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YUKON COAL EXPLORATION LICENCE NO. 36

PROSPECTING REPORT

Guy B. Allen, P. Eng.
Allen Resource Consultants Ltd.
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General

Coal Exploration Licence No. 36 is registered with the Department of Indian and Northern Affairs in the name of Guy B. Allen, and is effectively owned by Resoursex Ltd., c/o Allen Resource Consultants Ltd., 414 - 630 Eigth Ave. S.W., Calgary, Alberta. The Licence was granted on January 13th, 1975.

The Licence comprises approximately 44,609 acres and can be geographically described as comprising the northeast quarter of NTS block 115 H/16. It is bounded by Longitudes 136° 00'W and 136° 15'W, and by latitudes 61° 52' 30" N and 62° 00'N

Access to the Licence is by the Klondyke Highway, which transects the central portion of the area from southeast to northwest. Secondary roads and trails penetrating the interest area in the east portion of the Licence are non-existent.

The land is well-forested with second growth as the result of a fire about ten years ago. Deadfall and thick bush makes cross-country travel difficult. The valley of the Nordenskiold River is low and wide with extensive patches of muskeg. Hills extend up to 2,000 feet above the valley floor to the east and west. Maximum elevation on the Licence is at 4165 feet on Stutzer Mountain.

Geology

Geological relationships are gleaned from Geological Survey of Canada Map 17-1973 (Tempelman-Kluit, 1974). The portion of Coal Exploration Licence that is of interest from a coal exploration viewpoint lies entirely east of the Nordenskiold River.

Sedimentary assemblages of the Laberge Group and the Tantalus Formation are underlain and overlain by Triassic and Cenozoic volcanics respectively. Both the Laberge and the Tantalus strata consist of conglomerate, sandstone, and shale beds with coal seams. Formational boundaries are included on Figure No. 1.

Structural deformation, although not intense, is present. Local folding is seen in many outcrops. A synclinal axis is mapped trending northwest, in the southeast portion of the block.

History of Exploration

Coal showings near Porter Mountain, and west of Lone Pine Mountain were first examined, and reported upon by C.E. Cairnes, 1910. On the west side of Porter Mountain, along the road, he described a 16 inch seam of anthracitic material which had been considerably folded and distorted by the intrusion of a syenite porphyry body. Four miles to the south, a coal show which he assigned to the 'upper horizon' was described outcropping along the road to the west of Lone Pine Mountain.

In 1973 the showings were examined by representatives of the Department of Indian and Northern Affairs. Indications of recent bulldozer work on the Porter Mountain showing was mentioned along with a description of the Lone Pine Mountain occurrence. The existence of coal a half a mile south of the Porter Mountain occurrence was also cited. (Milner and Craig, 1973)

More recently, the Geological Survey of Canada has mapped the area on a 1 : 250,000 scale. This publication makes only passing reference to coal in the area. (Tempelman-Kluit, 1974)

Purpose of Present Exploration

The purpose of the present prospecting program was two-fold. Firstly, the known coal occurrences within the Licence boundaries were to be evaluated. Secondly, prospecting of areas indicated as underlain by Tantalus and Laberge strata was to be undertaken in an attempt to locate other showings of coal. These areas occupy a portion of the Licence east of the Highway, around Lone Pine, Andesite, and Porter Mountains.

Procedures

A two-man team of prospectors, Mr. Clifford Runham of Mara, B.C., and Mr. Eugene Connon of Olds, Alberta were contracted to investigate the interest areas within the boundaries of Coal Exploration Licence No. 36 during the period August 19 to September 2, 1975. Travel was by foot and horseback. Efforts were concentrated on locating occurrences of coal. The author spent seven days, August 19th to 25th inclusive on the property. All work was done from a field camp set up at a point on the Klondyke Highway approximately 18 miles south of Carmacks.

Progress was slowed considerably by the difficulties encountered in penetrating bush-covered areas due to the profusion of deadfall and dense second-growth. Traverses are plotted on Fig. No. 1.

Descriptions of Coal Shows

A total of eight coal occurrences were examined and described. Locations of the deposits are indicated on Fig. No. 1.

Location C1 - This occurrence is just under half a mile south of camp. A road-cut in the east bank exposes a section that strikes at 160° with a dip of 85° east. The beds are folded and contorted. From top to bottom the section is as follows.

2.5'	Sandstone - medium grey, fine to medium grained, soft, well weathered, bedded, crumbly
10'	Coaly shale - loose, friable
1'	Sandstone - as above
0.5'	Coaly shale - slightly coaly
1.5'	Sandstone - as above, interbedded with grey fissile sandy shale
0.2'	Coal - clean
0.8'	Sandstone and shale - interbedded, as above
0.5'	Sandstone - as above, blocky, lensy

1.0'	Coaly shale
1.8'	Coal - fairly clean, weathered, broken
0.5'	Sandstone - as above, less blocky
1.5'	Coal - slightly shaly
5.0'	Sandstone - as above
6.0'	Sandstone and shale - interbedded
0.5'	Coaly shale
0.8'	Sandstone - as above, blocky, massive
3.0'	Shale - slightly coaly
Base	Sandstone - hard, light grey, resistant, blocky, angular, almost quartzitic

This location is probably the Guder's Coal occurrence referred to by Milner and Craig, 1973.

Location C2 - This occurrence is located in a road cut along the Klondyke Highway, 0.6 miles north of the creek by camp. The cut extends for 350 feet south of this point. Strike of beds cannot be determined. Dip is 45°W. There are zones of coaly shale, much deformed, twisted, contorted, much weathered, soft, and crumbly. The coaly zones are thin. This assemblage appears to be capped by a volcanic bed which is dark grey and amygdaloidal, with white material in the vesicles. The whole exposure is very weathered and difficult to interpret. This may represent a contact between the Tantalus Formation and the overlying volcanic cap. Higher up the hill volcanics are exposed dipping to the southwest. The sandstone exposed is medium grey, fine to medium grained, soft and friable, and interbedded with zones of sandy, fissile, and much contorted shale. Approximately 0.1 mile north is another exposure of the sandstone zone. Here it is hard, light grey and resistant. This zone is similar to that exposed at the base of the section in Location C1.

Location C3 - In a road cut on the east side of the Klondyke Highway 2.7 miles north of Camp Creek, Tantalus rocks are exposed for 700 feet. Starting at the north end of the exposure, the following zones are encountered going up-section.

9.0'	Shale - fissile, breaks into small pieces, medium to dark grey, silty, sandy, fairly regular with occasional thicker more sandy interbeds Dip 52°E. Strike 180°
2.5'	Coaly shale - and shaly coal
7.5'	Shale - as above, with minor blocky, sandy interbeds
0.8'	Coaly shale
2.5'	Shale - poorly fissile, part blocky, irregular bedding, jointed, medium to dark grey, part angular
0.8'	Coaly shale
0.5'	Coal - clean
1.0'	Shale - part coaly, fissile
1.3'	Sandstone - fine to medium grained, brownish-grey, blocky, dense, with shaly interbeds and occasional small coaly lens

Above this sequence is a covered area for 340 feet. Rock fragments in the ditch indicate the same general type of rock. Occasional spots of dark grey to black soil suggest coaly material. At 340 feet is a black area in the overburden that has been dug out. It suggests the underlying presence of a 6" coal seam.

From	To	
360'	400'	Blocky sandstone rubble in ditch
400'	440'	Covered, no rubble
At 440'		Black area in soil - shaly coal
440'	455'	Blocky sandstone rubble
455'	495'	Shale and blocky sandstone rubble
At 495'		Bank has been dug out to expose 2.5' of coal, shaly coal, and coaly shale. This material is well-weathered and soft
495'	525'	Covered
525'	535'	Sandstone - blocky, with shaly interbeds, poorly exposed in top of cut
535'	550'	Rubble, same as above
At 550'		Section shows 7.0 feet of coal and shaly coal, finely fissile, soft, well-weathered and crumbly Strike 180°, Dip 55°W
557'	563'	Covered
At 563'		Coal and shale zone exposed by digging
563'	598'	Covered
At 598'		Coal zone is exposed in bank consisting of coal and coaly shale. It is a well-weathered, powdery zone at least 8 feet thick
598'	660'	Covered - sandstone and shale rubble
At 660'		Small outcrop of blocky sandstone
660'	750'	Rubble - as above
750'	785'	4' Coaly shale 8' Sandstone - blocky 5' Coal, coaly shale and shaly coal and shale 3' Shale - black 10' Sandstone - blocky 4' Coaly shale
785'	835'	Covered
At 835'		Coal and coaly shale in hole in bank, soft, crumbly
835'	850'	Covered
At 850'		Coal and coaly shale in hole in bank

Location C4 - This location is approximately 200 feet above the road on the east side above the gravel pit north of camp. This is probably Cairnes' Porter Mountain occurrence. The exposure is in a relatively steep hillside. The presence of wood cribbing at the entrance to the excavation suggests there may have been an adit at one time, that is now caved.

Coaly shale and coal are exposed in the face and sides of the excavation. The bedding is much disturbed and contorted, and a dip and strike would be impossible to obtain. Thickness of the coal zone looks to be irregular and cannot be estimated with accuracy. On the south face of the excavation the coal would appear to be at least 5 feet thick. There are a number of inclusions of a light yellowish-brown highly weathered material. One such exposed inclusion measures about 4 feet in diameter. The coal is deformed around these inclusions. The coal appears to be of relatively poor grade, somewhat resistant, and shaly.

Directly overlying the coal zone on the north side of the excavation is a zone of conglomerate. The slope continues for another 75' to 100' of elevation to reach the top of the ridge, which is relatively level, and would be an excellent location for a drill set-up

Location C4a - Approximately 350 feet west of Location C4 and 150' lower in elevation is an exposure along the power-line right of way. A zone of coaly shale and shaly coal over 3 feet thick is exposed. The bottom of this zone could not be reached by digging. Coal is bounded by zones of sandstone that is fine to medium grained, light to medium grey, friable with fairly regular bedding. Strike is southerly, dip is 45°E.

About 25 feet lower and 200 feet to the north, along the slope is a dark soil area with pieces of black shale. No coal fragments were seen.

Location C5 - Up the south branch of the creek at camp about one-eigth of a mile above the junction of the two creek branches, in a washout, is an area of soil blackening. This is a one foot zone of highly weathered clean coal underlain by highly weathered sandstone. This material is probably slumped from above. The coal layer just under the soil surface appears to be dipping downslope with a strike of 90° and a dip of 35°N.

Location C6 - One-half mile from the Klondyke Highway, on the east side, up the creek by camp, and on the north bank of the creek is located Cairnes' Lone Pine Mountain coal occurrence. A 'Cat' trail leads to the exposure in the cliffside where a 24 foot section can be seen. No conglomerate was observed in the section. The beds are fairly regular with some folding. The section from top to bottom is as follows.

6.0'	Shale - coaly, with occasional 2" coal seams
1.3'	Sandstone - blocky
0.4'	Coal - clean
0.8'	Sandstone - as above
0.5'	Coal
0.5'	Shaly coal
2.0'	Sandstone
0.9'	Coaly shale
0.5'	Coal - clean
1.0'	Sandstone - as above
0.7'	Coal - clean
0.5'	Coaly shale
2.0'	Sandstone
2.0'	Shale - fissile, light grey, sandy
1.2'	Sandstone
1.0'	Coaly shale
1.5'	Sandstone
0.2'	Coal
0.4'	Coaly shale
0.2'	Coal
2.5'	Sandstone with shale interbeds
0.5'	Coal

1.0' Coaly shale
1.5' Sandstone
3.0' Coal - clean
0.5' Coaly shale
Covered

The beds strike southeasterly and dip 30°NW. The coal has brownish specks. The seams are thin but fairly continuous. Material is similar to that exposed at Location C3.

The area immediately to the west has an exposure higher in the section. It shows sandstone rubble at the base with dark patches of soil on the slope indicating coaly material. There is no conglomerate in the rubble.

Location C7 - This location is on the east side of the Klondyke Highway, south of Location C4. On the south side of a small draw are areas in the hillside where dark soil has been dug away. Four diggings indicate a seam 12" to 18" thick of fairly clean coal in a sandstone horizon. Some folding is indicated. It strikes southerly with a 45° easterly dip.

Conclusions

Coal deposits were located within strata of the Laberge Group (Locations C1, C2, C5, and C6), and the Tantalus Formation (Location C3, C4, C4a, and C7). The maximum thickness of coal observed in one seam was three feet, near the base of the exposure at Location C6.

At most locations the coal exposures are shaly, dirty, and well-weathered. Beds at some locations, notably C4 and C6 are disturbed by folding, faulting, and inclusions.

Igneous activity is indicated throughout the interest area and has been a major factor affecting continuity and grade, as well as structure of the coal seams.

The potential coal-bearing rocks underlie a considerable area within the Licence. However, ground cover is extensive and outcrop relatively scarce, making exploration for coal difficult.

The coal deposits discovered to date are not of sufficient quality or grade to arouse much interest. Better seams no doubt exist, especially within the Tantalus Formation, but locating them may be a difficult and expensive proposition.

Recommendations

Licence acreage should be reduced to a block described as follows:

Starting at a point described at Longitude 136° 07' 06" and Latitude 61°52' 30", then proceeding easterly to a point described at Longitude 136° 00' 30" and Latitude 61° 52' 30", then proceeding northwesterly to a point described at Longitude 136° 07' 15" and Latitude 61° 58' 36",, then proceeding southwesterly to a point described at Longitude 136° 12' 15" and Latitude 61° 57' 24", then proceeding southeasterly to the starting point.

This area will contain approximately 64 square kilometers, or 15,814 acres. Expenditures in 1975 should be sufficient to hold this acreage until January, 1977.

The possible benefits of further prospecting in detail do not justify the cost of such a program in an area such as this where ground cover is extensive, outcrops scarce, and traversing so difficult.

Useful information could be gained by drilling a hole or holes to expose the potential coal-bearing sections. A drill location on the relatively even plateau above coal location C4 would be most suitable.

References

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1910: Preliminary Memoir on the Lewes and Nordenskiold Rivers Coal District, Yukon Territory; Geol. Surv. Can. Mem. 5

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Tempelman-Kluit, D.J.
1974 Reconnaissance geology of Aishihik Lake, Snag and part of Stewart River map-areas, west-central Yukon; Geol. Surv. Can Paper 73-41

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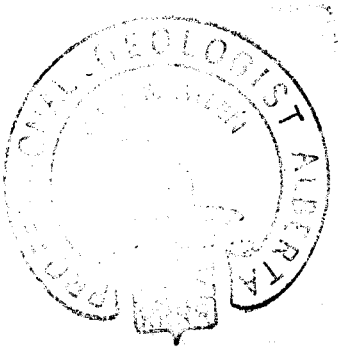

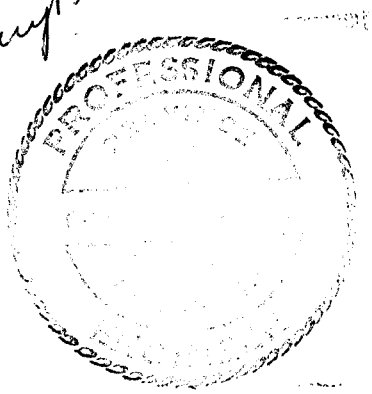

Expiry Date: April 22, 1976

PROVISIONAL MAP
115 H/16 E
1:50,000

CANADA

CARTE PROVISOIRE
EDITION 1
115 H/16 E

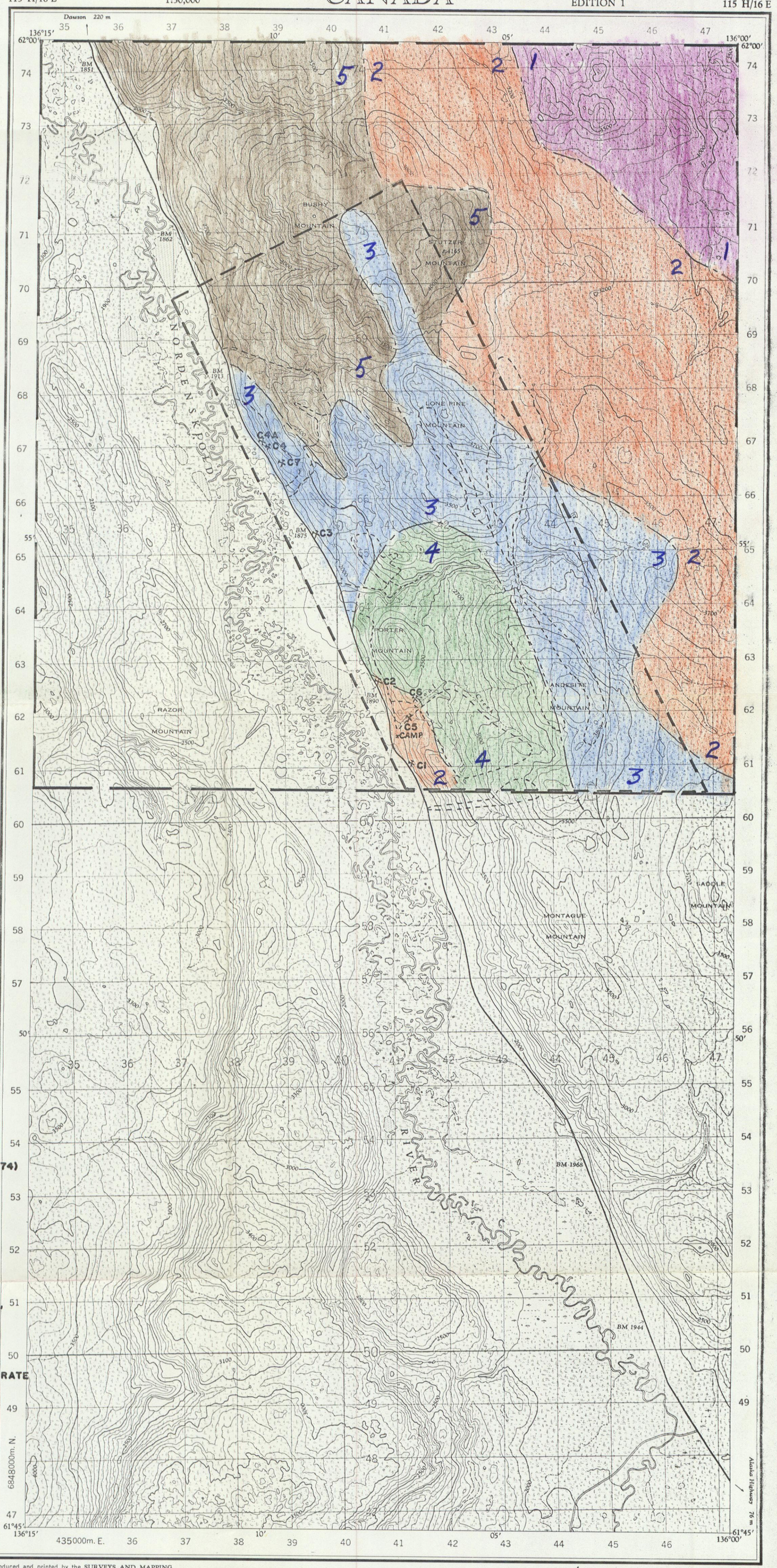

FIGURE NO. I

RESOURSEX LTD

COAL EXPLORATION LICENCE NO. 36

PROSPECTING MAP

LEGEND

- LICENCE BOUNDARY
- PROPOSED LICENCED AREA TO BE RETAINED
- GEOLOGICAL BOUNDARY (after Tempelman-Kluit, 1974)
- TRAVERSE ROUTE
- ✕ C2 COAL OCCURRENCE

GEOLOGY (AFTER TEMPELMAN-KLUIT, 1974)

- 5 CARMACKS GROUP - OLIVINE BASALT FLOW BRECCIA
- 4 UNDIFFERENTIATED VOLCANICS
- 3 TANTALUS FORMATION - CONGLOMERATE, SANDSTONE, SHALE, COAL
- 2 LABERGE GROUP - SANDSTONE, CONGLOMERATE SHALE, COAL
- 1 MASSIVE GREEN VOLCANICS

Produced and printed by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1961, from air photographs taken in 1948.

Établie et imprimée par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES RELEVÉS TECHNIQUES en 1961, d'après les photographies aériennes prises en 1948.

MOUNT MORRISON
YUKON TERRITORY

SCALE 1:50,000 ÉCHELLE

Miles 1 0 1 2 3 Miles
Metres 1000 500 0 1000 2000 3000 4000 Mètres
Yards 1000 500 0 1000 2000 3000 4000 Verges

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

ÉQUIDISTANCE 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

MAGNETIC DECLINATION 31° 53′ EAST AT CENTRE OF MAP 1961
Annual change (decreasing) 3′

DÉCLINAISON MAGNÉTIQUE AU CENTRE DE LA FEUILLE EN 1961: 31° 53′ EST
Variation annuelle (décroissante) 3′

The nomenclature on this map has not been submitted to the Canadian Board on Geographical Names and may be subject to revision. Information on names is invited by the Surveys and Mapping Branch.

La nomenclature de la présente carte n'a pas été soumise à la Commission canadienne des noms géographiques et, par conséquent, elle pourrait faire l'objet d'une revision. Tous renseignements sur les noms seront bien accueillis par la Direction des levés et de la cartographie.

Roads:	Routes:
all weather	toute saison
dry weather	période sèche
cart track	de terre
trail or portage	sentier ou portage
Railway, normal gauge, single track	Chemin de fer, voie unique (écartement normal) siding / voie d'evitement, station / gare
Power transmission line	Ligne de transport d'énergie
Mine or Open cut	Mine ou fosse à ciel ouvert
Horizontal control point, with elevation	Point géodésique avec cote 454 △
Bench mark, with elevation	Repère de nivellement avec cote BM 157→

Building	Bâtiment	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	Cours d'eau intermittent, ou à sec		
Lake intermittent; indefinite	Lac intermittent; rive imprécise		
Marsh or Swamp	Marais ou marécage		
Depression contours	Courbes de cuvette		