOV.	%CU	%FE	MOLY	AU/AG
190		0.3	Coal Seam - not possible to determine thickness (Core recovery between 182.6 & 190' is only 2'), quite possible the coal was completely ground out. Estimated coal seam to be 2-4 feet thick. Coal seam may be located 184.5 to 190.5	Sampled		190 ft						
190.5	192		Shale - black color, argillaceous									
192		0.3	Coal Seam - Core angle at 125° of coal with shale wallrock. 0.3 ft of coal in corebox. (Core recovery between 192' and 194' is 1.3 ft). Possible width of seam is 1 ft	Sampled		192 ft						
192.3	195.6	3.3	Shale - black color, argillaceous, carbonaceous, polished black colored slickensides, fairly hard & good core recovery.									
195.6			Coal Seam - only 0.2 ft in thickness (Core recovery about right and no grinding evident) Coal shed	Sampled		195.6						

To: **TESLIN EXPLORATION LIMITED,**
 Box 8592, Station F
 Calgary 13, Alberta
 Attn: Mr. Joe Hlavay



File No. 4851
 Date Dec. 6, 1971
 Samples Coal

Certificate of
ASSAY OF
LORING LABORATORIES LTD.

SAMPLE No.	INH %H ₂ O	% V.M.	% ASH	% F.C.	% S	FSI
<u>RAW COAL</u>						
CORE 190'	.68	19.27	42.64	37.41	.78	7½

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Rejects Retained one month.
 Pulps Retained one month
 unless specific arrangements
 made in advance.

E. L. MacFarlane
 Licensed Assayer of British Columbia

GEOLOGICAL REPORT

COAL LICENCES

#15, #16 and #17

CARMACKS AREA

YUKON TERRITORY

by: R.J.Kirker, P.Geol.

November 1971

CARMACKS COAL PERMITS

YUKON TERRITORY

INTRODUCTION:

In April, 1971, the owners of territorial coal exploration licences #15, #16 and #17, located in the Carmacks area of the Yukon Territory, asked the writer to do a geological evaluation of their lands and propose an exploration program. A program consisting of photogeology, surface geology followed by a small amount of diamond drilling was proposed and subsequently performed. This report summarizes the results of the first two phases of the above program and a report by Mr. J. Hlavay, P. Eng., describes the diamond drilling phase..

GEOGRAPHY:

The licenses are located northwest, northeast, and southeast of the village of Carmacks which is located at 62° 05' north latitude and 136° 16' west longitude. The licenses cover an area of approximately 132,000 acres and their positions are described on the National Topographic Grid System as the 115-I-1 (NE), 115-I-1 (NW) and 115-I-1 (SE).

The country consists of low rolling hills generally forested on their north sides and grassy on their south sides. The climate is semi-desert with an annual rainfall of about 10 inches. Access is quite good with the Klondike highway passing north-south through the area and the new Campbell highway dividing the easternmost permits. Access to the northwest is provided by the Mount Nansen mining road.

The Department of Northern Affairs has just completed the construction of a good airstrip a few miles east of the village and the White Pass and Yukon Railway have been investigating the possibility of extending their trackage to Carmacks.

GEOLOGY:

The area was first examined by G.M. Dawson of the Geological Survey in 1887 and he noted two coal occurrences along the Yukon River. D.D. Cairnes of the Survey spent two seasons (1907 - 1908) in the area and published his findings in 1910 as Memoir #5. (The writer was able to obtain Cairnes' original field notes and found them quite helpful in supplementing the memoir.)

The area was mapped by Dr. H.S. Bostock of the Survey in 1936 as part of the four mile to the inch mapping program. The latter report also contains a detailed (1 inch - 2 mile) map of the area covered by the subject permits.

From the writer's examination of the above reports, it was recommended that the area be mapped photo geologically using new air photography and the results ground checked. It was also recommended that the limited outcrop data be supplemented with some diamond drilling which could determine seam thickness and quality.

A diamond drill rig was available in the area prior to the completion of the preliminary studies and it was decided to locate a hole on the highway some ten miles north of Carmacks, based upon Bostock's mapping. The writer was sent up to pin point the location and determined that a fault existed between the mine at Five Fingers and the proposed site. The rig was released pending additional geological studies.

The writer, subsequently examined the outcrops in the vicinity of the Five Fingers Mine which is now preserved as a historical site. There are relatively good exposures of the strata overlying the seams that were mined in the period 1904 to 1908. The sequence from the top down was measured using a jacobs staff and the section is illustrated in figure 2.

Geology - Cont'd:

The superjacent strata here were quite unlike that overlying the coals of the Laberge series examined by the writer last year in the Nordenskiöld area, 50 miles to the south (see Figure 1). The two areas occur along the west flank of the Whitehorse Trough which has been well studied by Dr. J.O. Wheeler of the Geological Survey. The evolution of this sedimentary depression has been described by Dr. P. Ziegler of Shell Oil and Figure 2 is from his work. It is probably not too surprising that the quality of coal and the lithology of the adjacent sediments is so variable when one compares the chaotic evolution of the Whitehorse Trough with the relatively quiescent deposition that characterized the Cretaceous coal measures of the southern Rockies.

Traverses were also made along the north and south sides of the Yukon River east of Carmacks. The new highway on the north side provides some good outcrops however, they are not continuous enough to establish any definite correlations. The Tantalus conglomerate, because of its resistive nature, is easily identified. However, the relative soft weathering arkosic sands and shales of the Laberge formation provide poor outcrop control. In addition the great thickness of the unit (9000[±]) and the lack of any good type-section seriously hampers exploration. Perhaps there are a number of diagnostic units within the formation from which detailed mapping might provide a composite section.

The traverse south of the river was hampered by heavy ground cover and no definite outcrops were observed.

On returning to Calgary, the air photos flown last summer by the Department of Northern Affairs, were obtained, and examined. It was decided that further exploration of the permits could best be done utilizing a diamond drill. Two locations were picked; one as close as possible to the old Five Fingers mine, and a second one southeast of Carmacks (see Figure 4).

Geology - Cont'd:

As both of the proposed locations were adjacent to old coal leases owned by the Anvil Mining Company, it was recommended that some sharing of costs and information should be investigated. The Anvil management were consulted, but no assistance was forthcoming so the proposed drilling program was commenced. The results of this phase of the exploration program is covered by the report of Mr. J. Hlavay.

The writer was asked to supervise the road construction to the drill-sites selected and a number of additional geological features were noted in the course of this phase.

Firstly, in building the road along the west side of Five Fingers Mountain, the road cut down through a series of thin coal seams and inter-bedded sandstones approximately one-half mile south of the first location. The strata were dipping east at approximately 20° and the strike was roughly north south. In addition, an outcrop some 20 feet high was found in the dense growth some 100 yards north of our road cut. This outcrop consisted of a coarse conglomerate with boulders up to four inches in diameter. Their lithology was varied and the conglomerate was interpreted as being Tantalus. If the mass is in place, then trenching should disclose the contact with the underlying Laberge formation and one could correlate the position of the Five Finger coal seams with the base of the conglomerate.

While scouting the second location, the writer utilized a helicopter to examine the high area southeast of Carmacks. No contacts or outcrops could be found in the area mapped as Laberge by Dr. Bostock. Foot traverses were made in the vicinity of the old pits excavated by Anvil Mining southeast of Carmacks. The coal seams here are immediately underlying the east dipping Tantalus conglomerate and are highly contorted. Thicknesses of up to 20 feet are well-exposed in deep trenches that show very little erosion although excavated a number of years ago.

Geology - Cont'd:

A surprising discovery was the almost unconsolidated nature of the sands underlying the coal seams. No other Cretaceous sediment in the writer's examination of these areas has been so friable and loosely compacted. This is the more surprising when one realizes the sands are only separated by some 20 feet of coal from the strongly compacted Tantalus conglomerate.

SUMMARY:

The coal exploration permits #15, #16 and #17 are in an area that is highly prospective for coal. The original coal discoveries, both of which are on these permits, were located in exposures along the Yukon River and the coal from the Five Fingers and original Tantalus mine produced a good coking coal. It is probable that the upper part of the Laberge formation contains numerous coal seams and they may possibly be as thick as those discovered last year in the Nordenskiöld area to the south.

The area is experiencing a mining boom because of the discovery in 1971 of a number of copper ore bodies to the northwest. It is of interest that Dr. Cairnes was sent out from Ottawa in 1907 to obtain reliable information as to where metallurgical coking coal could be procured for a local smelter being considered for the newly discovered Whitehorse copper deposits.

The area has good access and the proposed extension and standard gauging of the White Pass and Yukon Railroad should allow the export of any coking coal surplus to the area's requirements.

The possibility of shipping coal to tidewater at Skagway via the new mode of a slurry pipeline enhances the coal marketing possibilities.

RECOMMENDATIONS:

It is recommended that additional diamond drilling be undertaken next summer. A hole should be located near the conglomerate outcrop found on the west side of Five Finger Mountain. A series of holes should be drilled east of the second location drilled in 1971.

Requests should be made to the pertinent authorities to trench suspected coal outcrops. It is obvious little or no erosional damage results in this climate because of the very low precipitation and the fact that the greater part of the area has recently been burned over results in very little additional damage to the ground cover.

All holes drilled should be left in such a condition that they may be subsequently logged with newer down-hole devices and/or deepened. In addition, measurements of the ground water level may be useful in later pit or mine design. The above techniques are being employed in British Columbia and it is strongly recommended for the Yukon Territories.

Enclosures:

	Index map
Figure 1	Carmacks/Nordenskiold area (8 miles to 1 inch)
Figure 2	Outcrop section at Five Fingers Mine
Figure 3	Evolution of Whitehorse Trough
Figure 4	Geological map of licences #15, #16, and #17 (1.25 miles - 1 inch)

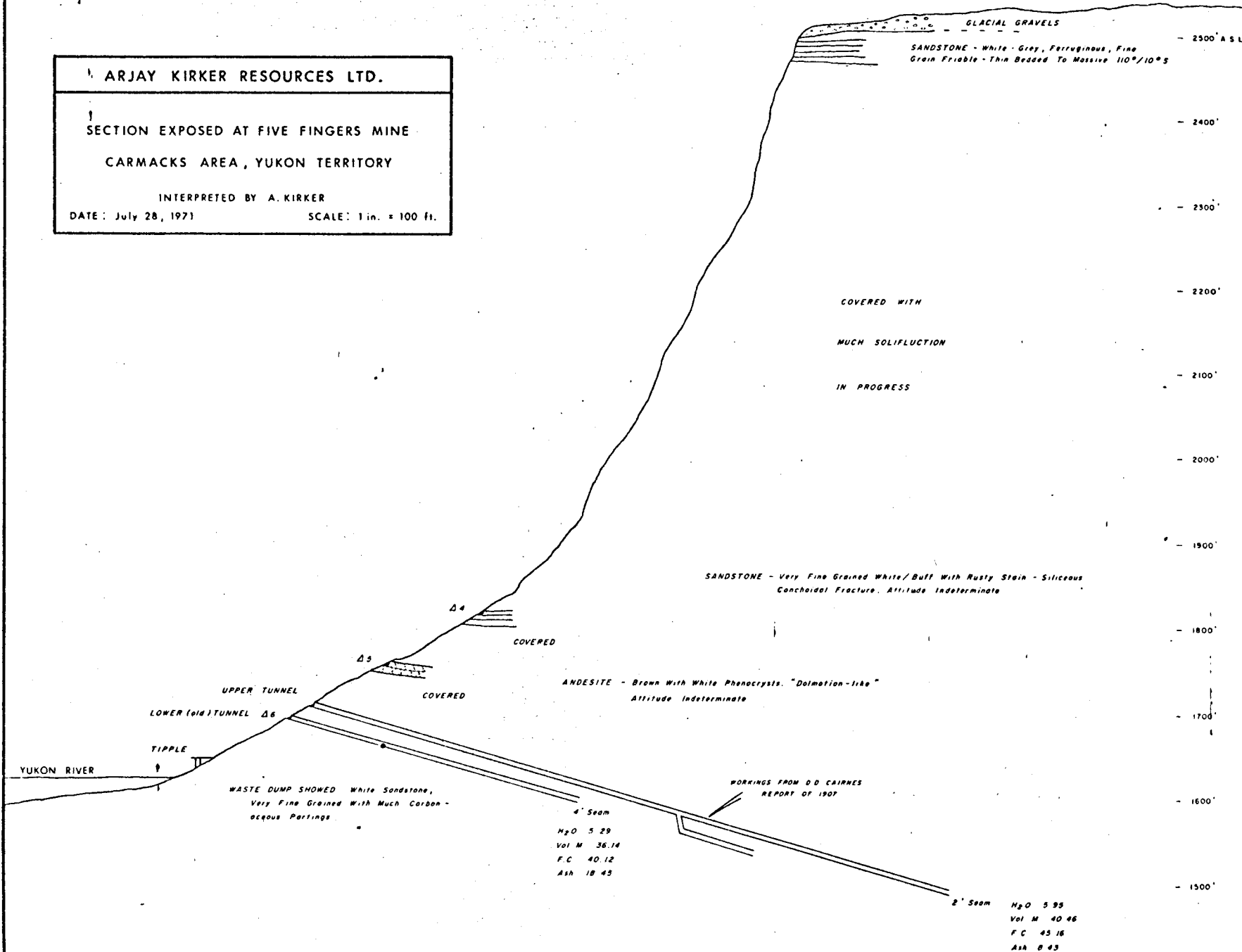
BIBLIOGRAPHY:

- Bostock, ^{H.S.} A.S. - Carmacks District, Yukon
G.S.C. Memoir #189, 1936
- Campbell, R.B. - Geology of Glenlyon Map Area, Y.T.
G.S.C. Memoir #352, 1967
- Cairnes, D.D. - Lewes and Nordenskiold Rivers Coal
District
G.S.C. Memoir #5, 1910
- Wheeler, J.O. - Whitehorse Map Area
G.S.C. Memoir #312, 1961
- Ziegler, P. - Development of Sedimentary Basins in
Western and Arctic Canada
A.S.P.G. Guide Book, 1969

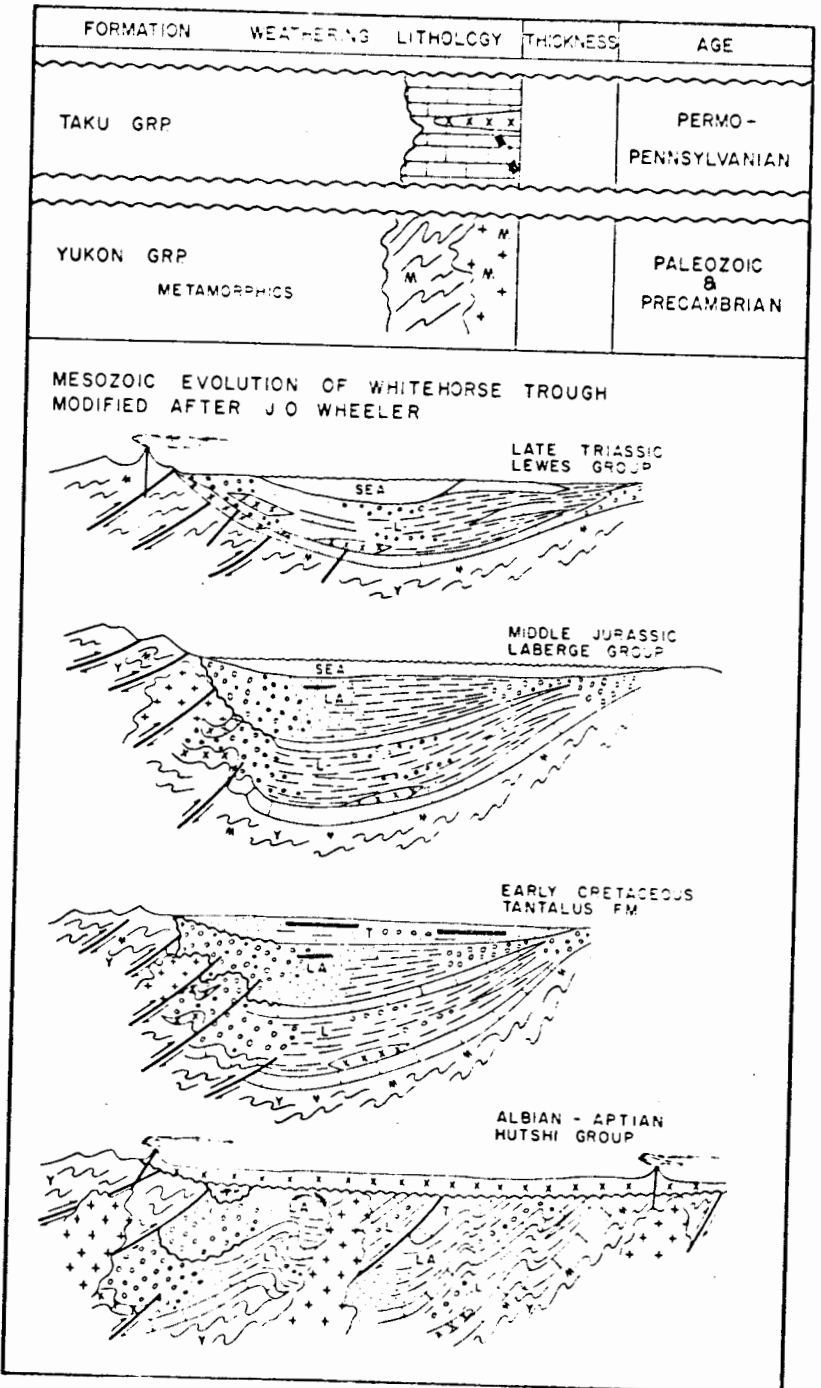
WEST

EAST

ARJAY KIRKER RESOURCES LTD.
 SECTION EXPOSED AT FIVE FINGERS MINE
 CARMACKS AREA, YUKON TERRITORY
 INTERPRETED BY A. KIRKER
 DATE: July 28, 1971 SCALE: 1 in. = 100 ft.



FORMATION	WEATHERING	LITHOLOGY	THICKNESS	AGE		
NO NAME (INCLUDES M. LES CANYON BASALT)	FLWS OUTWASH TUFF			RECENT & PLEISTOCENE		
ANGULAR UNCONFORMITY						
SKUKUM GRP. (PYROCLASTICS AND FLOWS)	UP BASALTIC		4000'+	TERIARY	CRETACEOUS	
	MID FELSIC			UPPER		
ANGULAR UNCONFORMITY GRANITIC INTRUSIONS						
HUTSHI GRP	BASALTS ANDESITES RHYOLITES FLOWS, FLOW BRECCIAS, AGGLOMERATES & TUFFS		3000'+	APTIAN	CRETACEOUS	
				ALBIAN		
MAJOR ANGULAR UNCONFORMITY - TRUNCATES ALL OLDER FORMATIONS GRANITIC INTRUSIONS						
TANTALUS FM	ESSENTIALLY CONTINENTAL		0-2500'	NEOCOMIAN	JURASSIC	
LOCALLY DISCONFORMABLE						
LABERGE GRP	MARINE, IN PART TURBIDITES		0-9500'+	UPPER		
				MIDDLE		
DISCONFORMABLE, LOCALLY ANGULAR - POSSIBLE GRANITE INTRUSIONS						
LEWES RIVER GRP	CONGL GRAYWACKES SHALE TURBIDITES LIMESTONES - OPEN MARINE & REEFAL BASALT & ANDESITES		2400'	NORIAN	TRIASSIC	
			500'	KARNIAN		
			2000'			
			3000'			



E. L. FITZGERALD CONSULTING GEOLOGIST LTD.

710 BAMLETT BUILDING, CALGARY 2, ALBERTA

TELEPHONE (403) 264-5102

February 3, 1972

File: 5572

Teslin Exploration Limited
8 - 5840 4th Street, S.E.
Calgary, Alberta

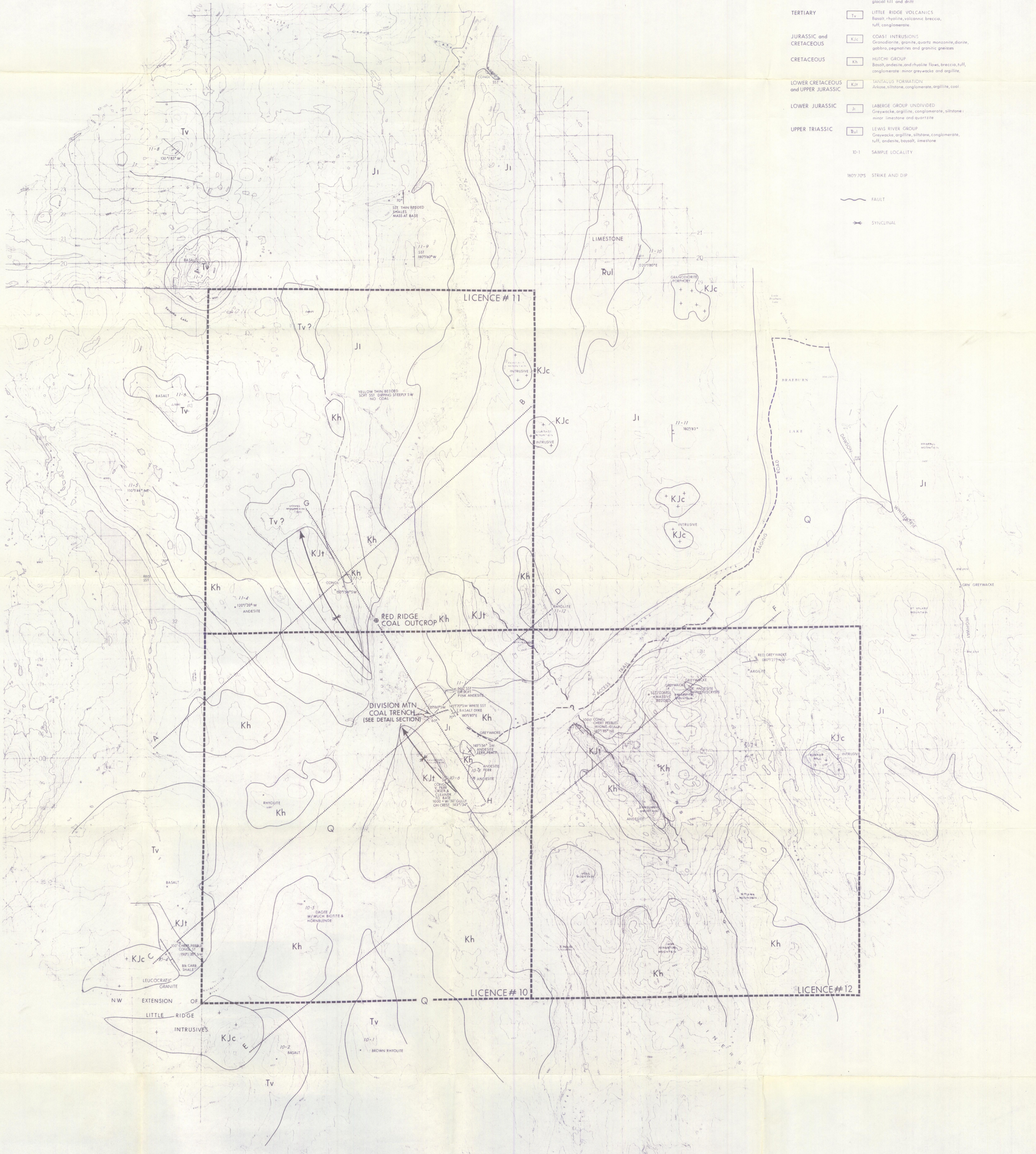
Attention: Mr. R. J. Kirker

Dear Sir:

Re: Carmacks Coal Property, Y.T.

Enclosed please find a "Reconnaissance Photogeologic Map" of the area you requested me to examine. Also included are maps, air photographs and other materials used in the study. A few comments are summarized below:

1. The Labarge and Tantalus units are not very distinctive on the photographs and accordingly, the latter has been indicated only where reported by ground studies.
2. A number of prominent linears are expressed on the photographs; these could indicate the presence of faults.
3. Little true bedrock expression is apparent in most of the area and some of the bedding traces shown could be glacial striae.
4. If the volcanics at Five Finger Mountain are Tertiary (i.e., Carmacks), they are probably separated from Labarge strata at and near the Five Finger Mine, by faults; since they appear to plunge beneath Labarge strata. Volcanic rocks reported in this area are not too distinct on the photos from Labarge units - possibly the two inter-finger and are of about the same age?
5. The structural style of Labarge and Tantalus strata in the area appears to be one of moderately tight folding with more intense folding in some places. Wave lengths of the folds are relatively short.
6. The present mapping could be upgraded considerably by the incorporation of more field data (attitudes, lithologic descriptions).
7. The apparent presence of numerous folds could be encouraging in the search for coal deposits since economic seams could outcrop several times on the flanks of the folds.



MAP UNITS

QUATERNARY	Q	Alluvium, terrace deposits, talus, glacial outwash and moraine deposits older than glacial till and drift
TERTIARY	Tv	LITTLE RIDGE VOLCANICS Basalt, rhyolite, volcanic breccia, tuff, conglomerate
JURASSIC and CRETACEOUS	KJc	COAST INTRUSIONS Granodiorite, granite, quartz monzonite, diorite, gabbro, pegmatites and granitic gneisses
CRETACEOUS	Kh	HUTCH GROUP Basalt, andesite, and rhyolite flows, breccia, tuff, conglomerate, minor greywacke and argillite
LOWER CRETACEOUS and UPPER JURASSIC	KJi	TANTALUS FORMATION Arkose, siltstone, conglomerate, argillite, coal
LOWER JURASSIC	Ji	LABERGE GROUP UNDIVIDED Greywacke, argillite, conglomerate, siltstone, minor limestone and quartzite
UPPER TRIASSIC	Rul	LEWIS RIVER GROUP Greywacke, argillite, siltstone, conglomerate, tuff, andesite, basalt, limestone

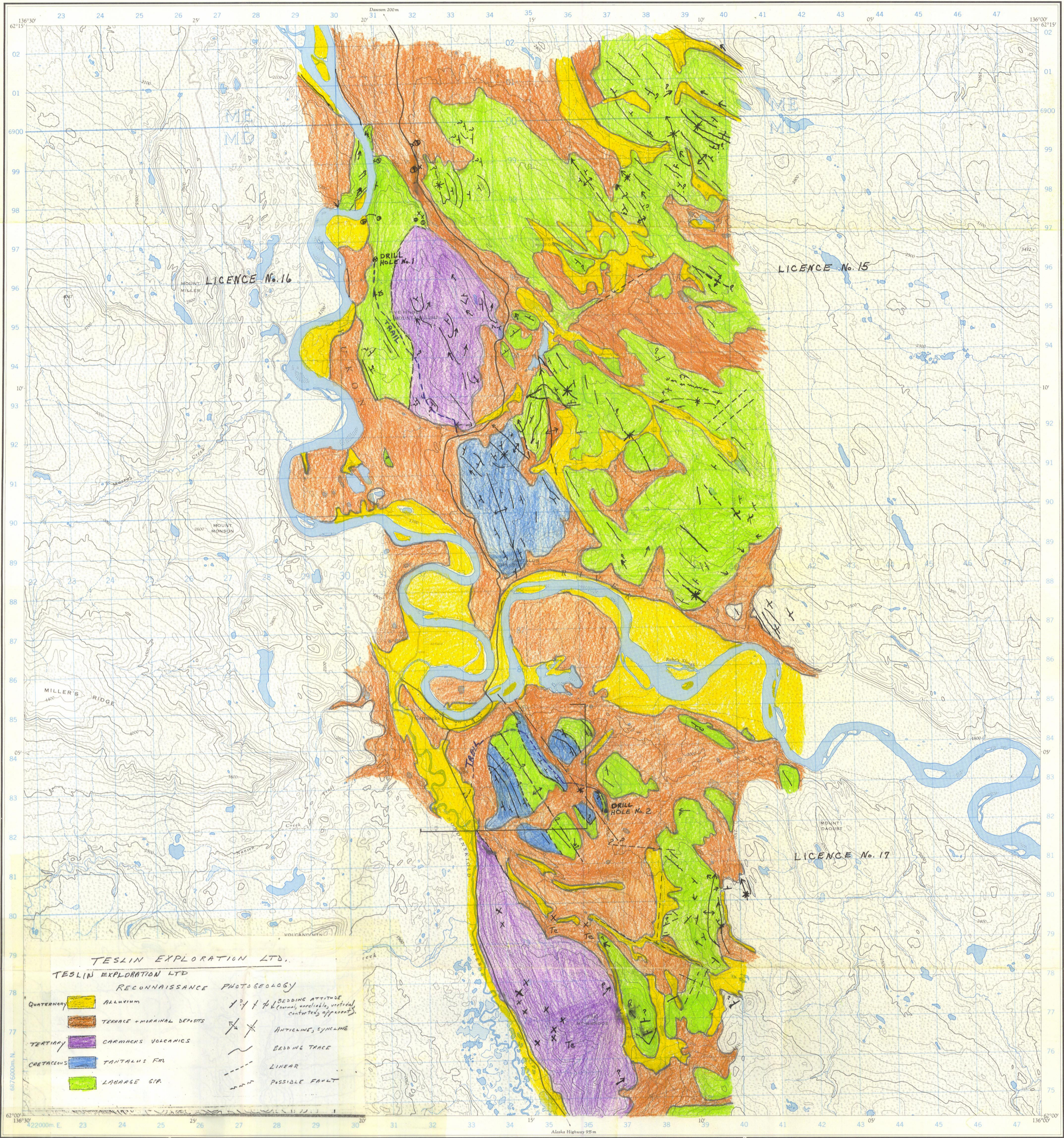
10-1 SAMPLE LOCALITY

180° 70'S STRIKE AND DIP

— FAULT

— SYNCLINAL

TESLIN EXPLORATION LTD
NORDENSKIÖLD COAL AREA
 YUKON TERRITORY
 GEOLOGICAL MAP OF
 TERRITORIAL COAL EXPLORATION
 Licences #10, #11 & #12
 SCALE: 1:50,000 (1" = 4166') DATE: August 1970
 ARJAY KIRKER RESOURCES LTD



(Joins Routineau Creek 115 1/2)

(Joins Frenchman Lake 105 1/4)

TESLIN EXPLORATION LTD.
TESLIN EXPLORATION LTD
 RECONNAISSANCE PHOTOGEOLOGY

- | | | |
|----------------------------|--------------------|--|
| QUATERNARY | ALLUVIUM | 1/4 to 1/2 BEDDING ATTITUDE (Normally, undulating, vertical, contorted apparent) |
| TERRACE + MARINAL DEPOSITS | | ANTICLINES, SYNCLINES |
| TERTIARY | CARMACKS VOLCANICS | BEDDING TRACE |
| CRETACEOUS | TANTALUS FM. | LINEAR |
| | LACARGE GP. | POSSIBLE FAULT |

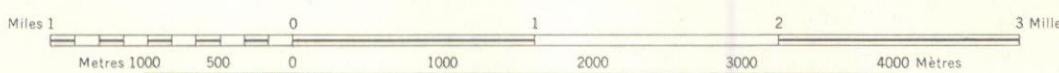
Compiled, 1963, by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, from air photographs taken in 1947 and 1953. Printed 1965.

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa.

(Joins Mount Morrison 115 H/16)

CARMACKS
YUKON TERRITORY

SCALE 1:50,000 ÉCHELLE



CONTOUR INTERVAL 100 FEET
 Elevations in Feet above Mean Sea Level
 North American Datum, 1927
 Transverse Mercator Projection

MAGNETIC DECLINATION 32°01' EAST
 AT CENTRE OF MAP 1963
 Annual change (decreasing) 3'

Some names on this map are not yet official. Corrections or additions are invited by the Surveys and Mapping Branch.

EQUIDISTANCE DES COURBES: 100 PIEDS
 Élévations en pieds au-dessus du niveau moyen de la mer
 Réseau géodésique nord-américain unifié (1927)
 Projection transverse de Mercator

DÉCLINAISON MAGNÉTIQUE AU CENTRE DE LA FEUILLE EN 1963: 32°01' EST
 Variation annuelle (décroissante) 3'

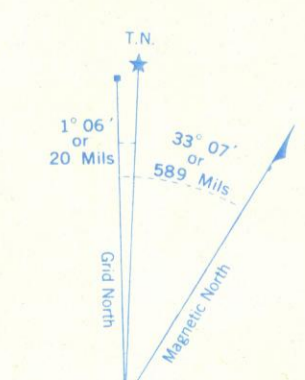
Certains noms inscrits sur cette carte ne sont pas encore officiels. La Direction des levés et de la cartographie saurait gré au public de lui signaler corrections et additions.



- | | | | |
|-------------------------------|----------------------------------|-------------|-----------------|
| Building | Établissement | Barn | Grange |
| School | École | Post Office | Bureau de poste |
| Church | Église | Cemetery | Cimetière |
| Lighthouse | Phare | | |
| River with bridge | Rivière avec pont | | |
| Stream, intermittent or dry | Cour d'eau intermittent ou à sec | | |
| Lake, intermittent, impetible | Lac intermittent non impetible | | |
| Marsh or Swam | Marais ou marécage | | |
| Depression contours | Courbes de cuvette | | |

Compilée en 1963, par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES RELEVÉS TECHNIQUES, d'après les photographies aériennes prises en 1947 et 1953. Imprimée en 1965.

Ces cartes sont en vente au Bureau de distribution des cartes, ministère des Mines et des Relevés techniques, Ottawa.



Use diagram only to obtain numerical values. APPROXIMATE MEAN DECLINATION 1963 FOR CENTRE OF MAP. Annual change decreasing 3.0'

NATIONAL TOPOGRAPHIC SYSTEM
 SYSTÈME DE RÉFÉRENCE CARTOGRAPHIQUE NATIONAL

115 1/1
 EDITION 2

GRID ZONE DESIGNATION: 8V

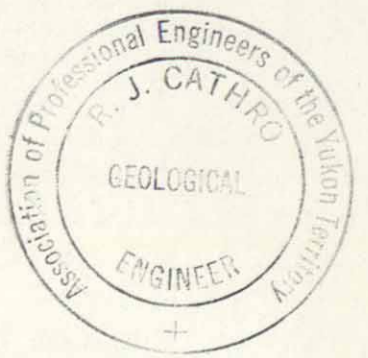
100,000 M. SQUARE IDENTIFICATION: ME 69

TO GIVE A REFERENCE TO NEAREST 100 METRES
 EXAMPLE: STREAM JUNCTION

EASTING: Read number on grid line immediately to left of point. Estimate tenths of a square from this line eastward to point.	36
NORTHING: Read number on grid line immediately below point. Estimate tenths of a square from this line northward to point.	36.3
MILITARY GRID REFERENCE:	8V 363
Nearest similar grid reference (100,000 metres (about 53 miles))	363894

ONE THOUSAND METRE
 UNIVERSAL TRANSVERSE MERCATOR GRID
 ZONE 8

SCALE IN FEET (HORIZONTAL & VERTICAL)



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

136°15' 10' 05' 136°00'

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

RED RIDGE COAL OUTCROP

CUB MOUNTAIN

RED RIDGE

RIVER

SEE FIG. 3

To Braeburn
14 miles

10+00

Basin Cr.

BASELINE

DIVISION MOUNTAIN

NORDENSKIOLD

Creek

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

20'

20'

LEGEND

- ACCESS TRAILS
- ⌋ TRENCHING
- TERRITORIAL COAL BOUNDARY
- ⊕ SYNCLINE

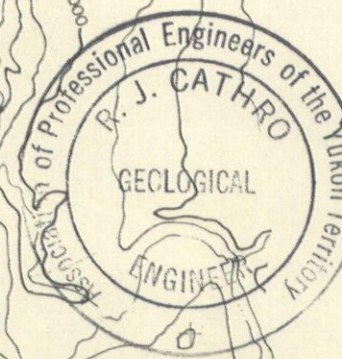
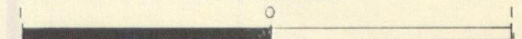


FIG. 2
 ARCHER, CATHRO & ASSOCIATES LTD.
LOCATION OF NORDENSKIOLD COAL AREA
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10

SCALE IN MILES



61°15' 136°15'

10'

05'

61°15' 136°00'

FIG. 3
 ARCHER, CATMOB & ASSOCIATES LTD.
**PLAN SHOWING DRILL HOLES
 AND TRENCHES**
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10

SCALE IN FEET
 0 100 200



LEGEND

- Diamond drill hole
- Overburden - glacial till
- Sandstone
- Shale - arenaceous
- Shale - black, soft
- Coal
- Contact - approximate
- Contact - defined - strike & dip
- Roads

NOTE -
 Territorial plane coordinate system
 Elevations - Sea level datum



S 40° W

DDH 1

2500'

2500'

2400'

2400'

2300'

2300'

2200'

2200'

2100'

2100'

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

CAIRNES SEAM

BASELINE

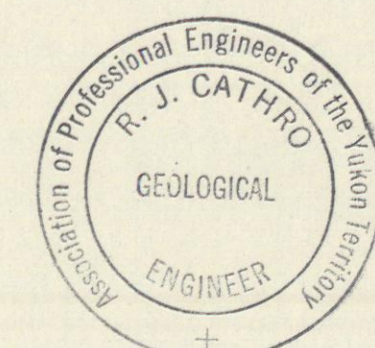
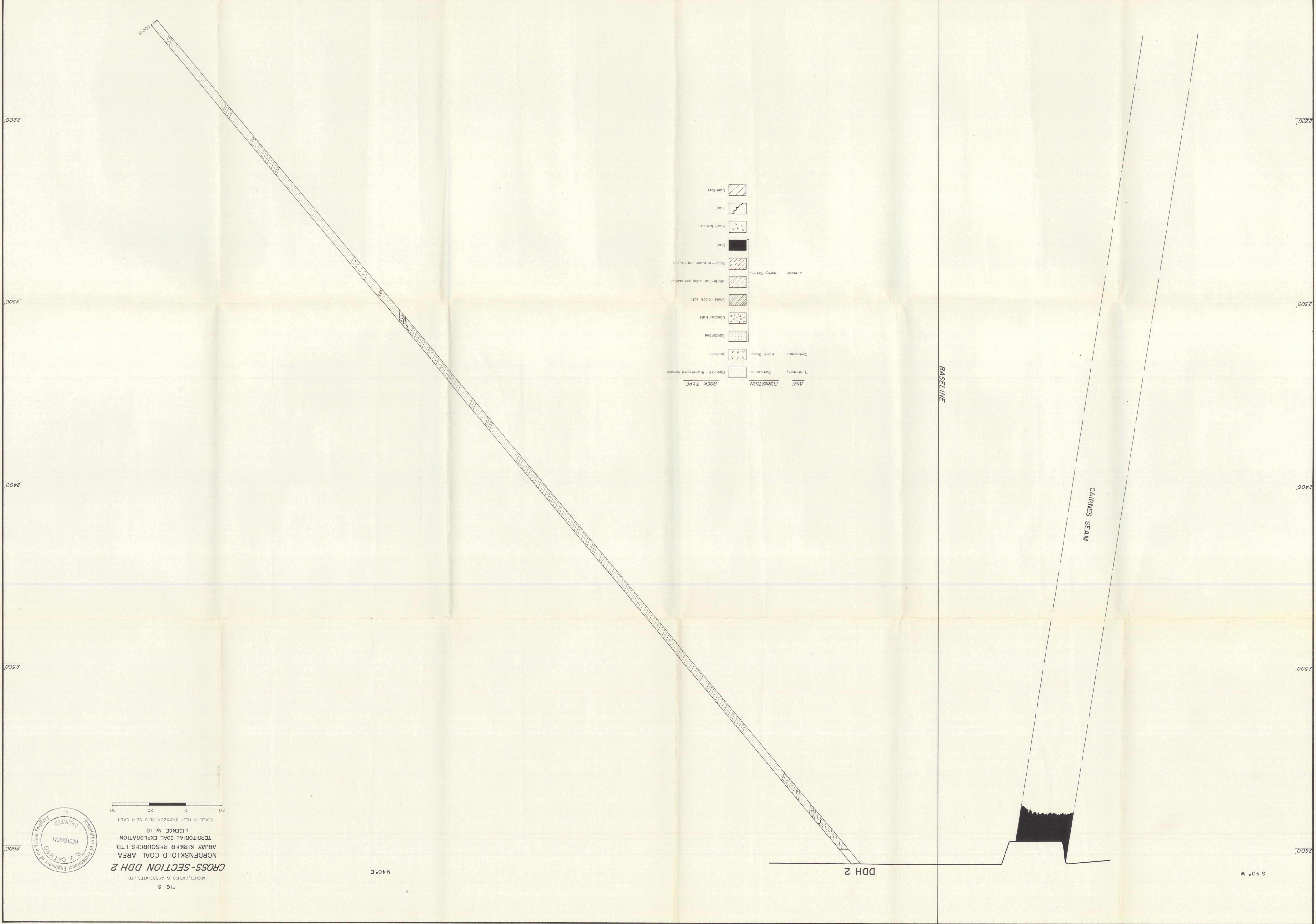


FIG. 4
 ARCHER, CATHRO & ASSOCIATES LTD.
CROSS-SECTION DDH 1
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)
 20 0 20 40

600 ft

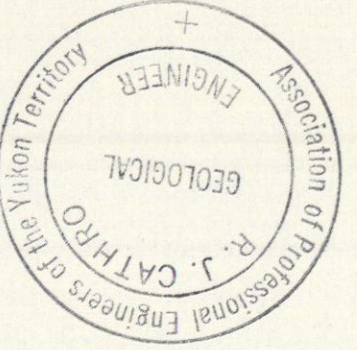


S 40° W

DDH 2

N 40° E

FIG. 5
 ARCHER, CATHER, & ASSOCIATES LTD.
 CROSS-SECTION DDH 2
 NORDENSKILD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10
 SCALE IN FEET (HORIZONTAL & VERTICAL)



S 40° W

N 40° E

DDH 3

2400'

2400'

2300'

2300'

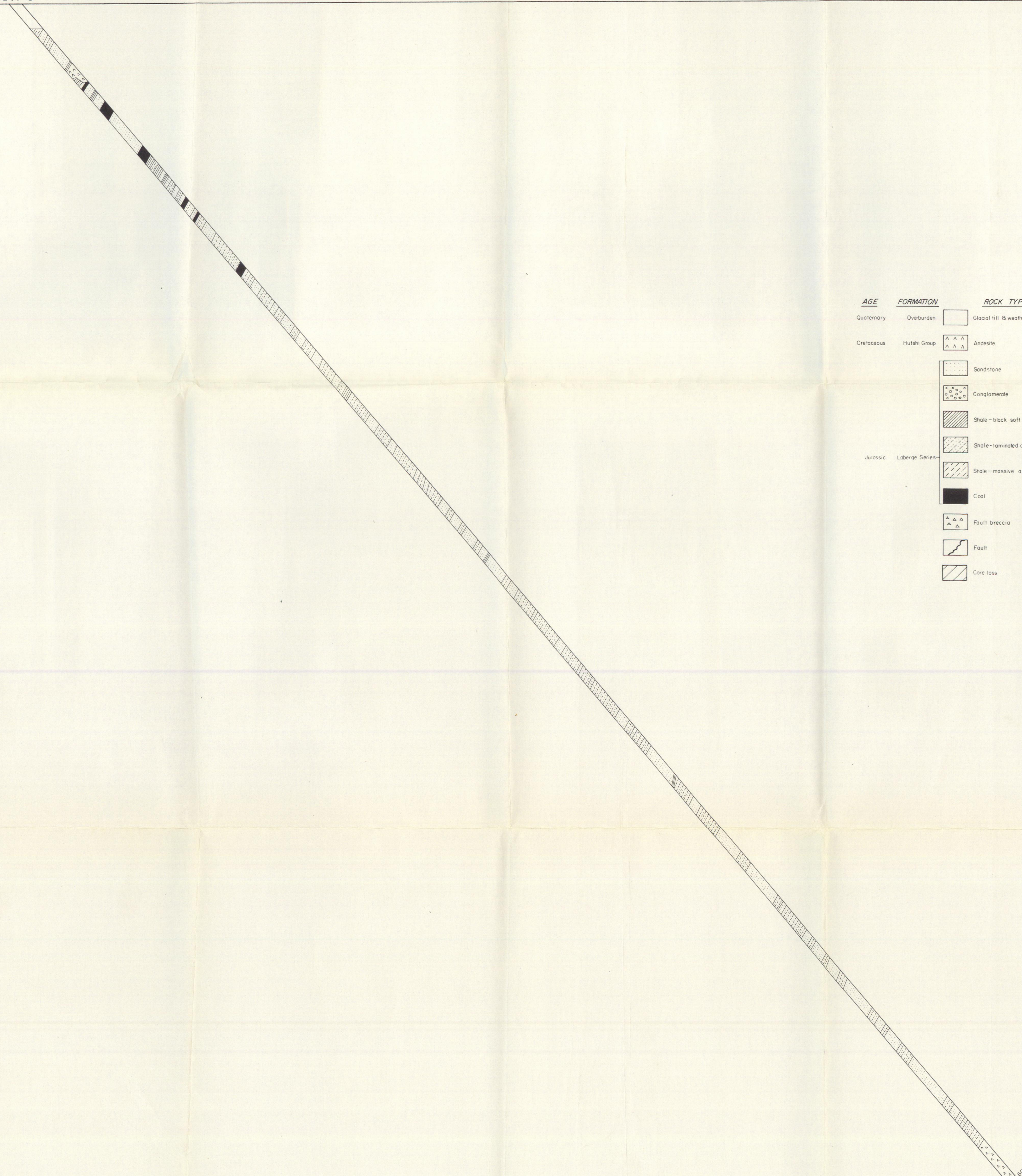
2200'

2200'

2100'

2100'

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



CAIRNES SEAM

BASELINE

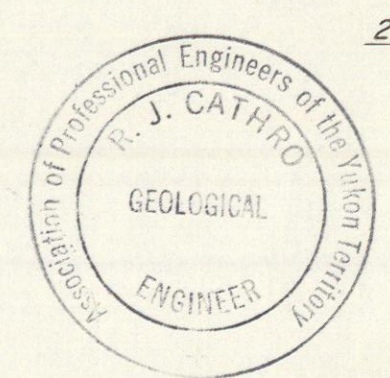
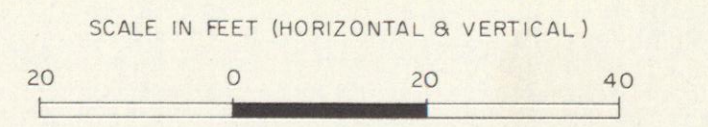


FIG. 6
 ARCHER, CATINO & ASSOCIATES LTD
CROSS-SECTION DDH 3
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10



2400'

2400'

S 40° W

N 40° W

DDH 6

FIG. 8

ARCHER, CATHRO & ASSOCIATES LTD.

CROSS-SECTION DDH 6

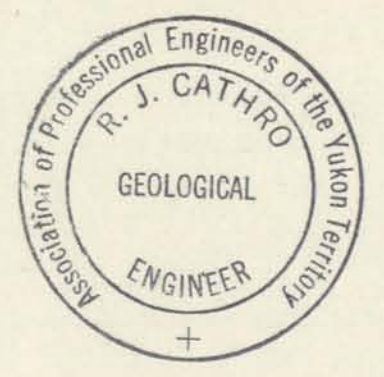
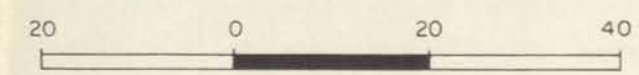
NORDENSKIOLD COAL AREA

ARJAY KIRKER RESOURCES LTD.

TERRITORIAL COAL EXPLORATION

LICENCE No. 10

SCALE IN FEET (HORIZONTAL & VERTICAL)



2300'

2300'

2200'

2200'

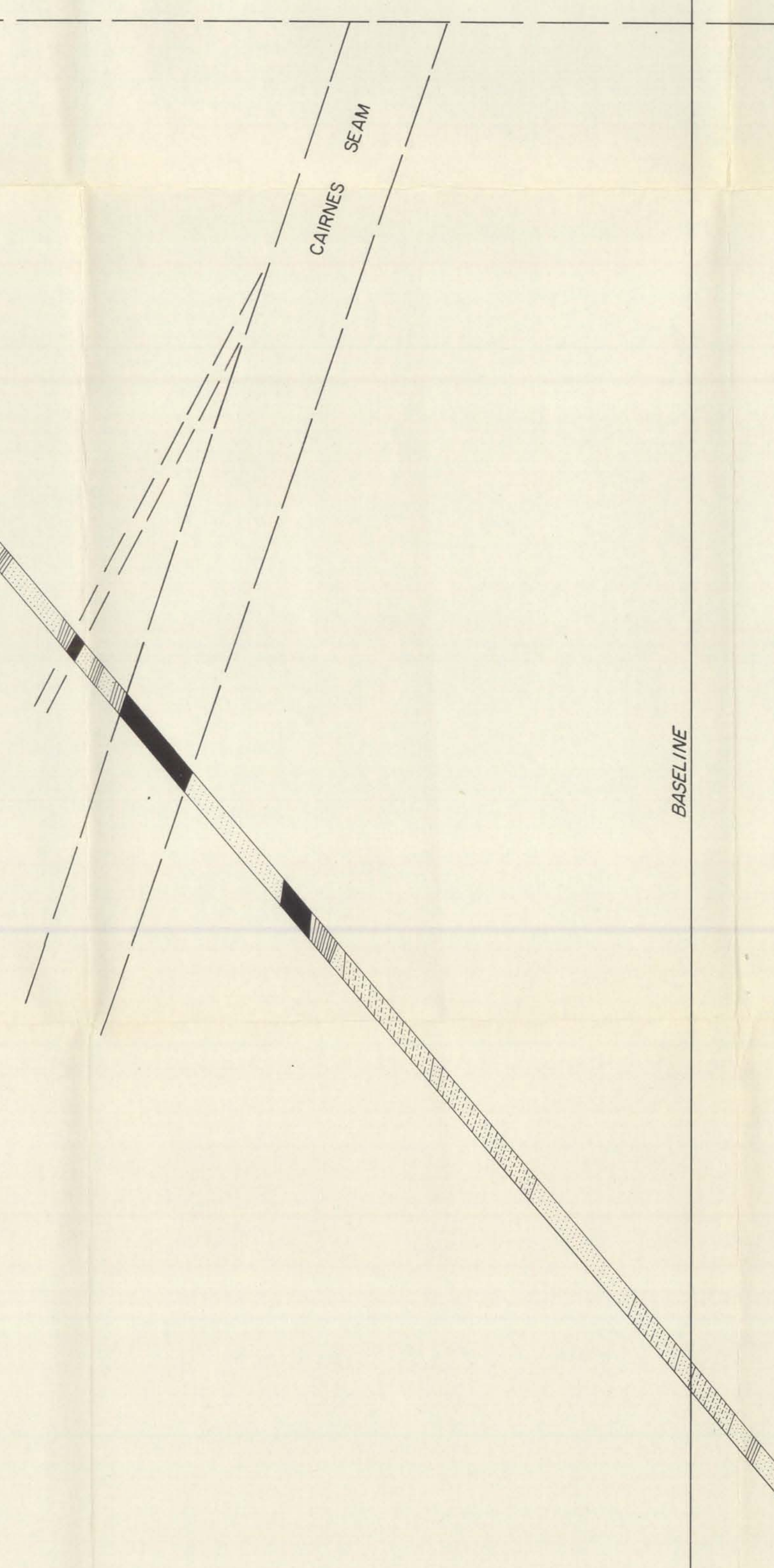
2100'

2100'

2000'

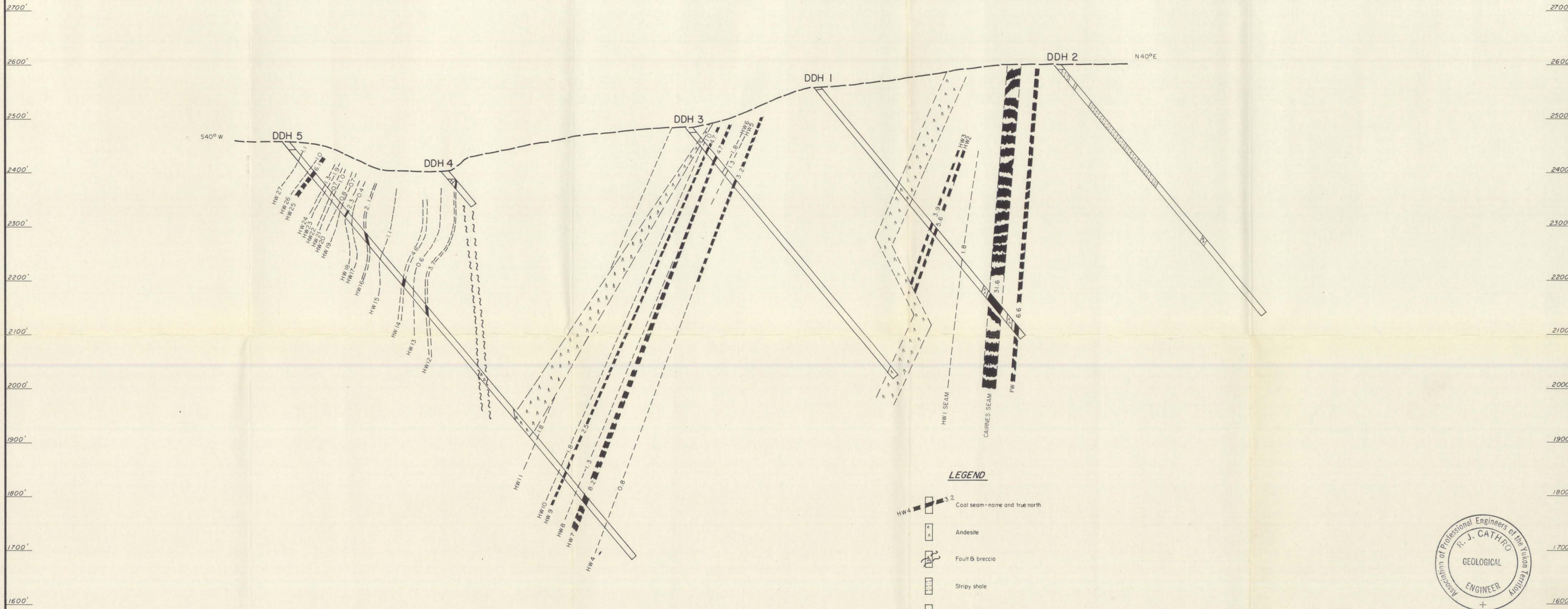
2000'

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



BASELINE

548.11



LEGEND

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

NOTE - Section looking N50°W

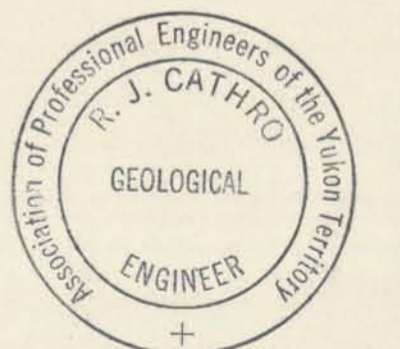
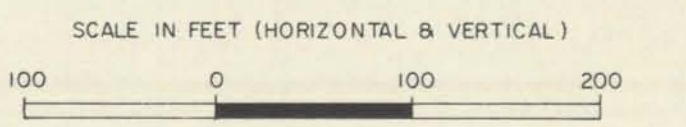
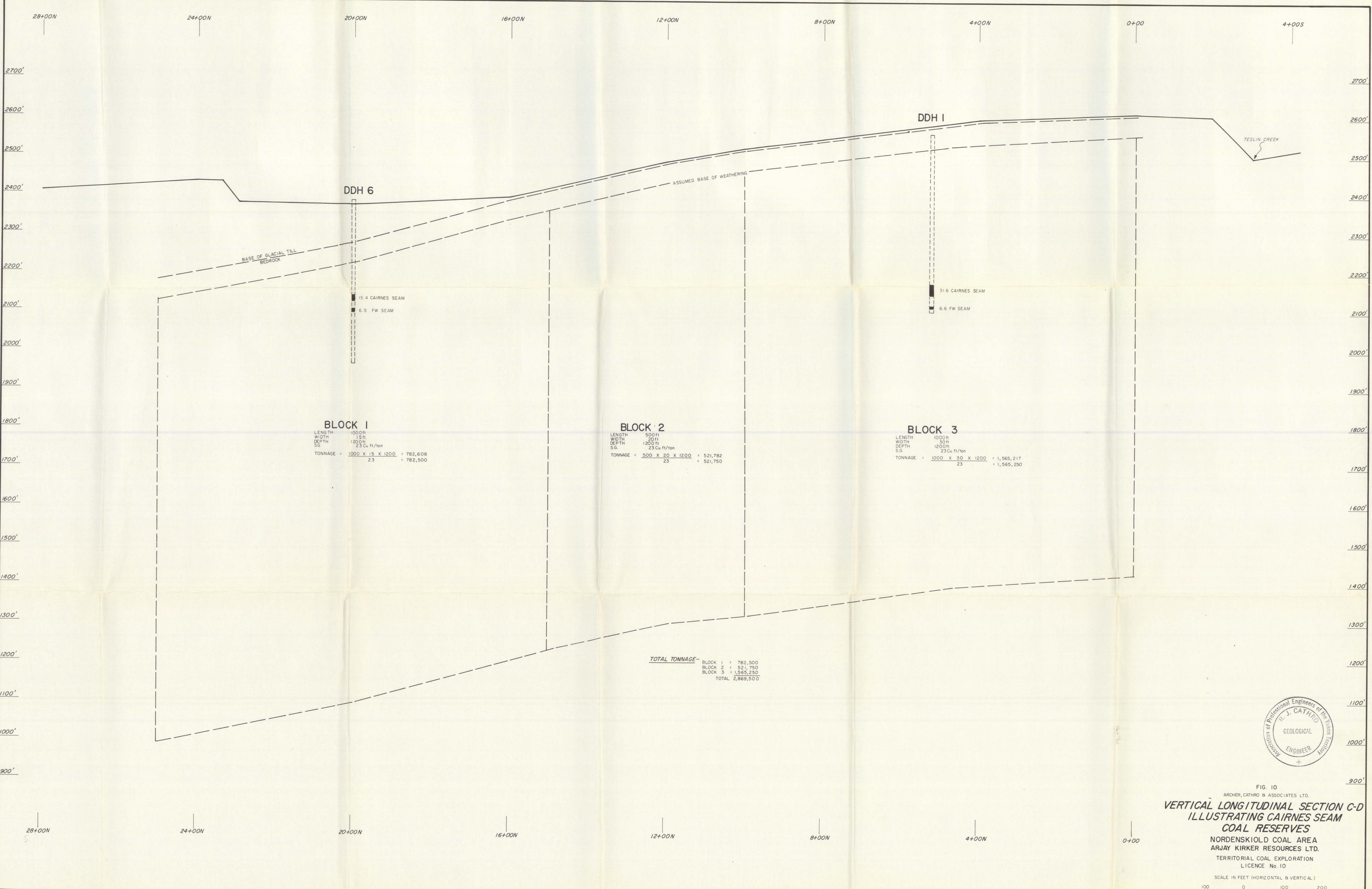


FIG. 9
 ARCHER, CATHRO & ASSOCIATES LTD.
CROSS-SECTION A-B
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10





BLOCK 1
 LENGTH 1000ft
 WIDTH 15ft
 DEPTH 1200ft
 S.G. 2.3 Cu ft/ton
 TONNAGE = $\frac{1000 \times 15 \times 1200}{2.3} = 782,508$
 = 782,500

BLOCK 2
 LENGTH 500ft
 WIDTH 20ft
 DEPTH 1200ft
 S.G. 2.3 Cu ft/ton
 TONNAGE = $\frac{500 \times 20 \times 1200}{2.3} = 521,782$
 = 521,750

BLOCK 3
 LENGTH 1000ft
 WIDTH 30ft
 DEPTH 1200ft
 S.G. 2.3 Cu ft/ton
 TONNAGE = $\frac{1000 \times 30 \times 1200}{2.3} = 1,565,217$
 = 1,565,250

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

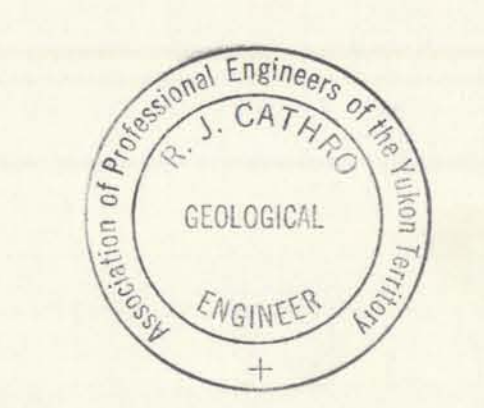


FIG. 10
 ARCHER, CATHRO & ASSOCIATES LTD.
VERTICAL LONGITUDINAL SECTION C-D
ILLUSTRATING CAIRNES SEAM
COAL RESERVES
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10
 SCALE IN FEET (HORIZONTAL & VERTICAL.)
 100 0 100 200

24+00N

20+00N

16+00N

12+00N

8+00N

4+00N

0+00

DDH 1

DDH 6

CAIRNES COAL SEAM

DATUM BASE OF CAIRNES COAL SEAM

FOOTWALL COAL SEAM

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

R

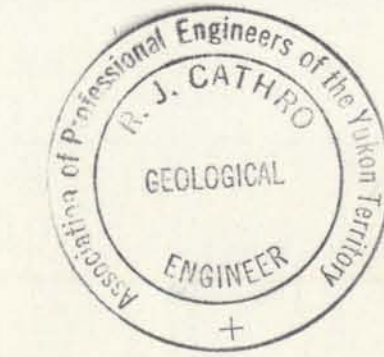


FIG. 11
 ARCHER, CATHRO & ASSOCIATES LTD.
**COLUMNAR SECTION DDH'S
 CAIRNES & FOOTWALL COAL SEAMS**
 NORDENSKIOLD COAL AREA
 ARJAY KIRKER RESOURCES LTD.
 TERRITORIAL COAL EXPLORATION
 LICENCE No. 10

