

R O S S R I V E R C O A L P R O J E C T

Report on 1980 Field Work



Coal Lease No.'s 2984, 2985, 2986

Whitehorse Mining District

N.T.S. 105-F-15, 16

Latitude: 61° 58'

Longitude: 132° 30'

By:

T. J. Adamson

CYPRUS ANVIL MINING CORPORATION

February, 1981

090816

This report has been examined by the Geological Evaluation Unit and is recommended to the Commission to be considered as representation work in the amount of \$ 9,600.00

Ruth Debicki A Reg'd
Resident Geologist or June 19/81
Resident Mining Engineer

Considered as representation work under
~~Section 59 (4) Yukon Quartz Mining Act~~

~~SECTIONS 22(1) & 22(2) TERRITORIAL
COAL REGULATIONS~~

SR BAXTER FOR MINISTER OF I.A. & N.D.
Commissioner of Yukon Territory

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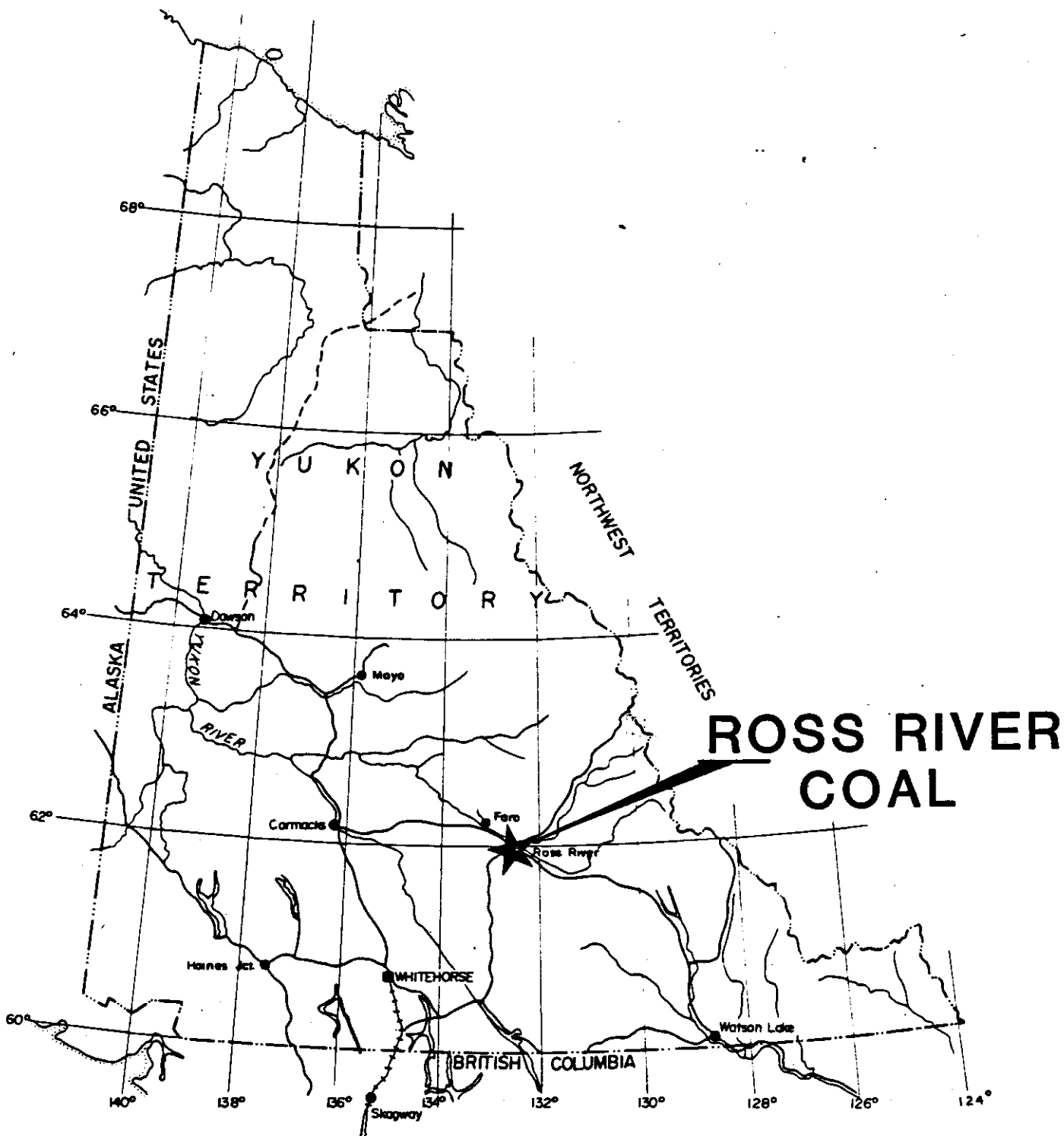
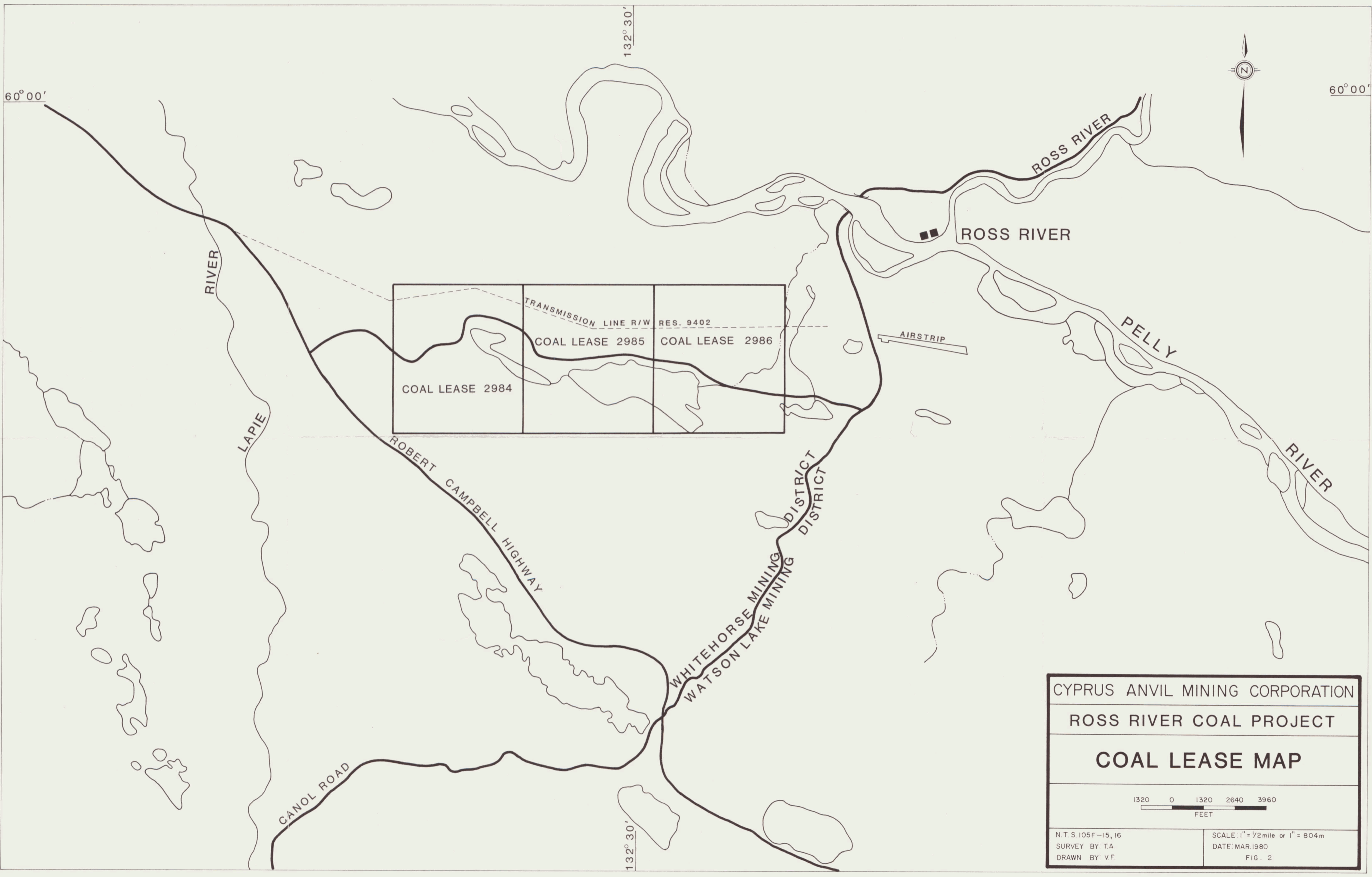


FIGURE 1
 CYPRUS ANVIL MINING CORPORATION
 LOCATION MAP
 ROSS RIVER COAL PROJECT

YUKON
 SCALE: 1" = 100 MILES



CYPRUS ANVIL MINING CORPORATION	
ROSS RIVER COAL PROJECT	
COAL LEASE MAP	
1320 0 1320 2640 3960 FEET	
N.T.S. 105F-15, 16 SURVEY BY: T.A. DRAWN BY: V.F.	SCALE: 1" = 1/2 mile or 1" = 804 m DATE: MAR. 1980 FIG. 2

Cyprus Anvil Mining Corporation

330, 355 Burrard Street Telex 04508594
Vancouver, British Columbia
V6C 2G8
Telephone (604) 687-2586

INTRODUCTION

Strata of Tertiary age containing coal seams have been known for many years to occur in a small fault bounded block just southwest of the settlement of Ross River, Yukon Territory. Outcrop is very scarce to non-existent over much of this basin. Prior to the exploration program described in this report, no evaluation had been made of the overall coal potential of these Tertiary sediments.

During 1980 three coal leases covering the known extent of the coal basin were acquired by Cyprus Anvil Mining Corporation. In June 1980, a rotary drilling program totalling 974.3 m, in 13 holes, was carried out to investigate the full stratigraphic thickness of the basin. Some minor bulldozer trenching further exposed the known surface coal occurrences. Proximate, heating value and sulphur analyses were carried out on coal samples from both drill holes and trenches.

CYPRUS ANVIL

LOCATION AND ACCESS

Coal lease numbers 2984, 2985 and 2986 are centered approximately 3 km west south-west of the settlement of Ross River, Yukon Territory. The leases straddle the boundary between N.T.S. map sheets 105-F-15 and 105-F-16.

The Robert Campbell Highway traverses the coal leases in an east-west direction and is paralleled about 0.5 km to the north by a power line right-of-way. A number of old bulldozer trails between the highway and the power line provide good access to most of the area of interest.

The road distance from Whitehorse, Yukon Territory to the property is approximately 358 km and the road distance to Faro, Yukon Territory is approximately 67 km.

ROTARY DRILLING AND TRENCHING

During June 1980 thirteen down-the-hole hammer, rotary percussion drill holes, ranging in depth from 50.0 m to 153.6 m and totalling 974.3 m were completed on the coal leases. These holes are numbered 80-RR-01 through 80-RR-13 and their locations are plotted on Map No. 1. Lithologic logs of each drill hole are included as Appendix III of this report.

The drilling was carried out under contract by Midnight Sun Drilling Co. Ltd. of Whitehorse, Yukon Territory, utilizing a truck mounted Schramm T64 H drill rig.

A Caterpillar D6C bulldozer, provided by Midnight Sun Drilling Co. Ltd., was used for drill site preparation, access road clearing, drill moves and for the trenching of surface exposure of known coal occurrences. Trench locations are plotted on Maps No.'s 1 and 3.

GEOLOGY

Coal bearing Tertiary sediments are known to occur, at a number of locations, within the Tintina Trench, extending from the Liard Plain through to the Alaska border. The extent of the Tertiary sediments is only very poorly defined because of thick surficial cover throughout much of the trench.

Near Ross River, Yukon Territory, coal bearing Tertiary sediments occur in a small tilted block bounded by steeply dipping faults. Most of this block is masked by overburden cover although several resistant sandstone and conglomerate members are fairly well exposed.

Regional geology is plotted on Map No. 1 and a number of sections across the block are plotted on Map No. 2. The lithologies through the Tertiary Section are tabulated in Table No. 1.

Throughout the eastern end of the Tertiary block, in the area underlain by units Ts_2 through Ts_5 , the rocks are relatively undeformed, with consistent dips ranging from 10° to 30° to the southeast. The mid- Ts_2 to mid- Ts_5 interval was completely intersected by drill holes. The $Ts_1 - Ts_2$ contact was not seen in drill holes or in outcrop.

At the west end of the basin, in the area underlain by mid- Ts_1 , in close proximity to the bounding faults, the rocks are extensively folded and faulted, with very variable dips to the south-west. A sketch showing trench and drill hole locations, and rock exposures, in this area, is included as Map No. 3.

TABLE OF GEOLOGIC FORMATIONS

<u>Age</u>	<u>Map</u> <u>Symbol</u>	<u>Thickness</u>	<u>Lithology</u>
Tertiary Paleocene-Eocene?	Ts	570 m +	Sandstone, shale, conglomerate, <u>coal</u>
	Ts ₅	120 m +	Conglomerate, conglomeratic sandstone, coarse grained sandstone, very minor mudstone.
	Ts ₄	130 m	Sandstone, conglomeratic sandstone, mudstone, <u>coal</u> , minor conglomerate. (11 coal seams .2 - 1.4 m thick, distributed throughout section)
	Ts ₃	140 m	Mudstone, siltstone, very fine-grained sandstone, minor conglomerate, very minor thin <u>coal</u> . (3 seams .3 - .5 m thick)
	Ts ₂	60 m +	Dark brown to grey to black mudstone, siltstone.
	Ts ₁	120 m +	Top 40 m + thinly interbedded mudstone, very fine-grained, light grey sandstone, dirty coal seams; middle 20 m fine-grained very clean quartzose sandstone; lower 60 m + light grey to pink clean silicious siltstone to very fine-grained clean sandstone.
Carboniferous or Permian	Pc		Recrystallized crinoidal limestone.
	CPv		Basalt, tuff, minor augite porphyry.
Age Unknown	PIPk		Phyllite, greywacke, marble.

Significant coal seams occur in unit Ts_4 and Ts_1 . Unit Ts_4 coal seams were intersected in drill holes 80-RR-02 and 80-RR-08 (11 seams 0.1 - 0.8 m thick in 80-RR-02 and 6 seams 0.2 - 1.4 m thick in the upper part of the unit in hole 80-RR-08; see Map No. 2). It appears that the two 1.4 m coal seams near the top of unit Ts_4 in hole 80-RR-08 have thinned to 0.3 m and 0.5 m respectively in hole 80-RR-02. There is some possibility, however, that hole 80-RR-02 was collared stratigraphically just below the top seam. The lower 1.4 m seam in hole 80-RR-08 was also exposed in a new bulldozer trench just to the west of the drill hole. A number of lower Ts_4 coal seams are poorly exposed in road cut banks to the west of hole 80-RR-08 but all appear much less than 1 m in thickness.

Unit Ts_3 contains only very minor coal. These seams (3 seams each about .3 m thick) were encountered in drill holes 80-RR-1, 4, and 5. These seams have no economic potential.

Unit Ts_1 coal seams were intersected in drill holes 80-RR-9, 10 and 12 and were also exposed in trenching immediately east and west of holes 80-RR-9 and 10. This section contains two seams up to 1.5 m thick and a number of thin seams less than 1 m thick. This area, as previously noted, is very folded and faulted. Along Section E-E', these seams dip into thickening overburden cover under the lake. Also, to the east and west, along strike, the thickness of overburden cover increases very rapidly. To the east, by Section D-D', unit Ts_1 is covered by 20 - 30 m of overburden. To the west of section E-E', and immediately west of the most westerly bulldozer trench, overburden cover appears to thicken to about 30 m.

COAL QUALITY

Coal samples for analysis were collected from bulldozer trenches and from rotary drill holes. Samples were analysed by Birtley Coal and Minerals Testing Ltd. of Calgary, Alberta. Samples were subjected to proximate, sulphur, and heating value determinations. The Birtley lab report is included as Appendix IV to this report.

Samples from all seams, from both surface exposures and drill holes, have a rank (A.S.T.M.) of low volatile bituminous. The dry mineral-matter-free fixed carbon content ranges between 78.0% and 86.4%. Earlier analyses reported by J. Hughes and D. Long (G.S.C. Paper 79-32) of surface exposed Ross River coals indicated a rank of medium volatile bit- to low volatile bituminous by A.S.T.M. methods and low volatile bituminous to semi-anthracite by the vitrinite reflectance method. The rank of these Tertiary coals is markedly higher than the rank within equivalent sediments elsewhere in the trench. Hughes and Long suggest that this elevation in rank is a result of local heating related to intrusions emplaced at relatively shallow depth subsequent to the deposition of the coal materials.

The fuel ratio (F.C./vol.) of the Ross River coals varies from 3.2 to 4.3, compared with Carmacks coal with a fuel ratio averaging 1.7. Although the Ross River coals will have different ignition and combustion characteristics than Carmacks coal, it is probable that they would still be compatible with the spreader stocker with vibrating grate furnaces in the mill heating plant at Faro.

The unit Ts₁ coals, sampled in Trenches B and C and also in drill hole 80-RR-09, have a high raw ash content, ranging from 25.1% to 44.1%.


The two thickest Ts_4 coal seams, in samples from hole 80-RR-08 and trench A are much lower in raw ash content, ranging from 8.6% to 16.5%. The dry basis heating value of these Ts_4 coals varies from 7041 to 7317 Kcal/Kg.

CONCLUSIONS AND RECOMMENDATIONS

The Ts_7 coals at the west end of the Tertiary block appear to have little potential for commercial exploitation at any scale. The structural complexity in the area, the strike trend within a short distance of the surface exposures into areas of very deep overburden cover, and the high ash content of these seams, all indicate that mining in this area would not be a viable proposition.

Coal in two seams near the top of unit Ts_4 is of reasonable quality for use at Faro. These two seams, apparently about 1.4 m thick each in hole 80-RR-08, appear to thin to the northeast towards Section A-A'. Some further trenching is marginally warranted. The surface minable tonnage potential in this area is at best in the order of a few hundred thousand tonnes.

Respectfully submitted,



T. J. Adamson
Senior Geologist
Coal Projects

February 16, 1981

APPENDIX I

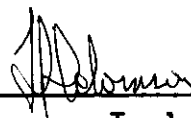
Statement of Qualifications

APPENDIX I

Statement of Qualifications

I, Thomas J. Adamson, geologist, with business address at 300-355 Burrard St., 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 1980 exploration field work on Coal Leases No. 2984, 2985 and 2986, and have compiled and interpreted all data resulting from this work.



T. J. Adamson

Senior Geologist
Coal Projects

February 16, 1981

APPENDIX II

Statement of Gosts

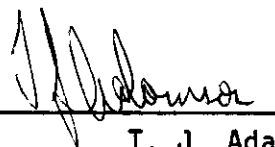
APPENDIX II

Coal Lease No.'s 2984, 2985 and 2986

1980 Rotary Drilling

Cost Statement

Rotary drilling; total direct on-site drilling expenditure \$ 53,490.75
(see attached Midnight Sun Drilling Co. Ltd. invoice)



T. J. Adamson
CYPRUS ANVIL MINING CORPORATION

February 16, 1981

APPENDIX III

Lithologic Log - Rotary Drill Holes 80-RR-01 thru 80-RR-13

ROTARY DRILL HOLE LOG

Hole No. 80-RR-02

Ross River Coal Project, 1980

Page 1 of 6

Coal Lease No.: 2986
 Bearing: -
 Dip: -90°
 Date: June 1980
 Ultimate Depth: 153.6 meters
 Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)								
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM	Rank
0.0- 1.0	0.0- 0.3		Overburden.									
1.0- 6.0	0.3- 1.8	Ts ₄	Conglomerate, white dust.									
6.0- 19.0	1.8- 5.8	†	Coarse-grained, conglomeratic quartzose sandstone.									
19.0- 20.0	5.8- 6.1		<u>Coal.</u>	5.8-6.1	0.3m	0.3m						
20.0- 34.0	6.1- 10.4		Brownish-grey mudstone, tan dust.									
34.0- 36.0	10.4- 11.0		Coaly mudstone, dark red-brown dust.									
36.0- 38.0	11.0- 11.6		Brownish-grey siltstone, buff dust.									
38.0- 41.0	11.6- 12.5		Slightly coaly mudstone.									
41.0- 43.0	12.5- 13.1		Fine-grained, medium-grey sandstone.									
43.0- 75.0	13.1- 22.9		Medium to coarse-grained quartzite † conglomeratic sandstone, white dust.									
75.0- 75.5	22.9- 23.0		<u>Coal.</u>	22.9-23.0	0.1m							

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)							
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM
350.0-365.0	106.7-111.3	Ts ₄ +	Fine-grained, light grey, [±] slightly conglomeratic sandstone.								
365.0-372.0	111.3-113.4		Dark grey siltstone.								
372.0-378.0	113.4-115.2		Interbedded dark mudstone and thin dirty coal.								
378.0-385.0	115.2-117.3		Fine to medium-grained grey sandstone.								
385.0-389.0	117.3-118.6		Dark grey mudstone.								
389.0-401.0	118.6-122.2		Black mudstone.								
401.0-403.0	122.2-122.8		<u>Coal.</u>	122.2-122.8	0.6m	0.5m					
403.0-415.0	122.8-126.5		Dark grey, very fine-grained sandstone.								
415.0-420.0	126.5-128.0		Dark grey to black siltstone.								
420.0-426.0	128.0-129.8		Medium-grey, very fine-grained sandstone.								
426.0-432.0	129.8-131.7		Dark grey, massive mudstone.								
432.0-437.0	131.7-133.2		Dark grey, massive siltstone.								
437.0-449.0	133.2-136.9		Medium to coarse-grained quartzose conglomeratic sandstone.								
449.0-454.0	136.9-138.4		Very fine-grained, dark grey sandstone.								
454.0-466.0	138.4-142.0		Thinly interbedded, very fine-grained sandstone, mudstone, siltstone, thin (few inches) dirty coal.								
466.0-475.0	142.0-144.8		Dark grey, massive mudstone.								

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)							
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM
70.0- 76.0	21.3- 23.2	Ts ₃	Dark grey siltstone; dark brownish dust.								
76.0- 86.0	23.2- 26.2	+	Fine-grained grey sandstone.								
86.0- 88.0	26.2- 26.8		Grey mudstone.								
88.0- 89.0	26.8- 27.1		Coaly mudstone.								
89.0-107.0	27.1- 32.6		Medium-grey, massive siltstone.								
107.0-119.0	32.6- 36.3		Fine to medium-grained, clean grey sandstone.								
119.0-138.0	36.3- 42.1		Dark grey mudstone to siltstone.								
138.0-148.0	42.1- 45.1		Dark brownish grey mudstone; dark brown dust.								
148.0-149.0	45.1- 45.4		Coaly mudstone.								
149.0-156.0	45.4- 47.5		Medium-grey siltstone.								
156.0-166.0	47.5- 50.6		Grey mudstone.								
166.0-206.0	50.6- 62.8		Fine-grained grey sandstone, thin interbeds brownish muddy matrix sandstone.								
206.0-240.0	62.8- 73.2		Dark grey siltstone, thin sandy interbeds.								
240.0-246.0	73.2- 75.0		Dark grey mudstone.								
246.0-248.0	75.0- 75.6		<u>Coal</u> and coaly mudstone.	75.0-75.6	0.6m	0.5m					

ROTARY DRILL HOLE LOG

Hole No. 80-RR-09

Page 1 of 3

Ross River Coal Project, 1980

Coal Lease No.: 2984
 Bearing: -
 Dip: -90°
 Date: June 1980
 Ultimate Depth: 59.4 meters
 Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)								
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM	Rank
0.0- 1.0	0.0- 0.3		Overburden.									
1.0- 4.0	0.3- 1.2	Ts ₁	Footwall white claystone.									
4.0- 25.0	1.2- 7.6	+	Dark brownish-grey mudstone, brown dust.									
25.0- 40.0	7.6- 12.2		<u>Coal.</u>	7.6-12.2	4.6m	1.4m	25.7	14.5	59.8	6.49	6044	1v6
40.0- 52.0	12.2- 15.8		Light grey, very fine-grained clayey matrix sandstone.									
52.0- 53.0	15.8- 16.2		Dark grey mudstone.									
53.0- 58.0	16.2- 17.7		<u>Coal.</u>	16.2-17.7	1.5m	<1.0m	44.1	12.2	43.7	0.28	4453	1v6
58.0- 62.0	17.7- 18.9		Coaly mudstone, dark brown to black.									
62.0- 64.0	18.9- 19.5		Interbedded mudstone and fine-grained sandstone.									
64.0- 70.0	19.5- 21.3		<u>Coal.</u>	19.5-21.3	1.8m	<1.0m	43.6	12.9	43.5	0.36	4406	1v6

ROTARY DRILL HOLE LOG

Hole No. 80-RR-11

Page 1 of 2

Ross River Coal Project, 1980

Coal Lease No.: 2984
 Bearing: -
 Dip: -90°
 Date: June 1980
 Ultimate Depth: 61.0 meters
 Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)							
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM
0.0- 45.0	0.0- 13.7	OB	Overburden, grey-brown, clayey till.								
45.0- 85.0	13.7- 25.9	OB	Overburden, dark grey, pebbly, silty till.								
85.0- 90.0	25.9- 27.4	OB	Overburden, gravel, clayey matrix.								
90.0- 96.0	27.4- 29.3	Ts ₁	Soft medium-brown mudstone.								
96.0-120.0	29.3- 36.6	+	Fine-grained, medium-grey, soft, poorly cemented sandstone.								
120.0-137.0	36.6- 41.8		Interbedded very very fine-grained, clayey matrix light sandstone and very fine-grained, hard, clean, light sandstone, all slightly platy breaking.								
137.0-150.0	41.8- 45.7		Pink platy siliceous mudstone to very very fine-grained sandstone, gradational with above.								
150.0-174.0	45.7- 53.0		As above, interbedded grey to pink.								
174.0-179.0	53.0- 54.6		Very very fine-grained grey to pink, clean quartz sandstone, angular irregular chips rather than platy.								

ROTARY DRILL HOLE LOG

Hole No. 80-RR-12

Page 1 of 2

Ross River Coal Project, 1980

Coal Lease No.: 2984
 Bearing: -
 Dip: -90°
 Date: June 1980
 Ultimate Depth: 56.1 meters
 Electrologged: No

INTERVAL		UNIT	DESCRIPTION	ANALYSIS (db)							
Feet	Meters			Int.	Thick.	Est. T.T.	Ash %	Vol.%	F.C.%	S%	Cal/GM
0.0- 76.0	0.0- 23.2	OB	Overburden. 0-45 - clayey till. 45-52 - sandy till. 52-58 - silt. 58-76 - gravelly silty till.								
76.0- 85.0	23.2- 25.9	Ts ₁	Dark grey to black mudstone.								
85.0-115.0	25.9- 35.1	+	Fine-grained, dark grey sandstone.								
115.0-126.0	35.1- 38.4		Thinly interbedded, fine to medium-grained sandstone, black mudstone, very minor thin coal.								
126.0-130.0	38.4- 39.6		As above, <u>Coal</u> approximately 50%.								
130.0-136.0	39.6- 41.5		Fine-grained to very fine-grained, medium-grey sandstone.								
136.0-138.0	41.5- 42.1		Sandstone, minor thin coal.								
138.0-145.0	42.1- 44.2		Soft clayey matrix fine-grained sandstone.								

NOTE: from 145' → high volume water flow, hole very difficult to log.

APPENDIX IV

Coal Analyses Lab Report

Birtley Coal & Minerals Testing

A DIVISION OF GREAT WEST STEEL INDUSTRIES LTD.



July 22, 1980

Mr. T. Adamson
Cyprus Anvil Mining Corporation
330-355 Burrard Street
Vancouver, B.C.
V6C 2G8

Dear Tom:

Enclosed are the test results for the nine Ross River Samples received at our laboratory July 18, 1980.

Yours truly,

BIRTTY COAL & MINERALS TESTING

A handwritten signature in cursive script that reads "Frank J. Horvat".

Frank J. Horvat
General Manager

Encl.
FJH/ceb

CLIENT : CYPRUS ANVIL MINING CORPORATION

PROJECT : ROSS RIVER SAMPLES Received July 18/80

LAB NO.	SAMPLE I. D.	ADM% MOIST	R.M. MOIST	PROXIMATE			S%	BTU/LB.	CALC. BASIS
				ASH %	V.M. %	F.C. %			
5371 Ts ₄	RR TRENCH "A"	1.7	5.0	8.2	20.2	66.6	0.32	12040	a.d.b.
	F.C./VOL 3.8		6.6	8.1	19.8	65.5	0.31	11835	a.r.b.
				8.6	21.3	70.1	0.34	12674	d.b.
5372 Ts ₁	RR TRENCH "B"	6.0	6.4	23.5	14.0	56.1	0.27	9476	a.d.b.
	F.C./VOL 4		12.0	22.1	13.2	52.7	0.25	8907	a.r.b.
				25.1	15.0	59.9	0.29	10124	d.b.
5373 Ts ₁	RR TRENCH "C"	4.2	3.7	38.5	11.0	46.8	0.26	7329	a.d.b.
	F.C./VOL 4.3		7.7	36.9	10.5	44.9	0.25	7021	a.r.b.
				40.0	11.4	48.6	0.27	7611	d.b.
5374 Ts ₄	RR 80-8 34' -40'	2.9	0.6	14.5	16.5	68.4	0.26	13091	a.d.b.
	F.C./VOL 4.1		3.5	14.1	16.0	66.4	0.25	12711	a.r.b.
				14.6	16.6	68.8	0.26	13170	d.b.
5375 Ts ₄	RR 80-8 90'-95.5'	1.3	0.6	16.4	17.3	65.7	0.24	12678	a.d.b.
	F.C./VOL 3.8		1.9	15.1	15.9	60.5	0.22	12513	a.r.b.
				16.5	17.4	66.1	0.24	12754	d.b.
5376 Ts ₁	RR 80-9 25'-40'	6.7	0.8	25.5	14.4	59.3	0.49	10901	a.d.b.
	F.C./VOL 4.1		7.4	23.8	13.4	55.4	0.46	10170	a.r.b.
				25.7	14.5	59.8	0.49	10989	d.b.
5377 Ts ₁	RR 80-9 53'-58'	5.6	0.6	43.8	12.1	43.5	0.28	8048	a.d.b.
	F.C./VOL 3.8		6.2	41.3	11.4	41.1	0.26	7597	a.r.b.
				44.1	12.2	43.7	0.28	8097	d.b.

Equilibrium Moisture deleted because of extra fine material produced by reverse air circulation method of drilling.

Birtley Coal
& Minerals Testing

CLIENT : CYPRUS ANVIL MINING CORPORATION

PROJECT : ROSS RIVER SAMPLES Received July 18/80

LAB NO.	SAMPLE I.D.	ADM%	R.M. MOIST	PROXIMATE			S%	BTU/LB.	CALC. BASIS
				ASH %	V.M.%	F.C.%			
5378	RR 80-9	4.2	0.7	43.3	12.8	43.2	0.36	7954	a.d.b.
Ts ₇	64'-70'		4.9	41.4	12.3	41.4	0.34	7620	a.r.b.
	F.C./VOL 3.4			43.6	12.9	43.5	0.36	8010	d.b.
5379	RR 80-2	7.4	0.7	53.6	10.8	34.9	0.32	6071	a.d.b.
Ts ₄	206'-209'		8.0	49.7	10.0	32.3	0.30	5622	a.r.b.
	F.C./VOL 3.2			54.0	10.9	35.1	0.32	6114	d.b.
			<u>No.</u>			<u>DMMF F.C. %</u>		<u>Rank</u>	
			5371			78.0		LVB	
			5372			82.8		LVB	
			5373			81.0		LVB	
			5374			82.0		LVB	
			5375			80.8		LVB	
			5376			83.4		LVB	
			5377			84.9		LVB	
			5378			83.7		LVB	
			5379			86.4		SA	

Equilibrium Moisture deleted because of extra fine material produced by reverse air circulation method of drilling.

Birtley Coal
& Minerals Testing

Territorial Coal Regulations

Coal Mining Lease

This INDENTURE made in triplicate this ...5th..... day of
..... May A.D. 19⁸¹.....,

BETWEEN

Her Majesty the Queen in right
of Canada, hereinafter called
"Her Majesty",

OF THE FIRST PART,

AND

Fred Welter (Surveyor)
Box 4418
Whitehorse, Yukon

OF THE SECOND PART,

WITNESSES THAT in consideration of the rental, royalty, covenants and agreements hereinafter reserved and contained and subject to the Territorial Coal Regulations, hereinafter called "the Regulations", Her Majesty grants unto the Lessee for a term of twenty-one years commencing on the 17th April 1980 exclusive licence to search for, win and take all coal within the meaning of the Regulations in, upon or under the location described as follows:

ALL AND SINGULAR that rectangular parcel of land marked by four location posts upon the ground, and situated 3.5 km southwest of Ross River, map area 105-F-15/16 in the Whitehorse Mining District of the Yukon Territory, as shown in sketch attached hereto and forming part of this description, and containing 640 acres more or less, and subject to prior rights of Yukon Electrical Company, Ltd. powerline right of way;

Yielding and paying therefor unto Her Majesty an annual rental of \$640.00 dollars, (the receipt of the rent for the first year of the term being hereby acknowledged) and an annual royalty as provided by the Regulations.

The Lessee covenants that it will comply with the provisions of the Regulations.

Upon the failure of the Lessee to pay the rents reserved herein or any royalty prescribed by the Regulations, within thirty days of the due date, the Minister of Indian Affairs and Northern Development may give notice to the Lessee by registered mail addressed to its last known address, that if payment is not received within 60 days from the date of such notice, the lease may be terminated.

In the event that the Lessee is convicted of an offence arising from a breach of the Northern Inland Waters Act or any other act of the Parliament of Canada or regulations made thereunder, or from a breach of any Ordinance or any municipal by-law relating to the protection of the environment or public safety, the Minister of Indian Affairs and Northern Development may at his option require the Lessee to remedy such breach or terminate this Lease.

COAL MINING LEASE NO: 2984
LESSEE: Fred Welter
CLAIM SHEET: 105-F-15/16
SCALE: 1:50,000



CML
2894
2633

CREEK

PIE

RIVER

RANGE

RAM

MOUNT ROSS 5877

NTAINS)

2605

2676

BM 2718

2700

5500

Every Lessee liable to pay royalty imposed by the Regulations, shall keep at or near the mine proper books of account of the quantity, weight, value and other particulars of the coal or coal bearing substances taken from the said mine, and the said books shall be available for review by the Minister, as required, and if any doubt arises as to the nature, number or quality of such books, the Minister shall determine the number and character of the books to be kept, and the place or places at which said books shall be kept.

The Lessee shall as the Minister may direct from time to time, deliver to the Chief, any material, information or records pertaining to any mining operations on the said lands in such form and manner as the Minister may prescribe.

The Lessee may at any time surrender this lease and abandon the site provided he has complied in every respect with the covenants and agreements of the lease and the Lessee hereby covenants that he shall restore said site as nearly as possibly to the same condition as it was prior to the commencement of the lease to the satisfaction of the Minister.

The Lessee shall at the expiration of this lease, submit to the Department, complete copies of all geological, geophysical and geochemical reports obtained, copies of all drill core logs, assay results and all other relevant information the Minister deems necessary and said material shall be held in confidence for a period of three years from the date of submission.

The Lessee will indemnify and save harmless Her Majesty against and from all actions, suits, proceedings, costs, charges, expenses, claims, demands, damages, matters and things whatsoever and by whomsoever made, sustained, brought or prosecuted, in any manner based upon, occasioned by or attributable to anything done, suffered or omitted by the Lessee, its servants or agents, in the exercise or purported exercise of the rights granted to it herein.

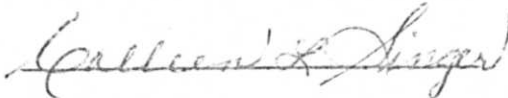
The parties hereto agree that this indenture enures to the benefit of, and is binding upon, Her Majesty, and Her Successors, and the Lessee, its successors and assigns.


No member of the House of Commons may be admitted to any share of this agreement or any benefit to arise therefrom.

In witness whereof the Supervising Mining Recorder on behalf of Her Majesty the Queen in right of Canada has hereunto set her hand and seal and Fred Welter has hereunto set his hand and seal.

Signed, Sealed and Delivered in the presence of


(seal)



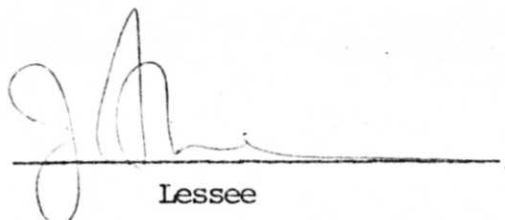


For Minister
Department of Indian Affairs and
Northern Development

Signed, Sealed and Delivered in the presence of



Witness



Lessee

AFFIDAVIT OF WITNESS

CANADA
YUKON TERRITORY
TO WIT:

I, WERNER GUTTEK, occupation..... DRAFTSMAN
....., of WHITEHORSE, Y.T.

witness to the within Instrument, make oath and say:

THAT I was personally present and did see the within Instrument and two
copies duly signed, sealed, and executed by..... FRED WELTER, SURVEYOR
....., the party thereto.

THAT the within Instrument and two copies were executed at the place and
on the date shown in the said Instrument.

THAT I know the said party and that she/he is, to the best of my knowledge
and belief, of legal age for the execution of the within Instrument.

THAT I am of legal age for the witnessing of the within Instrument.

SWORN and subscribed to at WHITEHORSE, Y.T.,
this 16 day of APRIL , 19⁸¹.,
before me --

A NOTARY PUBLIC

Werner Guttek

WITNESS (signed in presence of
Notary Public)

Territorial Coal Regulations

Coal Mining Lease

This INDENTURE made in triplicate this5th..... day of
.....May..... A.D. 19.81.,

BETWEEN

Her Majesty the Queen in right
of Canada, hereinafter called
"Her Majesty",

OF THE FIRST PART,

AND

Remick Campbell (Surveyor)
Box 4418
Whitehorse, Yukon

OF THE SECOND PART,

WITNESSES THAT in consideration of the rental, royalty, covenants and
agreements hereinafter reserved and contained and subject to the Territorial
Coal Regulations, hereinafter called "the Regulations", Her Majesty grants
unto the Lessee for a term of twenty-one years commencing on the 17th
April 1980 exclusive licence to search for, win and
take all coal within the meaning of the Regulations in, upon or under the
location described as follows:

ALL AND SINGULAR that rectangular parcel of land marked by four
location posts upon the ground, and situated 3.5 km southwest of Ross River,
map area 105-F-15/16 in the Whitehorse Mining District of the Yukon
Territory, as shown on sketch attached hereto and forming part of this
description, and containing 640 acres more or less, and to exclude
ground covered by Yukon Barite company, Ltd. Commercial Lease 4675, and
subject to prior rights of Yukon Electrical Company, Ltd. powerline right
of way;

Yielding and paying therefor unto Her Majesty an annual rental of
\$640.00 dollars, (the receipt of the rent for the first year of
the term being hereby acknowledged) and an annual royalty as provided by the
Regulations.

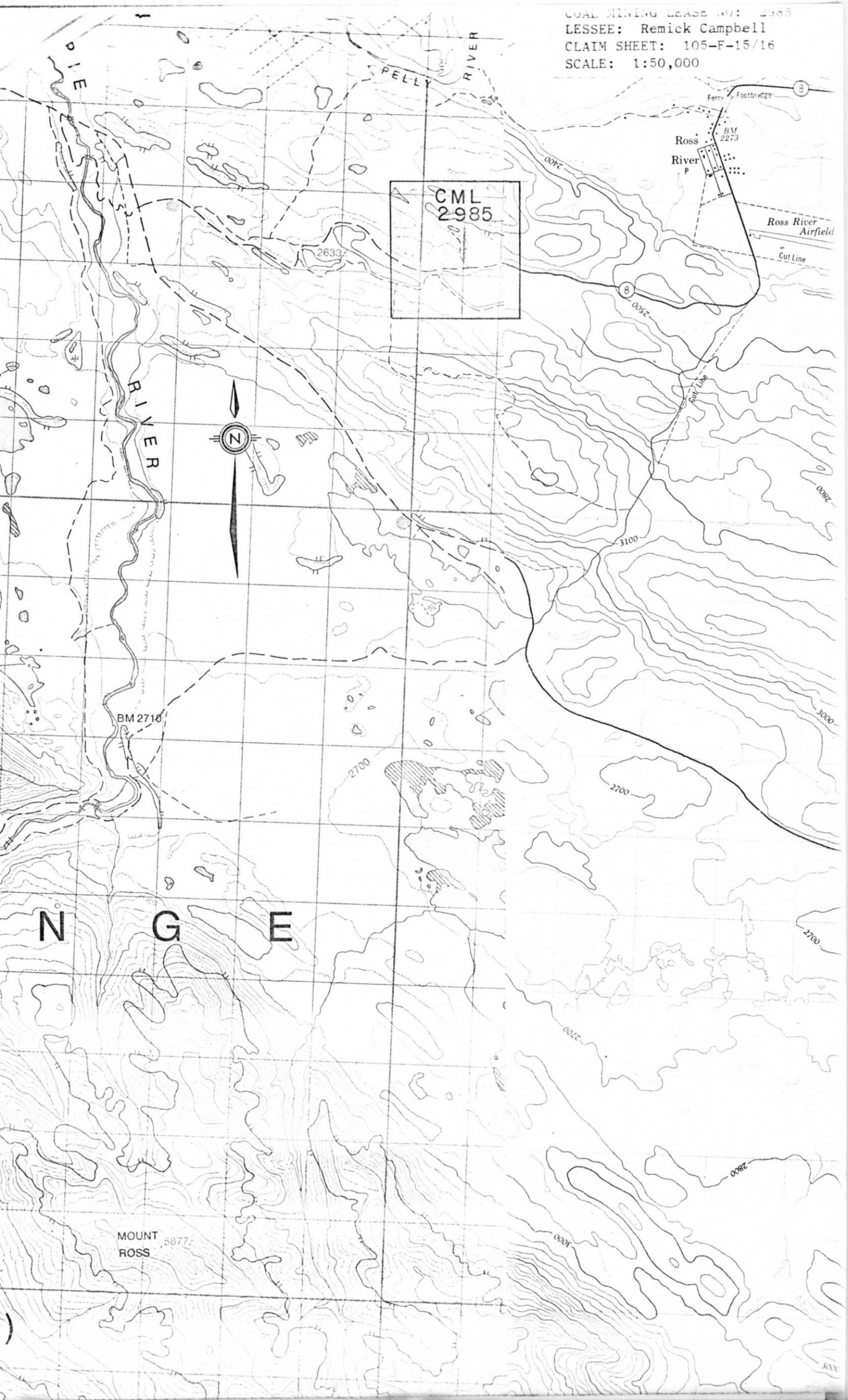
The Lessee covenants that it will comply with the provisions of
the Regulations.

Upon the failure of the Lessee to pay the rents reserved herein or any
royalty prescribed by the Regulations, within thirty days of the due date, the
Minister of Indian Affairs and Northern Development may give notice to the
Lessee by registered mail addressed to its last known address, that if payment
is not received within 60 days from the date of such notice, the lease may be
terminated.

In the event that the Lessee is convicted of an offence arising from
a breach of the Northern Inland Waters Act or any other act of the Parliament
of Canada or regulations made thereunder, or from a breach of any Ordinance
or any municipal by-law relating to the protection of the environment or
public safety, the Minister of Indian Affairs and Northern Development may
at his option require the Lessee to remedy such breach or terminate this
Lease.

Vertical text on the right margin, possibly a file number or date stamp, including the number 2985.

COAL MINING LEASE NO: 1985
LESSEE: Remick Campbell
CLAIM SHEET: 105-F-15/16
SCALE: 1:50,000



CML
2985

Ross
River
P

Ross River
Airfield

BM 2710

MOUNT
ROSS 5877

N G E

Every Lessee liable to pay royalty imposed by the Regulations, shall keep at or near the mine proper books of account of the quantity, weight, value and other particulars of the coal or coal bearing substances taken from the said mine, and the said books shall be available for review by the Minister, as required, and if any doubt arises as to the nature, number or quality of such books, the Minister shall determine the number and character of the books to be kept, and the place or places at which said books shall be kept.

The Lessee shall as the Minister may direct from time to time, deliver to the Chief, any material, information or records pertaining to any mining operations on the said lands in such form and manner as the Minister may prescribe.

The Lessee may at any time surrender this lease and abandon the site provided he has complied in every respect with the covenants and agreements of the lease and the Lessee hereby covenants that he shall restore said site as nearly as possibly to the same condition as it was prior to the commencement of the lease to the satisfaction of the Minister.

The Lessee shall at the expiration of this lease, submit to the Department, complete copies of all geological, geophysical and geochemical reports obtained, copies of all drill core logs, assay results and all other relevant information the Minister deems necessary and said material shall be held in confidence for a period of three years from the date of submission.

The Lessee will indemnify and save harmless Her Majesty against and from all actions, suits, proceedings, costs, charges, expenses, claims, demands, damages, matters and things whatsoever and by whomsoever made, sustained, brought or prosecuted, in any manner based upon, occasioned by or attributable to anything done, suffered or omitted by the Lessee, its servants or agents, in the exercise or purported exercise of the rights granted to it herein.

The parties hereto agree that this indenture enures to the benefit of, and is binding upon, Her Majesty, and Her Successors, and the Lessee, its successors and assigns.

No member of the House of Commons may be admitted to any share of this agreement or any benefit to arise therefrom.

In witness whereof the Supervising Mining Recorder
on behalf of
Her Majesty the Queen in right of Canada has hereunto set her hand and seal
and Remick Campbell has hereunto set his hand and seal.

Signed, Sealed and Delivered
in the presence of

(seal)

Colleen L. Surger



For Minister
Department of Indian Affairs and
Northern Development

Signed, Sealed and Delivered
in the presence of

Ruby M. Logan

Witness

Paul C. H.

Lessee

AFFIDAVIT OF WITNESS

CANADA
YUKON TERRITORY
TO WIT:

I, Beverley MacKenzie Secretary
....., occupation.....
....., of the Town of Renfrew, County of Renfrew.....
witness to the within Instrument, make oath and say:

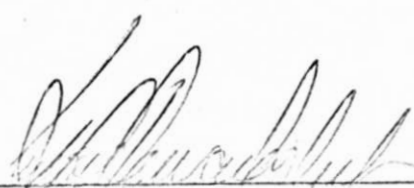
THAT I was personally present and did see the within Instrument and two
copies duly signed, sealed, and executed by Remick Campbell
....., the party thereto.

THAT the within Instrument and two copies were executed at the place and
on the date shown in the said Instrument.

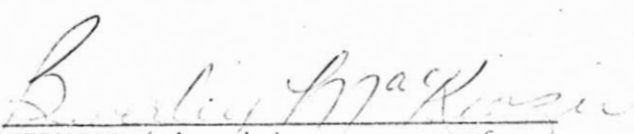
THAT I know the said party and that she/he is, to the best of my knowledge
and belief, of legal age for the execution of the within Instrument.

THAT I am of legal age for the witnessing of the within Instrument.

SWORN and subscribed to at the Town of Renfrew.....,
this 22nd day of April, 1981,
before me --



A NOTARY PUBLIC



WITNESS (signed in presence of
Notary Public)

File No. 350-5-36

No. 2986

Territorial Coal Regulations

Coal Mining Lease

This INDENTURE made in triplicate this ...5th..... day of
.....May..... A.D. 19.81.,

BETWEEN

Her Majesty the Queen in right
of Canada, hereinafter called
"Her Majesty",

OF THE FIRST PART,

AND

Peter Sullivan (Surveyor)
Box 4418
Whitehorse, Yukon

OF THE SECOND PART,

WITNESSES THAT in consideration of the rental, royalty, covenants and agreements hereinafter reserved and contained and subject to the Territorial Coal Regulations, hereinafter called "the Regulations", Her Majesty grants unto the Lessee for a term of twenty-one years commencing on the 17th April 1980 exclusive licence to search for, win and take all coal within the meaning of the Regulations in, upon or under the location described as follows:

ALL AND SINGULAR that rectangular parcel of land marked by four location posts upon the ground, and situated 3.5 km southwest of Ross River, map area 105-F-15/16 in the Whitehorse Mining District of the Yukon Territory, as shown in sketch attached hereto and forming part of this description, and containing 640 acres more or less, and subject to the prior rights of Yukon Electrical Company, Ltd. powerline right of way;

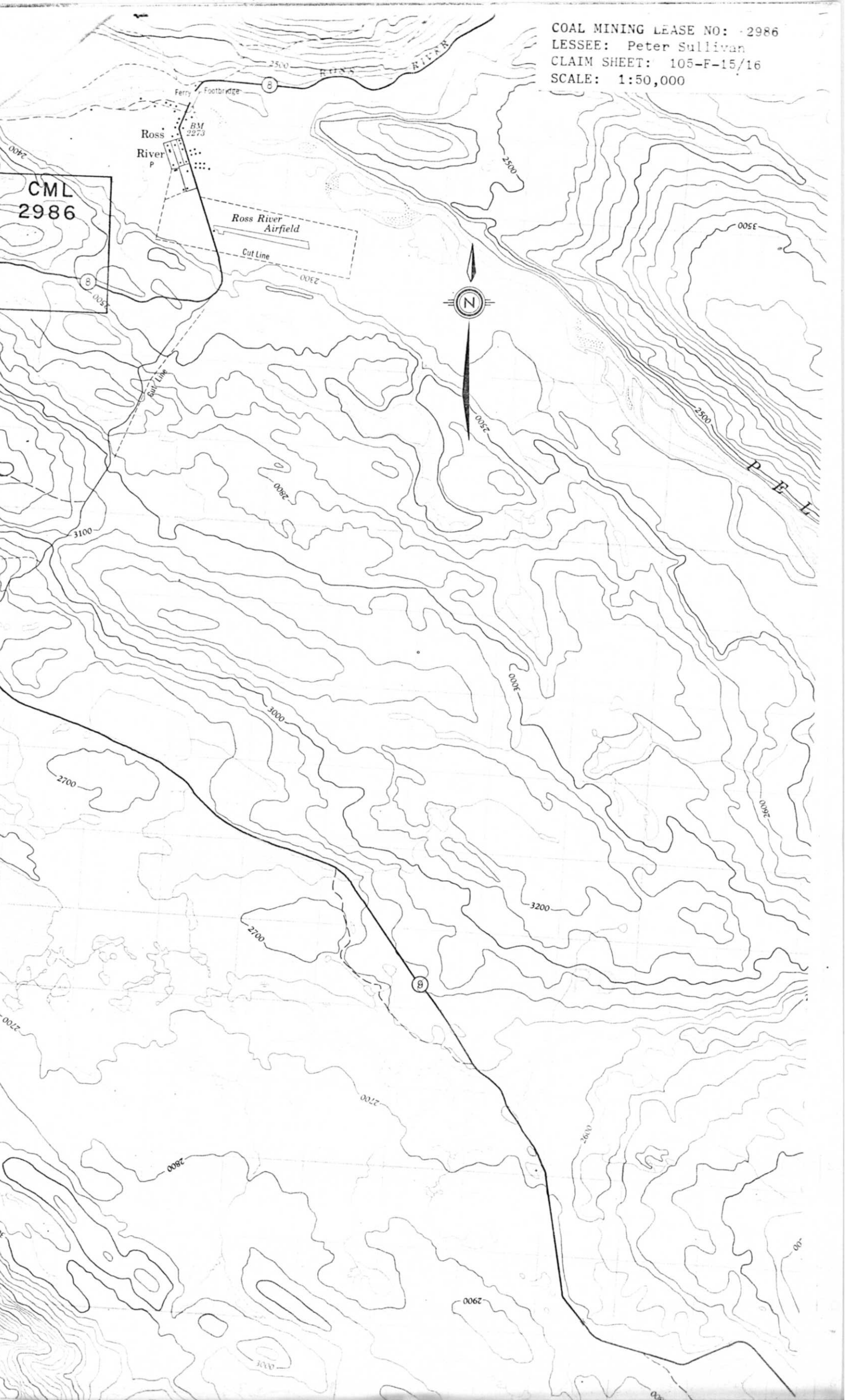
Yielding and paying therefor unto Her Majesty an annual rental of \$640.00 dollars, (the receipt of the rent for the first year of the term being hereby acknowledged) and an annual royalty as provided by the Regulations.

The Lessee covenants that it will comply with the provisions of the Regulations.

Upon the failure of the Lessee to pay the rents reserved herein or any royalty prescribed by the Regulations, within thirty days of the due date, the Minister of Indian Affairs and Northern Development may give notice to the Lessee by registered mail addressed to its last known address, that if payment is not received within 60 days from the date of such notice, the lease may be terminated.

In the event that the Lessee is convicted of an offence arising from a breach of the Northern Inland Waters Act or any other act of the Parliament of Canada or regulations made thereunder, or from a breach of any Ordinance or any municipal by-law relating to the protection of the environment or public safety, the Minister of Indian Affairs and Northern Development may at his option require the Lessee to remedy such breach or terminate this Lease.

COAL MINING LEASE NO: 2986
LESSEE: Peter Sullivan
CLAIM SHEET: 105-F-15/16
SCALE: 1:50,000



Every Lessee liable to pay royalty imposed by the Regulations, shall keep at or near the mine proper books of account of the quantity, weight, value and other particulars of the coal or coal bearing substances taken from the said mine, and the said books shall be available for review by the Minister, as required, and if any doubt arises as to the nature, number or quality of such books, the Minister shall determine the number and character of the books to be kept, and the place or places at which said books shall be kept.

The Lessee shall as the Minister may direct from time to time, deliver to the Chief, any material, information or records pertaining to any mining operations on the said lands in such form and manner as the Minister may prescribe.

The Lessee may at any time surrender this lease and abandon the site provided he has complied in every respect with the covenants and agreements of the lease and the Lessee hereby covenants that he shall restore said site as nearly as possibly to the same condition as it was prior to the commencement of the lease to the satisfaction of the Minister.

The Lessee shall at the expiration of this lease, submit to the Department, complete copies of all geological, geophysical and geochemical reports obtained, copies of all drill core logs, assay results and all other relevant information the Minister deems necessary and said material shall be held in confidence for a period of three years from the date of submission.

The Lessee will indemnify and save harmless Her Majesty against and from all actions, suits, proceedings, costs, charges, expenses, claims, demands, damages, matters and things whatsoever and by whomsoever made, sustained, brought or prosecuted, in any manner based upon, occasioned by or attributable to anything done, suffered or omitted by the Lessee, its servants or agents, in the exercise or purported exercise of the rights granted to it herein.

The parties hereto agree that this indenture enures to the benefit of, and is binding upon, Her Majesty, and Her Successors, and the Lessee, its successors and assigns.

No member of the House of Commons may be admitted to any share of this agreement or any benefit to arise therefrom.

In witness whereof the Supervising Mining Recorder on behalf of Her Majesty the Queen in right of Canada has hereunto set her hand and seal and Peter Sullivan has hereunto set his hand and seal.

Signed, Sealed and Delivered in the presence of

Gallien L. Singer

(seal)

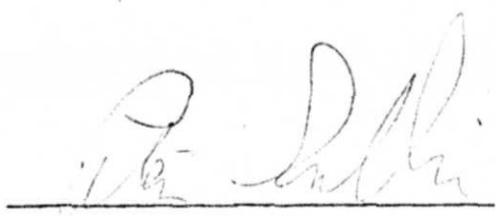


For Minister
Department of Indian Affairs and
Northern Development

Signed, Sealed and Delivered in the presence of

Bob Edgerton

Witness



Lessee

AFFIDAVIT OF WITNESS

CANADA
YUKON TERRITORY
TO WIT:

I, WILLIAM EDGERTON, occupation SURVEYOR
....., of GRANDE PRAIRIE, ALBERTA

witness to the within Instrument, make oath and say:

THAT I was personally present and did see the within Instrument and two
copies duly signed, sealed, and executed by PETER SULLIVAN
..... (SURVEYOR), the party thereto.

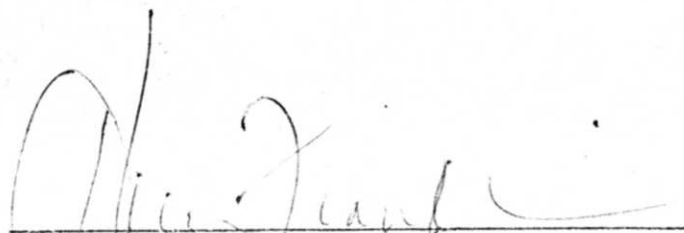
THAT the within Instrument and two copies were executed at the place and
on the date shown in the said Instrument.

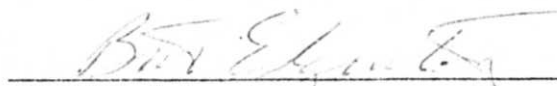
THAT I know the said party and that she/he is, to the best of my knowledge
and belief, of legal age for the execution of the within Instrument.

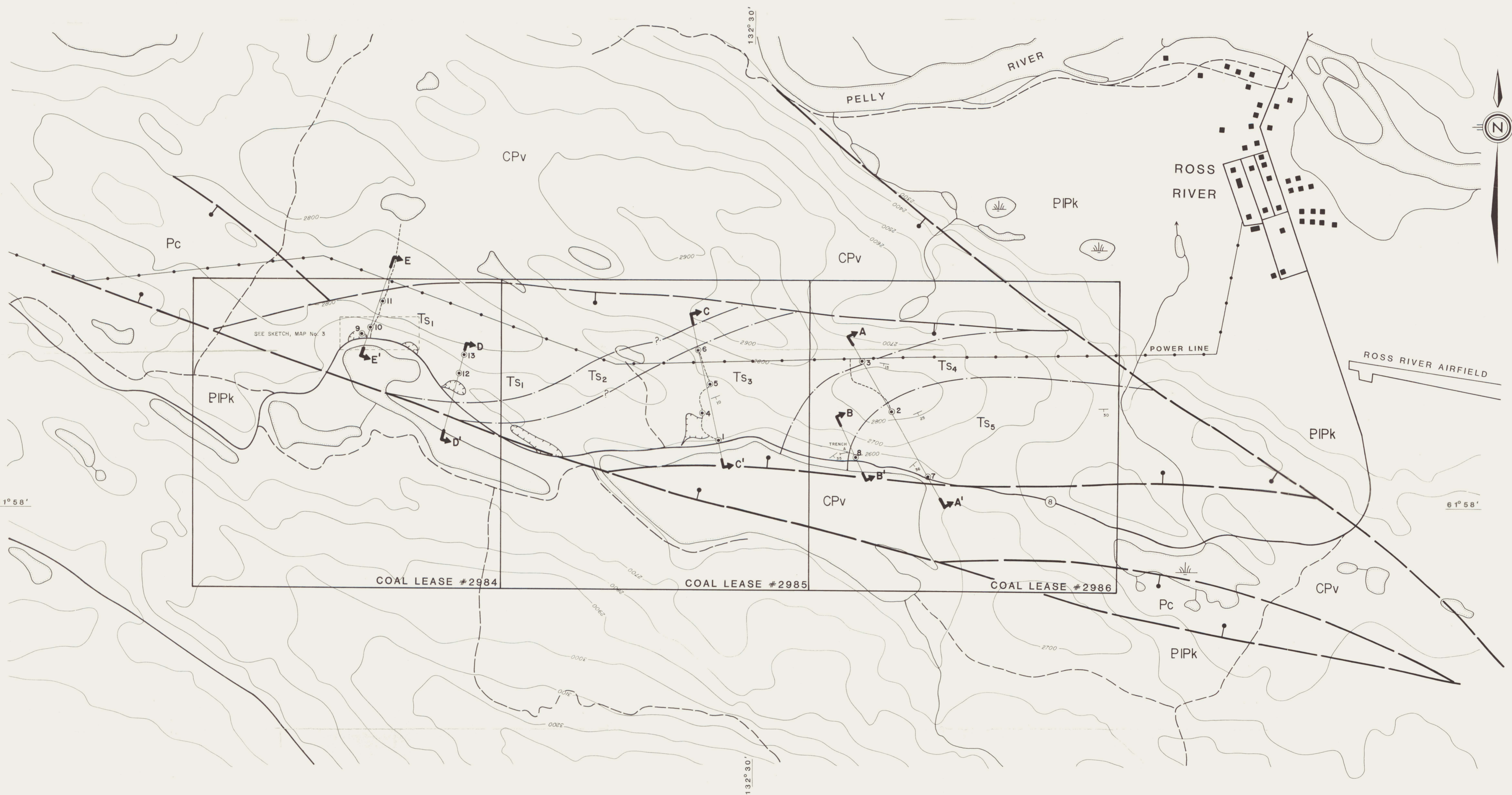
THAT I am of legal age for the witnessing of the within Instrument.

SWORN and subscribed to at GRANDE PRAIRIE, ALBERTA
this 22 day of APRIL, 1981

before me -- HELEN L. FRANKLIN, BARRISTER & SOLICITOR


A NOTARY PUBLIC


WITNESS (signed in presence of
Notary Public)



LEGEND

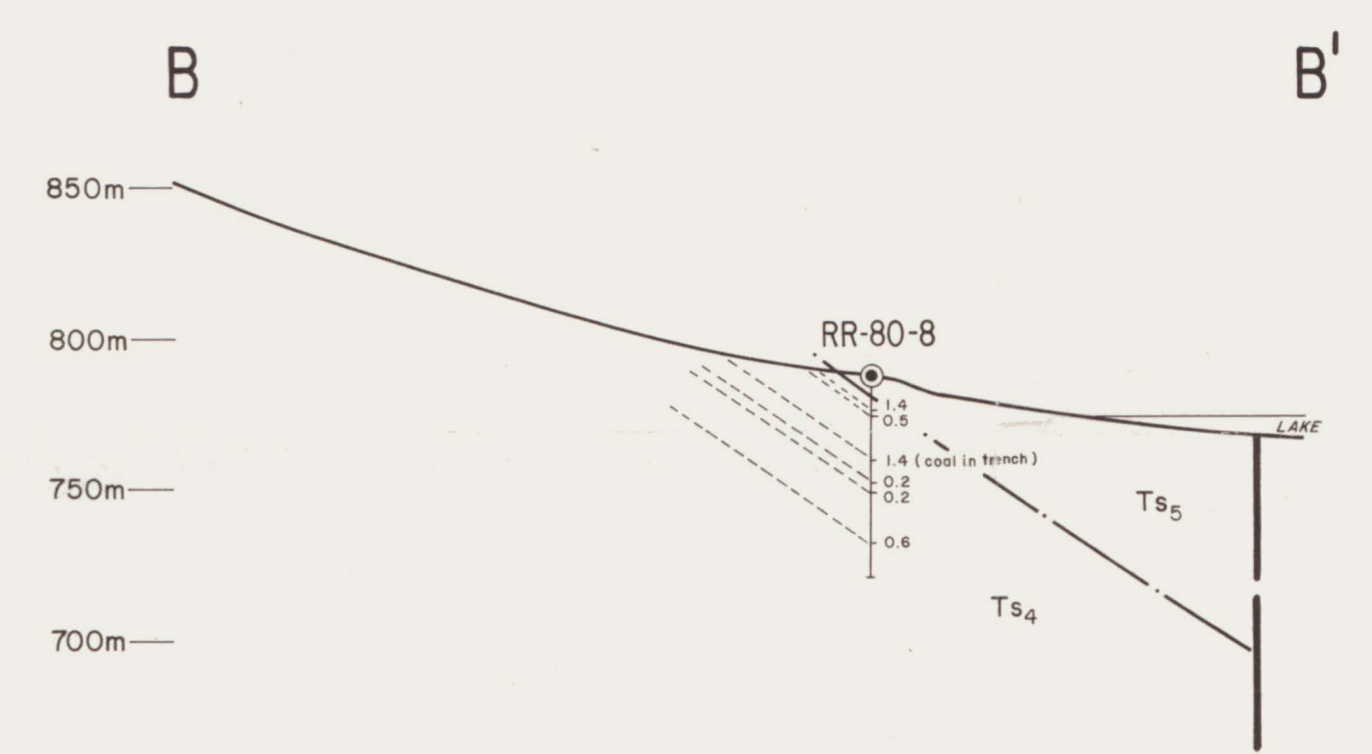
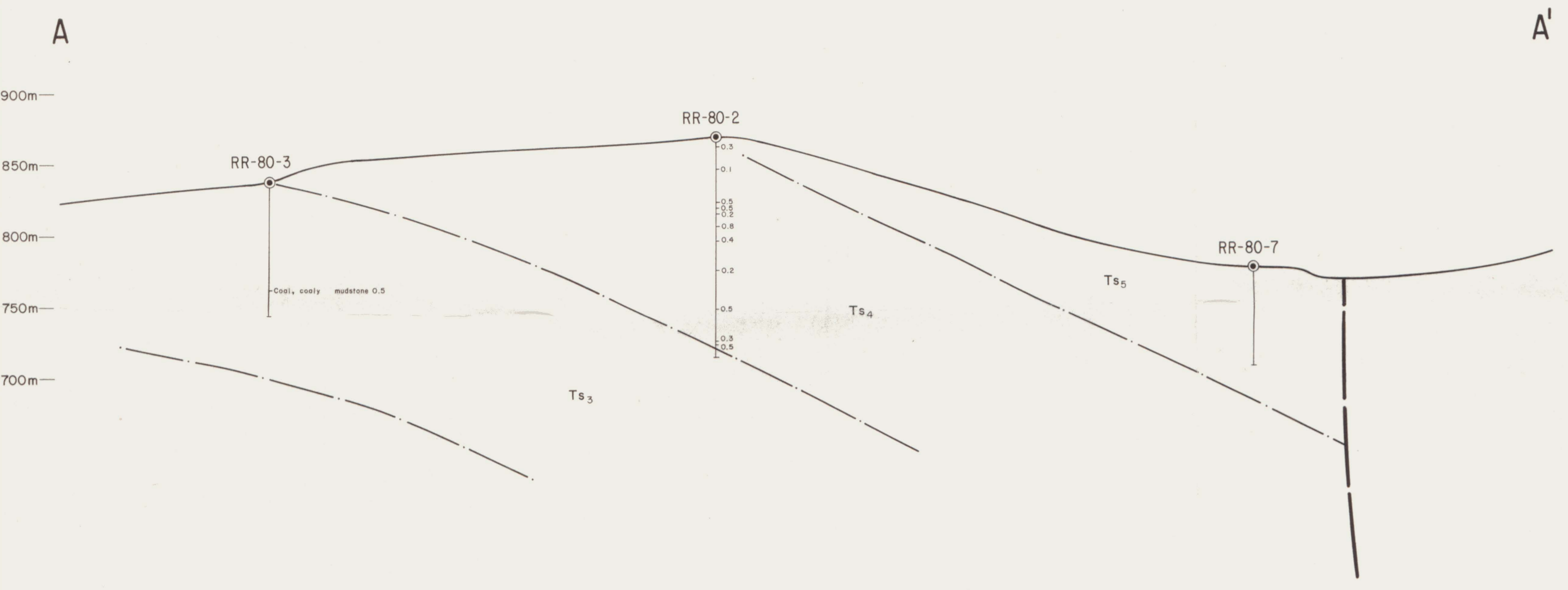
- TERTIARY**
PALEOCENE - EOCENE (?)
- Ts** SANDSTONE, SHALE, CONGLOMERATE, COAL
 - Ts₁** CONGLOMERATE, CONGLOMERATIC SANDSTONE, COARSE-GRAINED SANDSTONE, VERY MINOR MUDSTONE
 - Ts₂** SANDSTONE, CONGLOMERATIC SANDSTONE, MUDSTONE, COAL, MINOR CONGLOMERATE
 - Ts₃** MUDSTONE, SILTSTONE, VERY FINE-GRAINED SANDSTONE, MINOR CONGLOMERATE, VERY MINOR THIN COAL
 - Ts₄** DARK BROWN TO GREY TO BLACK MUDSTONE, SILTSTONE
 - Ts₅** TOP - MUDSTONE, VERY FINE-GRAINED SANDSTONE, DIRTY COAL; MIDDLE - FINE-GRAINED CLEAN QUARTZOSE SANDSTONE; BASE - CLEAN LIGHT GREY TO PINK SILTSTONE TO VERY FINE-GRAINED SANDSTONE
- CARBONIFEROUS OR PERMIAN**
- Pc** RECRYSTALLIZED CRINOIDAL LIMESTONE
 - CPv** BASALT, TUFF, MINOR AUGITE PORPHYRY
- UPPER CAMBRIAN (?) AND ORDOVICIAN (?)**
- CO** SHALE, LIMESTONE, PHYLLITE, QUARTZITE
- AGE UNKNOWN**
- PIPk** PHYLLITE, GREYWACKE, MARBLE

- CONTACT
- - - FAULT
- ⊙ 1980 ROTARY DRILL HOLES RR 80-1 THROUGH 13
- - - 1980 BULLDOZER TRENCH

CYPRUS ANVIL MINING CORPORATION	
ROSS RIVER COAL PROJECT	
YUKON TERRITORY	
COAL LEASES 2984, 2985, 2986	
GEOLOGY	
1:10,000	
NTS 105F-15, 16 SURVEY BY TA DRAWN BY VF	DATE: Dec 1980 MAP: 1

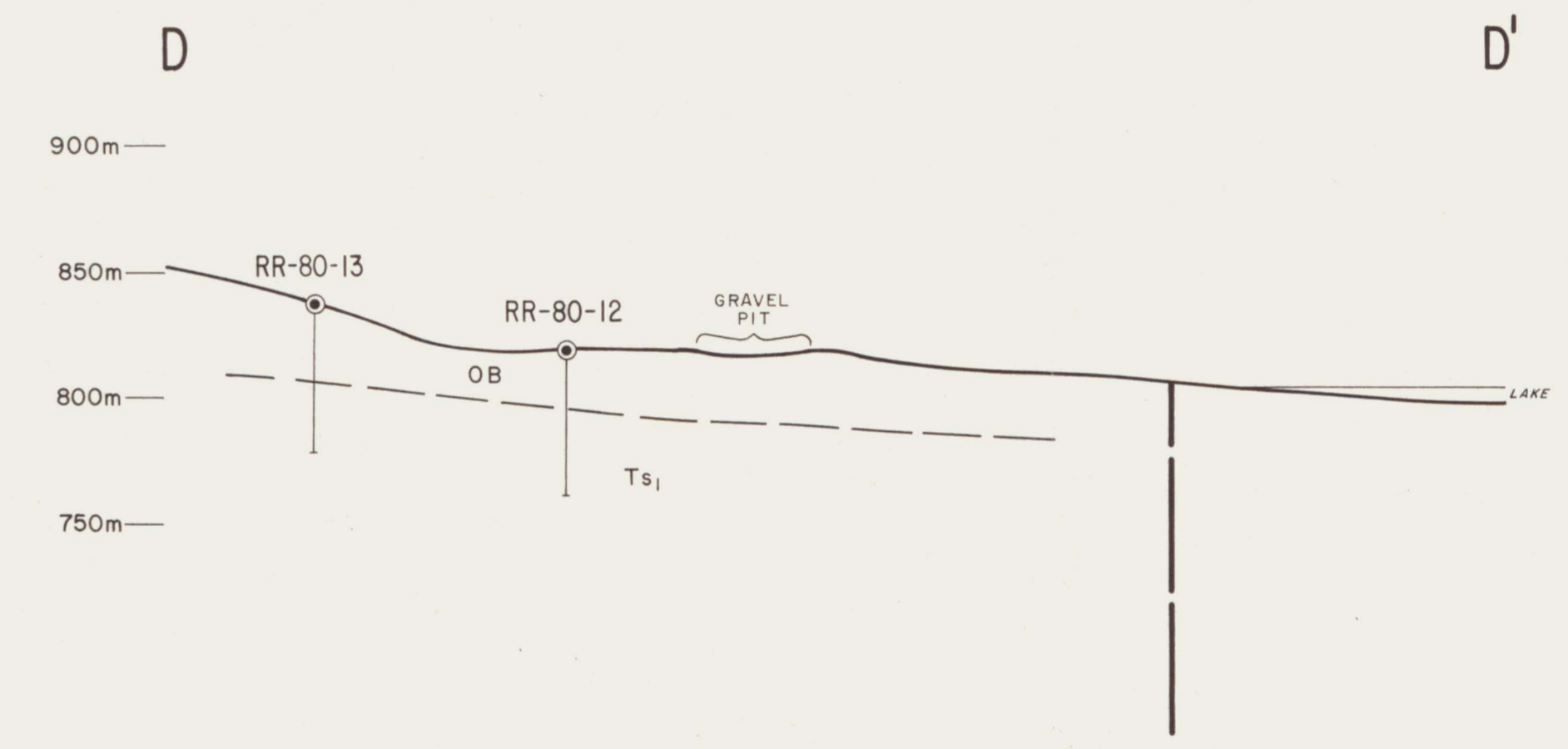
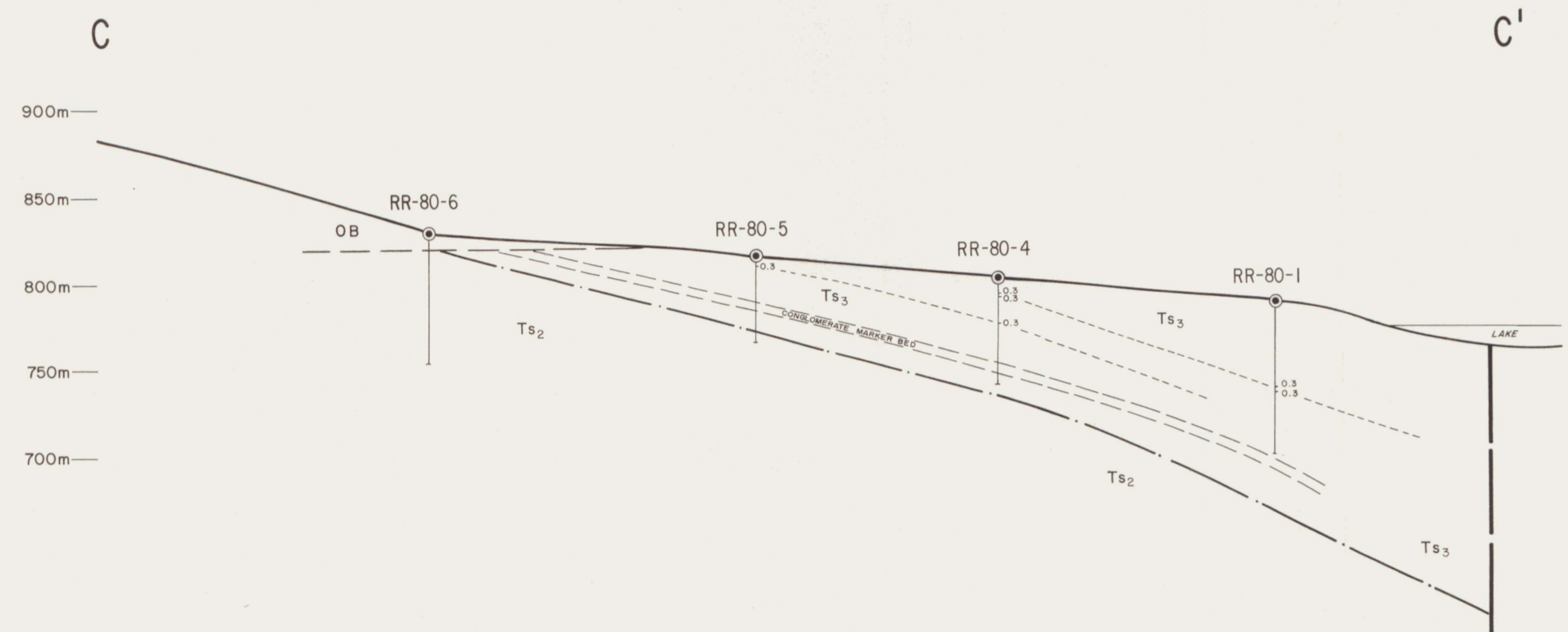
CROSS SECTION A-A'

CROSS SECTION B-B'

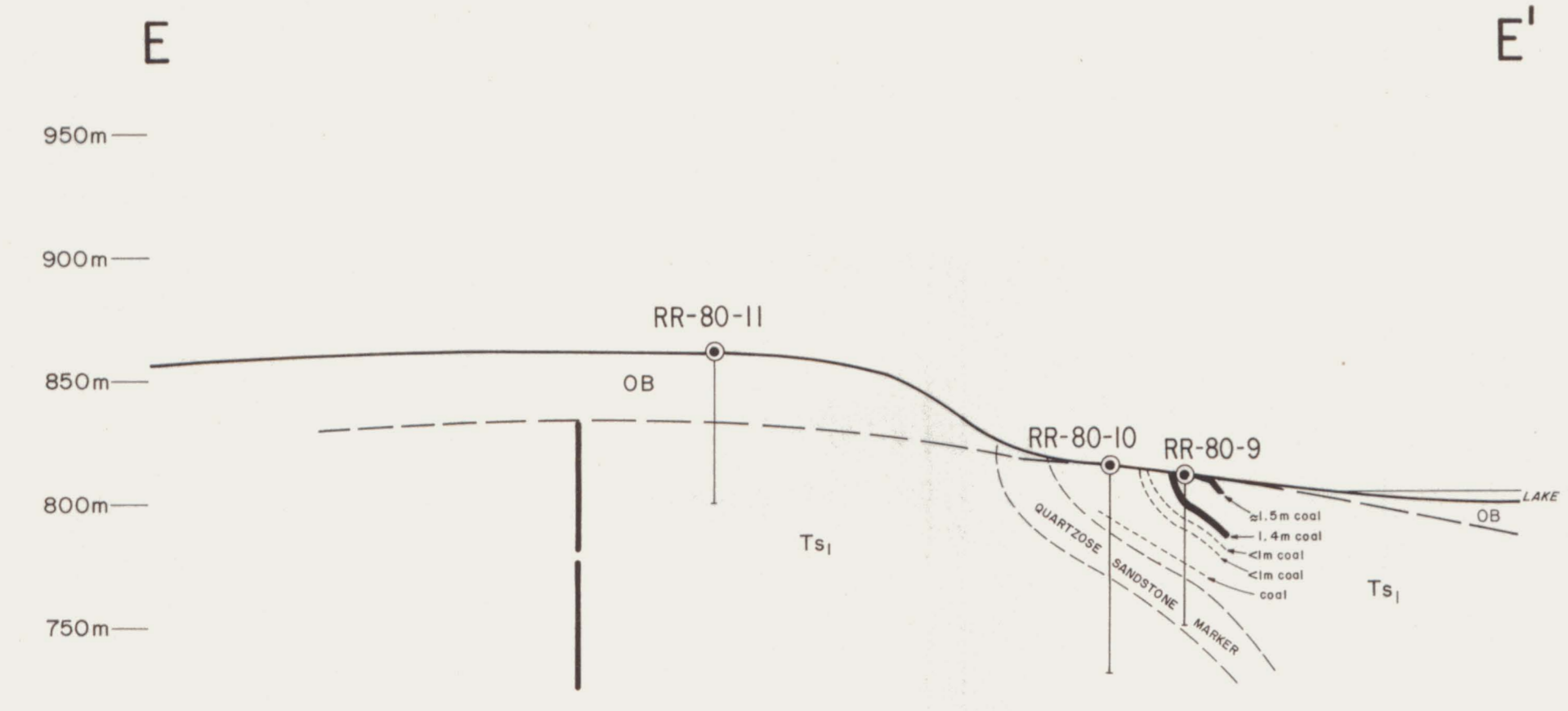


CROSS SECTION C-C'

CROSS SECTION D-D'



CROSS SECTION E-E'



- LEGEND
- TERTIARY
PALEOCENE - EOCENE (?)
- Ts SANDSTONE, SHALE, CONGLOMERATE, COAL
 - Ts1 CONGLOMERATE, CONGLOMERATIC SANDSTONE, COARSE-GRAINED SANDSTONE, VERY MINOR MUDSTONE
 - Ts4 SANDSTONE, CONGLOMERATIC SANDSTONE, MUDSTONE, COAL, MINOR CONGLOMERATE
 - Ts3 MUDSTONE, SILTSTONE, VERY FINE-GRAINED SANDSTONE, MINOR CONGLOMERATE, VERY MINOR THIN COAL
 - Ts2 DARK BROWN TO GREY TO BLACK MUDSTONE, SILTSTONE
 - Ts1 TOP - MUDSTONE, VERY FINE-GRAINED SANDSTONE, DIRTY COAL; MIDDLE - FINE-GRAINED CLEAN QUARTZOSE SANDSTONE; BASE - CLEAN LIGHT GREY TO PINK SILTSTONE TO VERY FINE-GRAINED SANDSTONE
- CARBONIFEROUS OR PERMIAN
- Pc RECRYSTALLIZED CRINOIDAL LIMESTONE
 - CPv BASALT, TUFF, MINOR AUGITE PORPHYRY
 - CO UPPER CAMBRIAN (?) AND ORDOVICIAN (?)
 - AGE UNKNOWN
 - PIPK PHYLITE, GREYWACKE, MARBLE

CYPRUS ANVIL MINING CORPORATION
ROSS RIVER COAL PROJECT
 YUKON TERRITORY
 COAL LEASES 2984, 2985, 2986
 DRILL HOLE CROSS SECTIONS

1:2500

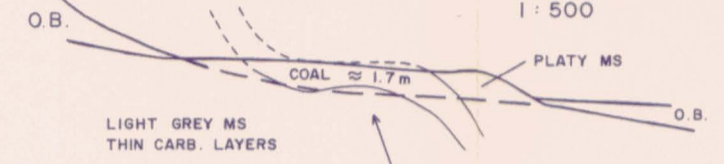
0 50 100 150 200

NTS: OSF-15, 16
 SURVEY BY: T.A.
 DRAWN BY: V.F.

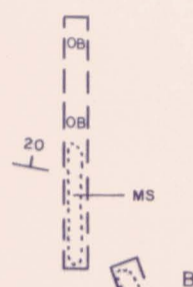
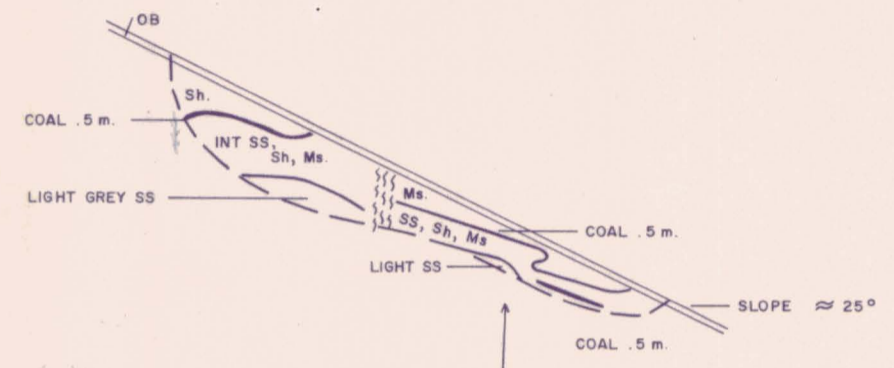
DATE: MARCH 18, 1981
 MAP: 2



SKETCH X - SECTION TRENCH B (Looking East)
1: 500



SKETCH - X SECTION TRENCH D (Looking East)
1: 500



BULLDOZER TRENCH C

BULLDOZER TRENCH B

RR 80-09

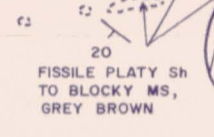
RR 80-10

BULLDOZER TRENCH E

BULLDOZER TRENCH D

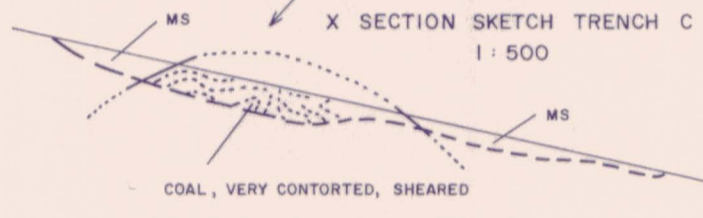


DARK BROWN TO BLACK MS



FISSILE PLATY Sh TO BLOCKY MS, GREY BROWN

X SECTION SKETCH TRENCH C
1: 500



COAL, VERY CONTORTED, SHEARED

CULVERT

DOZER PIT

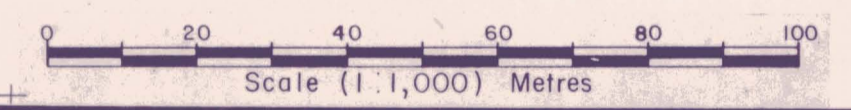
ROAD

ROAD

GRAVEL PIT

LAKE

LAKE



CYPRUS ANVIL MINING CORPORATION
ROSS RIVER COAL PROJECT

COAL LEASE 2984
SKETCH BULLDOZER TRENCHES;
AREA OF
DRILL HOLES RR-80-9, 10

N.T.S. 105 F - 15, 16 SURVEY BY: T. A. DRAWN BY: C. L. C.	SCALE: 1: 1000 DATE: MARCH 18, 1981 MAP 3
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