

824436

REPORT ON
THE RUSS PROPERTY

KAMLOOPS MINING DIVISION
BRITISH COLUMBIA

Latitude $51^{\circ} 16.5'N$ Longitude $119^{\circ} 51.2' W$

NTS 82M/5W

FOR

TRANS OCEANIC RESOURCES LTD.

BY

NEIL B. JORGENSEN, P.ENG.

FEBRUARY 19, 1988

REPORT ON
THE RUSS PROPERTY

KAMLOOPS MINING DIVISION
BRITISH COLUMBIA

Latitude $51^{\circ} 16.5'N$ Longitude $119^{\circ} 51.2' W$

NTS 82M/5W

FOR

TRANS OCEANIC RESOURCES LTD.

BY

NEIL B. JORGENSEN, P.ENG.

FEBRUARY 19, 1988

REPORT ON
THE RUSS PROPERTY

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	1
SECTION 1.0 INTRODUCTION	3
1.1 LOCATION AND ACCESS	3
1.2 PROPERTY AND OWNERSHIP	4
1.3 PHYSICAL SETTING	5
1.4 HISTORY	5
SECTION 2.0 REGIONAL GEOLOGY	9
SECTION 3.0 LOCAL GEOLOGY	11
3.1 LITHOLOGY	11
3.2 ALTERATION AND MINERALIZATION	13
SECTION 4.0 GEOCHEMISTRY	15
SECTION 5.0 GEOPHYSICS	15
SECTION 6.0 DISCUSSION	17
SECTION 7.0 CONCLUSIONS AND RECOMMENDATIONS	21
7.1 STAGE 1	21
7.2 STAGE 2	22

SECTION 8.0	COST ESTIMATES	23
8.1	PHASE 1	23
8.2	PHASE 2	24
SECTION 9.0	STATEMENT OF QUALIFICATIONS	26
SECTION 10.0	REFERENCES	27

FIGURES

		<u>After Page</u>
Figure 1	Location	3
Figure 2	Area Location	3
Figure 3	Claims Location	4
Figure 4	South Section Compilation Map	12
Figure 5	North Section Compilation Map	13

REPORT ON
THE RUSS PROPERTY

SUMMARY

The Russ Property consists of 7 claims totalling 56 units in the Barriere Lakes Area, Kamloops Mining Division, B.C. The claims are owned by J.M. Ashton and J.D. Graham and are under option to Trans Oceanic Resources.

Exploration has taken place in the Barriere Lakes - Adams Plateau Area since the late 1800's and production took place from one deposit prior to 1946. Interest in the area was rekindled in 1983 when Rea Gold Corporation discovered massive sulphides at a location about 14 km south-south east of the Russ claims. Continuing exploration on the Rea Gold property has outlined two polymetallic deposits with aggregate reserves of about 0.9 million tons.

During 1984 and 1985 preliminary exploration of the Russ claims was undertaken by Racer Resources and Taywin Resources.

The Barriere Lakes Region is underlain by weakly to moderately metamorphosed sedimentary and volcanic rocks belonging to the Late Devonian to Late Mississippian Eagle Bay formation. The Russ claims are underlain by rocks of this formation, with slight differences on either side of a north-east trending fault along Russel Creek. South of this structure the claims cover mafic volcanic flows, pyroclastics and clastic and chemical sediments. North of the fault the strata comprise mafic pyroclastics and fine grained sediments.

Strong pervasive quartz sericite alteration is present in the rocks north of Russel Creek. Zones of carbonate alteration associated with quartz veins

occur in pyroclastics south of the creek. It is felt that both types of alteration may be indicative of massive sulphide mineralization.

Geochemical survey carried out on the property by past operators were not detailed enough to adequately test for the presence of massive sulphide lenses. Nevertheless, a number of interesting silver anomalies were outlined in an overburden covered area south of Russel Creek.

A VLF EM survey covering the southern part of the grid-area delimited a number of conductors, some of which may be related to geochemical anomalies or alteration zones. A magnetometer survey of the same area revealed no features of interest.

Total cost of exploration carried out on the claims by past operators is about \$47,500.00. A two stage project is proposed to search for massive sulphide deposits on the claims. The first phase involves extensive geological, geochemical and geophysical programs plus necessary trenching and is estimated to cost \$106,000.00. The second stage consists of diamond drilling at a cost of \$171,000.00.

SECTION 1.0 - INTRODUCTION

The author was engaged by Trans Oceanic Resources to examine the Russ Property and to recommend a program on it if warranted. The following report is based on a review of data supplied by the Company, observations made during a field examination on June 21, 1987 and research into other sources. Much of the discussion in the geology, geochemistry and geophysics section is based on Blanchflower (1984, 1985A and 1985B).

1.1 LOCATION AND ACCESS

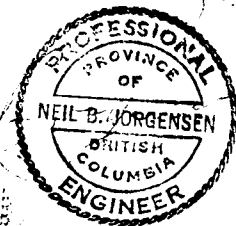
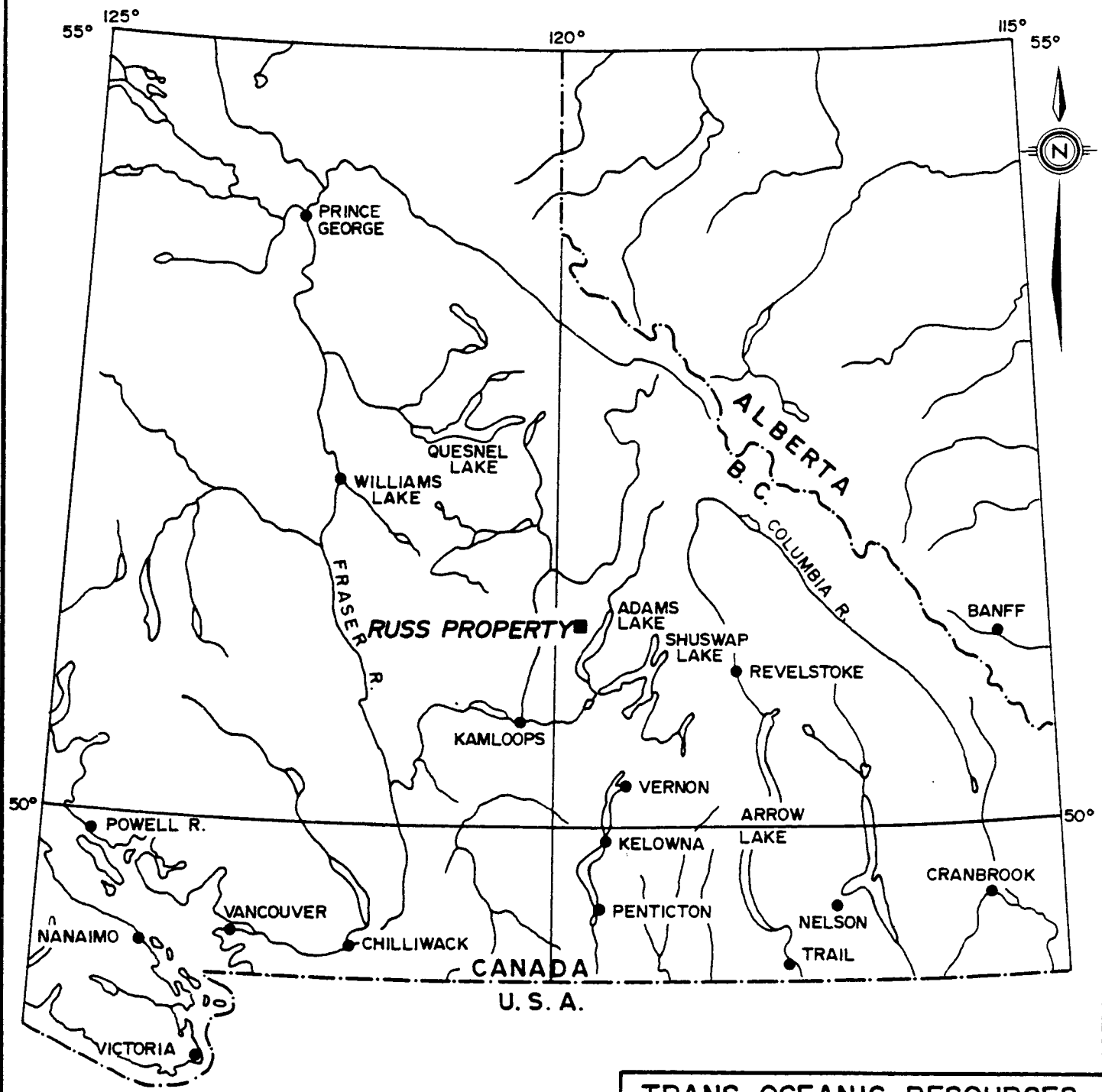
The property straddles the south western tip of East Barriere Lake and extends to the north for about 6 km. The claims are about 24 km east-north east of the town of Barriere and about 78 km north-north east of the City of Kamloops, B.C. Property location is shown on Figures 1, 2 and 3.

The claims are situated at latitude $51^{\circ} 16.5'N$ and longitude $119^{\circ} 51.2'$ west, NTS 82M/15W. They are in the Kamloops Mining Division.

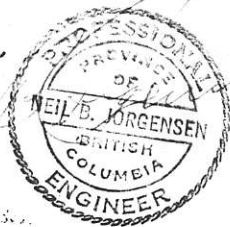
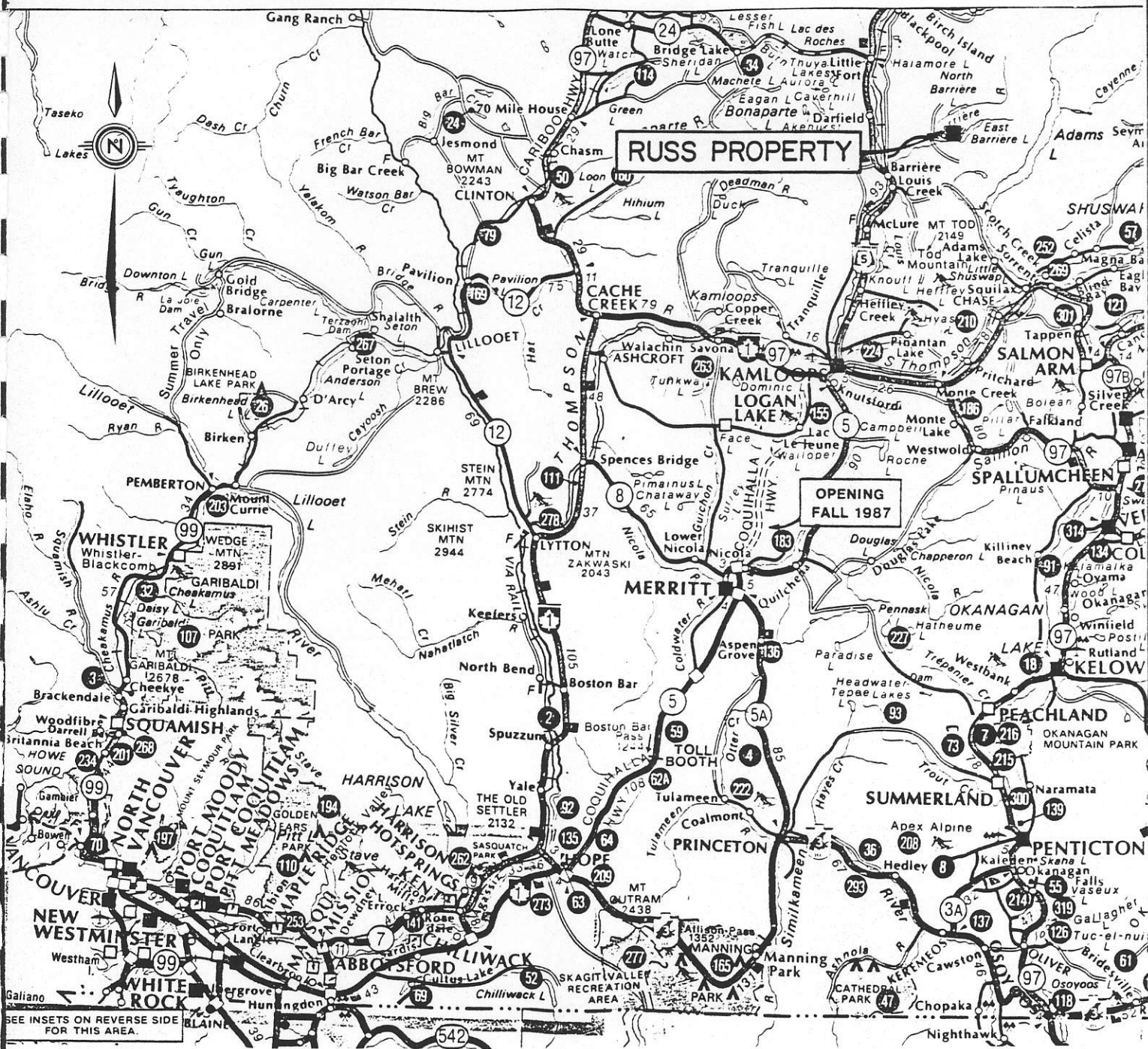
Access from Kamloops is via Highway 5 north to Barriere, thence 1.1 km through town on the Barriere Business Road, thence 21.1 km east on the East Barriere Lake Road. From this point the Barriere Ridge Road runs north and connects to a network of roads which cross various parts of the Russ 100, Russ 300 and Ebar Claims. The East Barriere Lake Road crosses the southern part of the claim block.

A four wheel drive vehicle is recommended for access to the northern parts of the property.

The claim block is about 88 km by road from kamloops.



TRANS OCEANIC RESOURCES	
RUSS PROPERTY LOCATION	
SCALE : 1 : 4,055,000	
N. JORGENSEN, JUNE, 1987	FIGURE 1
AFTER FROM BLANCHFLOWER, 1985 A	



TRANS OCEANIC RESOURCES
RUSS PROPERTY
PROPERTY LOCATION

SCALE APPROX. 1 : 1,756,000
 20 10 0 20 40 60 80 Km

N. JORGENSEN , JUNE ,1987 FIGURE 2

1.2 PROPERTY AND OWNERSHIP

The property consists of the seven claims listed in the following table:

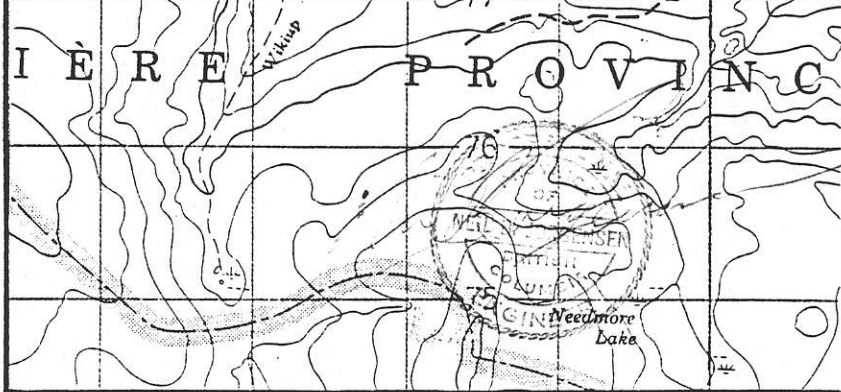
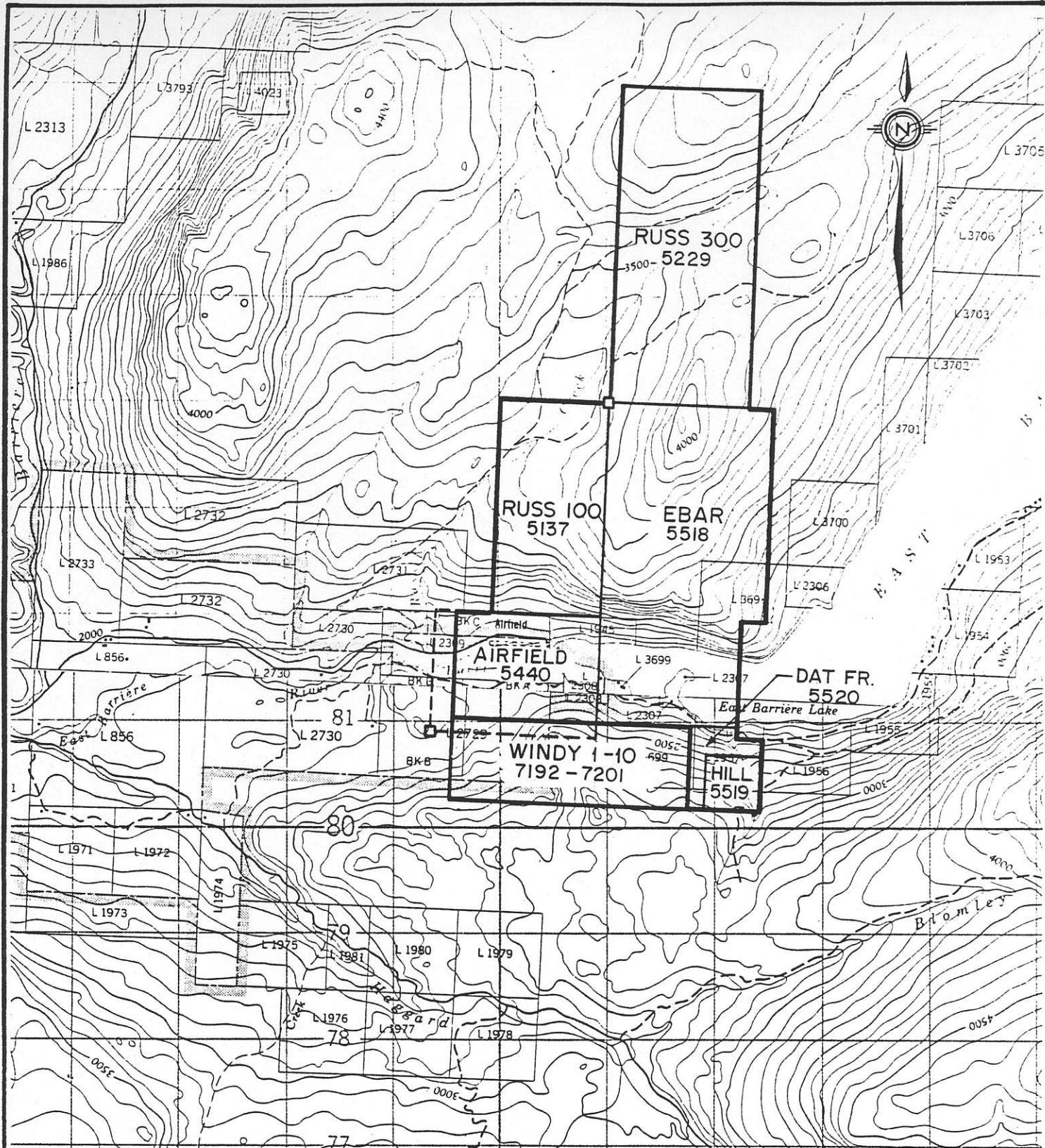
<u>Claim Name</u>	<u>Record No.</u>	<u>Type</u>	<u>Units</u>	<u>Expiry Date</u>	<u>Registered Owner</u>
Russ 100	5137	MGS	8	Nov. 28, 1989	S.E. Apchkrum
Ebar	5518	MGS	18	Feb. 10, 1989	J.D. Graham
Airfield 1	5440	MGS	9	Jan. 12, 1990	J.D. Graham
Airfield 2 Fr.	5441	MGS	1	Jan. 12, 1990	J.D. Graham
Hill	5519	2 Post	1	Feb. 10, 1990	J.D. Graham
Dat Fr.	5520	MGS	1	Feb. 10, 1990	J.D. Graham
Russ 300	5229	MGS	18	Dec. 15, 1988	J.D. Graham
Windy 1-10	7192- 7201	2 Post	10	July 27, 1988	J.D. Graham

—
66

A notice to group, N/G2099, covering the first 6 claims was filed on September 18, 1984. It should be noted that because of pre-existing claims only about 12 units of the Russ 300 claim are valid.

The author located the common legal corner post of the Russ 100, Russ 300 and Ebar claims and is of the opinion that it conforms to the Staking Regulations of the Mineral Act of British Columbia. He also examined the claim records in the Gold Commissioner's offices in Kamloops and Vancouver and found that the claims were duly recorded and had up to date assessment filed on them. He cannot, however, make any further comment on the validity of the claims.

Trans Oceanic Resources have optioned the claims from the Owners.



TRANS OCEANIC RESOURCES	
RUSS PROPERTY CLAIMS LOCATION	
SCALE 1 : 50,000	
1.0 0.5 0 1.0 2.0 Km	
N. JORGENSEN, JUNE, 1987	FIGURE 3
NTS 82M/5W & 82M/4W	

1.3 PHYSICAL SETTING

The property covers a section of the East Barriere Valley and extends over the highlands to the north. The valley walls are quite steep but elsewhere on the claim block the terrain is moderate. Elevations on the claims range from 610 m to 1,335 m and total local relief is about 800 m.

The climate of the region is temperate with summer highs up to 30°C and winter lows down to -25°C. Precipitation is moderate to heavy.

Parts of the north and central portions of the property have been subjected to clear cut logging. Elsewhere the area is covered by moderate to thick forests of pine, fir, cedar and aspen.

Outcrop on the property is scarce except in areas of high relief or in some road cuts.

1.4 HISTORY

The Barriere Lakes - Adams Plateau region has been explored intermittently since the early 1890's. Most of the work has involved the search for and development of base metals massive sulphide deposits.

One of the earliest significant discoveries was the Homestake deposit Hoy and Goutier (1986) describe its history:

The property, as recorded in Minister of Mines Annual Reports (1927, 1936), was discovered in 1893 and first developed between 1893 and 1895. Work on the property was intermittent and shipments of ore occurred sporadically until 1927. The mine was reopened by Kamloops Homestake Mines Ltd. in 1935; workings at that time consisted of four adits and more than 455 metres of cross cuts, drifts, raises and a winze. A 50 tonne per day flotation mill was installed on the

site. Recorded production between 1935 and 1941 totalled approximately 6,965 tonnes from which 12,400 grams of gold, 9,565,900 grams of silver, 11,080 kilograms of copper, 171,325 kilograms of lead and 246,520 kilograms of zinc were recovered. In the early 1970's, work on the property was resumed with geophysical and geochemical surveys, diamond drilling and drifting to gain access to the old workings and to provide underground diamond drill sites. Proven reserves were at that time, estimated to be 1,010,800 tonnes with an average grade of about 240 grams silver per tonne, 2.5 percent lead, 4.0 percent zinc, 0.55 percent copper and 28 percent barite (The Financial Post, January 13, 1973). Since 1982 work by the Kamad Silver Company Ltd. has confirmed and improved previous grade estimates but the deposit is considered difficult to mine, mainly because of the poor strength of the host rocks.

In 1978 Craigmont Mines discovered the Chu Chua copper deposit near the headwaters of Chu Chua Creek. This find led to increased activity in the area until the decline in copper prices shifted interest elsewhere.

In October, 1983, Rea Gold Corporation announced the discovery of gold bearing massive sulphide mineralization south of Johnson Lake. Minnova Inc. (formerly Corporation Falconbridge Copper) optioned the Rea Gold property and has since carried out extensive surface exploration and diamond drilling programs. This work has outlined two massive sulphide deposits with the following estimated reserves (Rea Gold News Release printed in Vancouver Stockwatch, November 23, 1987):

<u>Deposit</u>	<u>Tonnage</u>	<u>Au</u>	<u>Ag</u>	<u>Zn</u>	<u>Pb</u>	<u>Cu</u>
		<u>Grade</u>	<u>Grade</u>	<u>Grade</u>	<u>Grade</u>	<u>Grade</u>
	(tons)	(oz/ton)	(oz/ton)	(%)	(%)	(%)
Discovery Zone	266,200	0.190	2.14	2.247	2.149	0.527
Samatosum Silver Zone	661,000	0.052	32.08	3.50	1.70	1.20

Underground development and bulk sampling of the Discovery Zone and feasibility studies on the Samatosum deposit currently are in progress (Rea Gold News Release printed in Vancouver Stockwatch, February 5, 1988).

The Russ Property is located 14 km north-north west of Rea Gold and 18 km north by west of Homestake.

Racer Resources held the southern part of the property from 1984 to 1985. During this period the company did geological mapping, preliminary and follow-up geochemical sampling, Magnetometer and VLF-EM surveys and bulldozer trenching on the northern parts of the Russ 100 and Ebar claims (Blanchflower, 1984 and 1985A). The mapping and trenching revealed the presence of interesting rock types and alteration zones, the geochemical sampling outlined significant target areas and the EM survey showed that conductors are associated with some of the anomalies. These results are described in more detail in the appropriate sections of this report.

The total cost of the exploration is reported to be \$32,926.70 (Blanchflower, 1984 and 1985A).

In 1985 Taywin Resources carried out reconnaissance geological mapping and geochemical sampling on the Russ 300 claim (Blanchflower, 1985B).

This work identified areas of interesting mineralization and alteration which are described in more detail in the appropriate sections of this report. Blanchflower (1985B) states that the total cost of the project was \$14,500.00. After completing the programs Taywin allowed its option to lapse.

J.L. Wise, president of Trans Oceanic Resources (personal communication, February 9, 1988) states that the company has paid the owners \$47,000.00 in recognition of past meaningful exploration on the claims. He further states that Trans Oceanic has spent approximately \$30,000.00 to upgrade and construct road access to the Ebar and Windy claims.

SECTION 2.0 - REGIONAL GEOLOGY

The following description of the regional geology is taken from Blanchflower (1986):

The regional geology of the Barriere Lakes - Adams Plateau has been the subject of a number of recent governmental publications; the most definitive of these are authored by: P.A. Schiarizza and V.A. Preto (1984), V.A. Preto (1981) and T. Hoy and R. Goutier (1985). Much of the following text is based on the results of these recent geological reports.

This region is underlain dominantly by a weakly to moderately metamorphosed assemblage of sedimentary and volcanic rocks belonging to the Late Devonian to Early Mississippian age Eagle Bay formation. The Eagle Bay formation appears to stratigraphically overlie volcanic rocks of the Late Devonian Fennell formation. Both of these major formations have been intruded by granodiorite orthogneiss to biotite quartz monzonite ranging in age from Late Devonian to Cretaceous. Locally, the metamorphosed strata and intrusions are overlain by olivine basalt flows of Pleistocene to recent age.

Structural features of the region include, at least, two periods of folding and faulting (Preto 1979). An early period of folding, west to north-west trending with axes plunging north to north-west, has deformed the volcanic and sedimentary strata prior to later folding with axes plunging gently north.

There are numerous base metal occurrences known in the region, many of which are clearly syngenetic stratabound massive sulphide deposits. Polymetallic deposits, commonly with associated barite and precious metal values, are most abundant in the Birk Creek - North

Barriere Lake, Johnson Lake - Sinmax Creek and Adams Plateau areas.

The best known deposits in the area are the Rea Gold, Homestake and Chu Chua. The former two occur in the Eagle Bay formation and the latter, in the Fennell formation.

SECTION 3.0 - LOCAL GEOLOGY

The property geology is shown on the compilation maps, Figures 4 and 5.

3.1 LITHOLOGY

The following discussion is based on Blanchflower's 1984 and 1985 reports on the programs carried out by Racer and Taywin Resources and examination of the geology maps therein.

The property is underlain by a northerly trending sequence of mafic volcanics interbedded with clastic and chemical sedimentary rocks. Over most of the claim block the igneous rocks include submarine flows, pillow basalts and mafic pyroclastics which range from lapilli tuffs to agglomerates. The sedimentary facies include limestone, gray to black chert and green phyllites to phyllitic wackes. The latter rocks are quartz poor, chlorite rich and appear to be derived from mafic volcanics.

The strata strike about 170° and dip approximately 25° E. A few flat lying minor folds are present in the phyllites.

The northern part of Russ 300 claim, north of Russel Creek is underlain by mafic pyroclastics and fine grained sedimentary rocks. The bedding strikes north westerly and has shallow north easterly dips.

Areas adjacent to Russ Creek are covered by overburden. Schiarizza and Preto (1984) indicate that a major north east trending fault runs along the creek. The presence of this structure probably explains the differences between the geology on the northern and southern parts of the claim block.

Blanchflower (1985B) summarized the stratigraphy of the area in the

following table. The unit numbers correspond to those on the compilation maps.

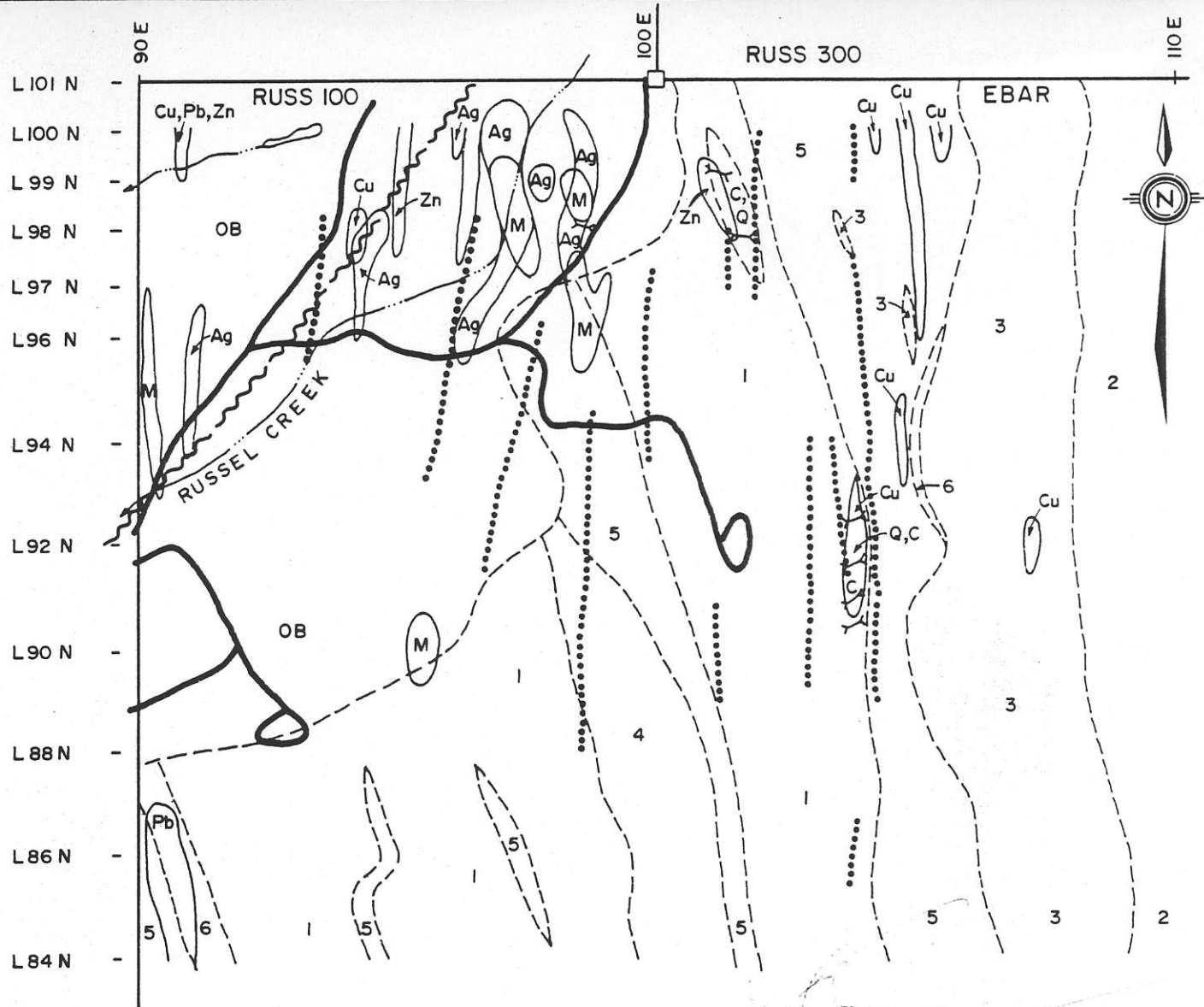
PLEISTOCENE TO RECENT

Overburden and glacial alluvium

LATE DEVONIAN TO EARLY MISSISSIPPIAN

Eagle Bay Formation

6. Limestone: Massive, buff to grey weathering. May contain weak detrital component.
5. Phyllite (a) and: a) Grey to green, fine grained, highly foliated sediments. Locally calcareous.
Chloritic Wacke (b): b) Silica-poor dominated by mafic detritus. May be gradational to fine grained re-worked volcanoclastic.
4. Chert: Medium to dark grey. May develop indistinct 2 to 5 cm. wide ribbon structures. Massive, non-foliated and no evidence for breccia features.
3. Mafic Pyroclastic: Medium to dark green, lapilli to agglomerate size fragmental. Fragments usually wispy ovoids with possible alignment parallel to strike. Possible basaltic composition (colour index CI 40).



LEGEND:

QUATERNARY AND RECENT

OB OVERBURDEN AND DRIFT

**LATE DEVONIAN TO LATE MISSISSIPPIAN
EAGLE BAY FORMATION**

- 6** LIMESTONE
- 5** PHYLLITE AND CHLORITIC WACKES
- 4** CHERT
- 3** MAFIC PYROCLASTICS
- 2** MAFIC FLOWS
- 1** UNDIFFERENTIATED MAFIC PYROCLASTICS AND FLOWS
- C** DOLOMITE AND SIDERITE ALTERATION
- Q** QUARTZ VEIN
- GEOLOGICAL CONTACT
- ~ FAULT AFTER PRETO, 1984

GEOCHEMICAL ANOMALIES

- Ag** SILVER ≥ 0.8 ppm
- Cu** COPPER ≥ 70 ppm
- M** MULTI; ELEMENT
Ag \pm , Cu \pm , Zn \pm , Pb
- Pb** LEAD ≥ 30 ppm
- Zn** ZINC ≥ 130 ppm

GEOPHYSICAL ANOMALIES

- VLF-EM, FRASER PLOT
SEATTLE OR ANAPOLIS
STATIONS
- ROAD
- CREEK
- CLAIM LINE
- LCP RUSS 100,300,EBAR

TRANS OCEANIC RESOURCES

**RUSS PROPERTY
SOUTH SECTION
COMPILATION MAP**

SCALE: 1 : 12,500

100 50 0 100 200 300 400 500 600 700 m

N. JORGENSEN, JUNE, 1987 | FIGURE 4

MODIFIED FROM BLANCHFLOWER, 1985A

2. Mafic Flow: Basaltic flow sequence. Locally may contain well preserved pillow structures.
1. Undifferentiated Mafic Pyroclastics and Flows: Undivided (2) and (3).

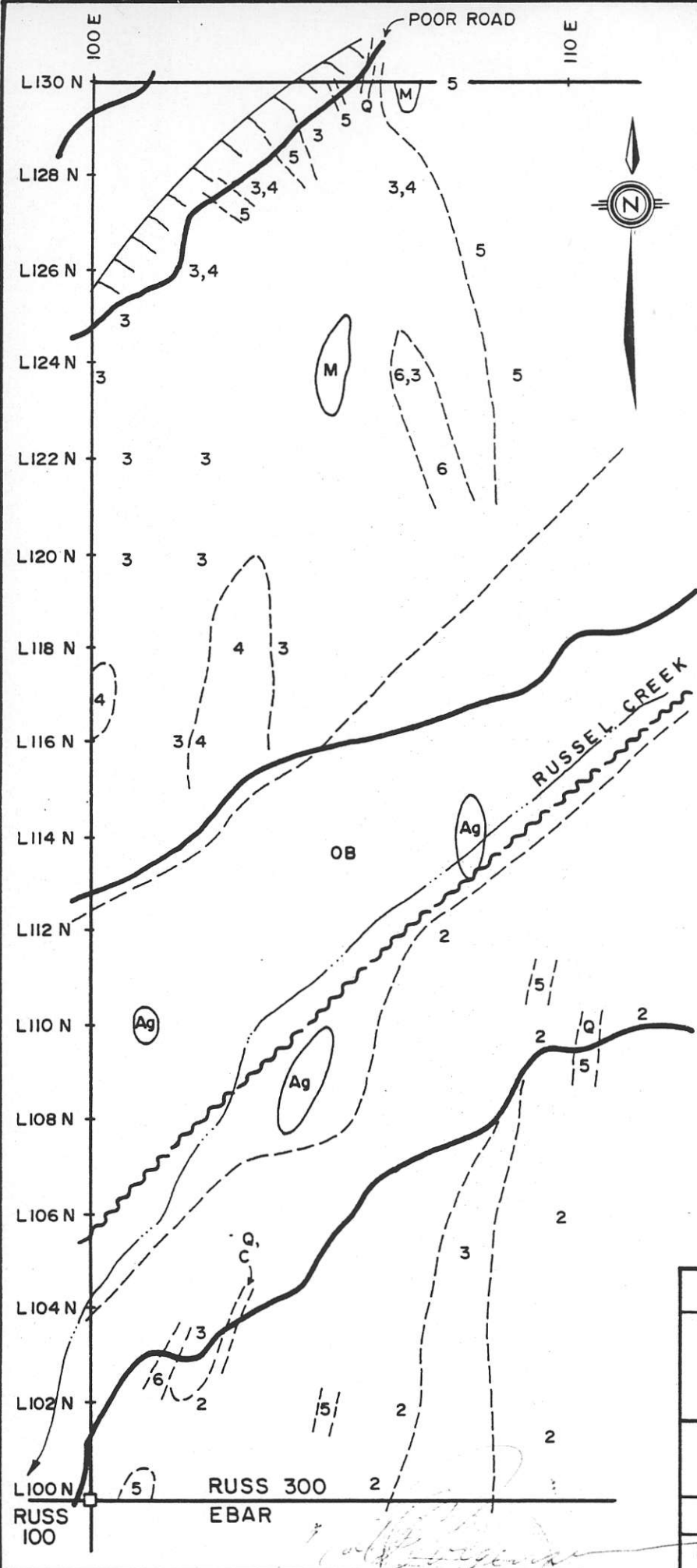
Hoy and Goutier (1986) state that the region has been subjected to Greenschist facies metamorphism. The presence of widespread chlorite and the absence of biotite in all lithologies support this theory.

3.2 ALTERATION AND MINERALIZATION

The author observed two main types of alteration in the rocks on the property; a pervasive quartz sericite assemblage and carbonate (dolomite siderite?) alteration associated with quartz veins.

As shown in Figure 4, a trench just south of line 98, 101 + 25E-101+50E, south grid, exposes 20 m of strongly carbonate altered buff to orange coloured rock centred on 2, 1 m wide massive quartz veins. Iron oxides cover all fractures. The presence of dark clasts in a matrix of light coloured carbonate at the edges of the exposure indicates that the rock probably was originally a pyroclastic. Smaller zones of similar alteration are present in trenches south of line 92N, 105E (south grid) and in the road cut at 103 + 50N, 103E, north grid.

The sequence of rocks along the northern road on the Russ 300 claim (Figure 5) generally exhibits strong pervasive quartz and sericite alteration, commonly to the point where original fabrics are obscured. The rocks are moderately to strongly bleached in most places. Iron oxides occur as disseminated blebs after pyrite and as fracture coatings. At a few localities thin (15 cm or less) chert layers and/or quartz veins are present.



LEGEND :

QUATERNARY AND RECENT

OB OVERBURDEN AND DRIFT

LATE DEVONIAN TO LATE MISSISSIPPIAN
EAGLE BAY FORMATION

- 6** LIMESTONE
- 5** PHYLLITE AND CHLORITIC WACKES
- 4** CHERT
- 3** MAFIC PYROCLASTICS
- 2** MAFIC FLOWS
- 1** UNDIFFERENTIATED MAFIC PYROCLASTICS AND FLOWS

STRONG QUARTZ AND SERICITE ALTERATION AND LIMONITE

C DOLOMITE AND SIDERITE ALTERATION

Q QUARTZ VEIN

GEOLOGICAL CONTACT

FAULT AFTER PRETO, 1984

ROAD

CREEK

GEOCHEMICAL ANOMALIES

SILVER ≥ 0.8 ppm

MULTI ELEMENT
SILVER ≥ 0.8 ppm
COPPER ≥ 63.5 ppm
ZINC ≥ 157.5 ppm

LCP RUSS 100, RUSS 300, EBAR

CLAIM LINE

TRANS OCEANIC RESOURCES

**RUSS PROPERTY
NORTH SECTION
COMPILATION MAP**

SCALE : 1 : 12,500

100 50 0 100 200 300 400 500 600 700 m

N. JORGENSEN, JUNE, 1987 | **FIGURE 5**

MODIFIED FROM BLANCHFLOWER, 1985 B

Blanchflower (1985B) states that rocks in the northern part of Russ 300 claim have 1-3 percent pyrite which has been altered to a gosan. However, little sulphide mineralization was seen by the author.

SECTION 4.0 - GEOCHEMISTRY

The following discussion is based on Blanchflower's 1984 and 1985 reports on the programs carried out by Racer and Taywin Resources and examination of the geochemical maps therein.

In the south grid area, B horizon soil samples were taken at 25 m or 50 m spacings on lines 200 m apart. The samples were analysed for Au, Ag, Cu, Pb and Zn. Limited fill in sampling on short 100 m spaced lines with 25 m stations also was done. These samples were run for all of the above elements, except gold.

The sampling program outlined a number of north-south trending silver anomalies as much as 500 m long in the overburden covered area along Russel Creek, north-west Russ 100 claim. Elsewhere in the area, there are a few narrow copper or zinc anomalies which may be associated with structures or alteration zones.

The Russ 300 claim was soil sampled at 50 m intervals along lines 200 m apart. The survey did not outline any significant anomalies.

Highlights of the geochemical programs are shown on the compilation maps.

SECTION 5.0 - GEOPHYSICS

The following discussion is based on Blanchflower's 1984 report on the program carried out by Racer Resources and examination of the geophysical maps therein.

A VLF EM16 survey and a vertical field magnetic intensity survey were carried out on the south grid area (see Figure 4). The magnetics survey did not reveal any features of interest. The EM16 program, however, delineated

a number of north-south striking anomalies. Some of these features appear to be related to lithological units, ie. L90N-L98N, 104E, or swamps. However, a number of them line up with alteration zones or geochemical anomalies and may be indicative of controlling structures or mineralization. Some examples would be the following conductors: L97N-L100N, 102E; L87N-L94N; 98+50E; L94N-L98N and 96-97E.

SECTION 6.0 - DISCUSSION

The target on the Russ Property is a massive sulphide deposit similar to the Homestake and Rea Gold. Hoy and Goutier (1986) describe the Rea Gold discovery zone as follows:

Two massive sulphide lenses occur at the stratigraphic top of a thin felsic tuff and exhalative chert sequence that lies above a thicker sequence of mafic ash, crystal and lapilli tuffs. Both lenses are underlain by a footwall feeder and alteration zone, characterized by intense silicification, pervasive pyrite and sericite development, indicative of Si, Fe and K metasomatism. The southern lense is 'capped' by a layer of massive barite. Both lenses are stratigraphically overlain by a thin sequence of mafic tuff which grades up into argillites, wackes and grits. Deposition of sulphides and barite occurred near the end of a cycle of explosive volcanism. Intense regional deformation and greenschist facies regional metamorphism have altered the host rocks to produce a succession of sheared chlorite phyllites, quartz sericite schists and chert.

They also describe the Homestake Mine:

Sulphide-barite lenses at Homestake occur near the top of a thick sequence of pyritic quartz-sericite phyllites within a predominantly mafic to intermediate tuff succession. The quartz-sericite phyllites include both felsic tuffs and metasomatically altered footwall rocks in which potassium, silica and iron have been introduced. Although macroscopic folds are not recognized within the footwall phyllites, their presence is inferred due primarily to recognition of folds in overlying units where bedding is more visible and to the presence of rootless minor folds within the phyllites.

The authors go on to state:

Rea Gold and Homestake have many similarities. They are sulphide + barite lenses within or near the top of a felsic (?) pyroclastic unit within a thicker pile of more mafic tuffs and minor mafic flows. Both have extensive footwall alteration zones characterized by silicification, sericitization and pyrite development and both are overlain by a mixed mafic pyroclastic and clastic sedimentary sequence. These deposits, as well as a number of other somewhat similar deposits in Eagle Bay formation rocks such as Beca and Birk Creek (Goutier, et.al., 1985) are similar in many respects to the volcanogenic 'polymetallic' or Kuroko class of deposits.

Boyle (1982) states that typical massive sulphide deposits have extensive wall rock alteration envelopes which generally contain chlorite, sericite, quartz, pyrite, chert and in some cases, carbonate. Furthermore, most deposits have complex and irregular trace element halos involving mainly chalcophile elements such as Cu, Ag, Au, Zn, Pb, Sb, As and others. The halos and envelopes are detectable over a wide range of distances from the sulphide lenses, in some cases for as much as several hundred metres.

The basic geology of the claims is favourable for the discovery of massive sulphides since it is the same as at Rea Gold. The area of strong sericite quartz alteration on the Russ 300 claim is similar to the footwall alteration at Rea Gold and Homestake. It also fits in well with Boyle's alteration envelopes. Thus the feature could be indicative of the presence of a sulphide deposit. The carbonate alteration zones in the south grid area could also be distal parts of the envelopes described by Boyle and as such, indicative of mineralization. The association of small geochemical and VLF EM anomalies with these zones support this theory.

Careful geological mapping of the areas, with close attention to alteration, stratigraphy and structure is required to determine the cause of the alteration zones and assess their worth as exploration targets.

The linear silver geochemical anomalies near Russel Creek or Russ 100 claim deserve comment. These anomalies occur in a partially swampy area covered by glacially derived overburden. This overburden may be as much as 10-15 m thick, as indicated by drilling on a neighbouring property (Sherchenko, 1986), although it likely is thinner along the south eastern part of the zone.

It could be argued that the overburden would mask any surface expression of bedrock mineralization and that the silver enrichment is caused by down-slope dispersion by groundwater flow. However, Sinclair (1986) reports that B horizon soil sampling in an area with 3 to 4 m thick overburden in Lanark Township, Ontario, was effective of discovering zinc mineralization. Rampton et. al (1986) states the copper and molybdenum mineralization in New Brunswick were identified by B horizon sampling in a region with up to 10 m thick overburden, and that gold was located in eastern Ontario where overburden is 2 m thick by A and B horizon soil sampling. Furthermore, groundwater dispersion would produce anomalies elongate in the direction of drainage, which is not the case in this area. For these reasons the author feels that the anomalies are real features which warrant further attention.

According to J.M. Ashton (personal communication, 1987), the Rea Gold silver zone was indicated by only one highly anomalous sample on their geochemistry survey. Reaugh (1986) reports that the average width of the Silver Zone is only 3 m. These facts indicate the necessity of detailed sampling programs to located massive sulphides in this area. Thus, re-sampling the north grid area on 100 m lines at 25 m spacings might well detect mineralization that was missed by the earlier reconnaissance survey.

Similar fill in sampling on the northern part of the south grid would help to define the known anomalies and might locate others.

The VLF survey showed that EM is a useful exploration tool in this region. It would be advantageous to cover the grid areas with a horizontal loop EM survey which would allow better definition and interpretation of the known conductors and search for undiscovered zones on Russ 300 claim.

Full correlation and study of the data gathered by the suggested surveys likely would yield a number of targets which could be tested by diamond drilling.

It should be noted that the southern quarter of the claims is virtually untested. As this area also is underlain by the regionally favourable geology, it should be explored at some time.

SECTION 7.0 - CONCLUSIONS AND RECOMMENDATIONS

The Russ Property is situated in a good geological environment for the occurrence of massive sulphide deposits. Furthermore work by previous operators has located geological, geochemical and geophysical indications that such a deposit may exist on the claims. Therefore a two stage program is recommended to further explore the most favourable areas of the claim block.

7.1 STAGE 1

The first phase of the program should concentrate on the area north of line 90N (south grid) to the northern property boundary. In the south grid area work need not extend east of 108E. However, Russ 300 claim should be covered to 110E.

The area should be covered by a cut grid with lines at 100 m spacings and stations at 25 m intervals. This grid can utilize the old lines but all stations should be relabelled to a common coordinate system with the 100N, 100E origin point at the common legal corner post of the Russ 100, Russ 300 and Ebar claims.

Following grid preparation the area should be geologically mapped at a scale of 1:2500 and covered by an HLEM survey with readings at each grid station. Soil samples should be taken at each station on the Russ 300 claim and on unsampled fill in lines in the present south grid area. The samples should be analysed using multi-element ICP methods to gain maximum information from the survey. Trenching should be carried out where necessary to expose mineralization or solve geological problems.

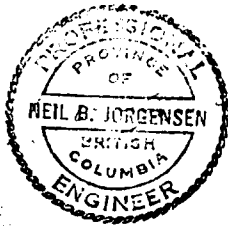
At the completion of the program all available data should be compiled and

interpreted and a report written with recommendations for further exploration.

Estimated cost of the program is \$105,650.00.

7.2 STAGE 2

The second stage program would consist of 1,200 m of diamond drilling at an estimated cost is \$171,200.00. The project is contingent on the identification of suitable targets by the first phase of work.



Neil B. Jorgensen, P.Eng.

February 19, 1988

SECTION 8.0 - COST ESTIMATES

8.1 PHASE 1

PERSONNEL COST:

Geologist and Assistant - 40 days at \$450/day	\$	18,000.00
Room and board - 45 days at \$120/day	\$	5,400.00
	\$	<u>23,400.00</u>

TRUCK RENTAL:

1.3 month at \$4,000/month including fuel	\$	5,200.00
---	----	----------

LINE CUTTING AND GRID PREPARATION:

24 km new lines at \$225/km	\$	5,400.00
27.5 km old lines at \$150/km	\$	4,100.00
	\$	<u>9,500.00</u>

EM SURVEY:

51.5 km surveyed at \$375/km	\$	19,300.00
Interpretation and report	\$	2,000.00
	\$	<u>21,300.00</u>

GEOCHEMICAL AND ASSAY COSTS:

1590 soil samples at \$8.00 for ICP	\$	12,725.00
45 rock samples at \$10.50 for ICP	\$	475.00
25 assays at \$38.00 for Au, Ag, Pb, Zn and Cu	\$	950.00
	\$	<u>14,150.00</u>

PROVISION FOR TRENCHING:	\$	10,000.00
--------------------------	----	-----------

FIELD SUPPLIES:	\$	2,000.00
COMMUNICATIONS:	\$	500.00
PREPARATION AND SUPERVISION:	\$	5,500.00
REPORT PREPARATION:	\$	6,500.00
		<hr/>
SUB-TOTAL	\$	96,050.00
CONTINGENCIES AT 10 PERCENT	\$	9,600.00
		<hr/>
TOTAL	\$	105,650.00

8.2 PHASE 2

PERSONNEL COSTS:

Geologist - 30 days at \$275/day	\$	8,250.00
Room and board - 30 days at \$70/day	\$	2,100.00
		<hr/>
	\$	10,350.00

TRUCK RENTAL:

1 month at \$4,000/month including fuel	\$	4,000.00
---	----	----------

DIAMOND DRILLING:

1,200 m at \$90/m all inclusive	\$	108,000.00
Drill pad and access preparation	\$	10,000.00
Core Splitting	\$	1,100.00
		<hr/>
	\$	119,100.00

GEOCHEMICAL AND ASSAY COSTS:

ICP of all core, 475 samples at \$16.00/sample	\$	7,600.00
Assays, 30 samples at \$38 for Au, Ag, Pb, Zn and Cu	\$	<u>1,150.00</u>
	\$	8,750.00

FIELD SUPPLIES:	\$	2,000.00
-----------------	----	----------

COMMUNICATIONS:	\$	500.00
-----------------	----	--------

PREPARATION AND SUPERVISION:	\$	4,500.00
------------------------------	----	----------

REPORT PREPARATION:	\$	<u>6,500.00</u>
---------------------	----	-----------------

SUB-TOTAL	\$	155,700.00
-----------	----	------------

Contingencies at 10 percent	\$	<u>15,500.00</u>
-----------------------------	----	------------------

TOTAL	\$	171,200.00
-------	----	------------

SECTION 9.0 - STATEMENT OF QUALIFICATIONS

I, Neil B. Jorgensen do hereby certify that:

1. I am a resident of British Columbia and have been since 1964.
2. I graduated from the University of British Columbia in 1972 with a degree of Bachelor of Applied Science in Geological Engineering.
3. I am a member in good standing of the Association of Professional Engineers of British Columbia and the Canadian Institute of Mining and Metallurgy.
4. I have practiced my profession in mineral exploration since graduation.
5. I have no direct or indirect interest in either the Russ Property or Trans Oceanic Resources, nor do I expect to receive any.
6. I consent to the use of this Report on the Russ Property in a prospectus or statement of material facts so long as it is not condensed or excerpted in any way such as to portray a meaning different from that of the whole.

Neil B. Jorgensen, P.Eng.

February 19, 1988



SECTION 10.0 - REFERENCES

- Blanchflower, J.D., 1986; Report on the Russel Creek Property, CAD Claim Group, Kamloops Mining Division, B.C; Report for Merritech Development Corp. by Minorex Consulting Ltd; December 22, 1986.
- Blanchflower, J.D., 1985A; Geochemical and Trenching Report on the Russ Property, Kamloops Mining Division, B.C; Report for Racer Resources Ltd. by Minorex Consulting Ltd; July 25, 1985.
- Blanchflower, J.D., 1985B; Geological and Geochemical Report on the Russ 300 Claim, Kamloops Mining Division, B.C; Report for Taywin Resources Ltd. by Minorex Consulting Ltd; September 19, 1985.
- Blanchflower, J.D., 1984; Geological, Geochemical and Geophysical Report on the Russ Property, Kamloops Mining Division, B.C; Report for Racer Resources Ltd. by Minorex Consulting Ltd; December 4, 1984.
- Boyle, R.W., 1982; Geochemical Methods for the Discovery of Blind Mineral Deposits, Parts 1 and 2; Canadian Institute of Mining and Metallurgy Bulletin, August 1982 and September 1982; pp. 123-142 and pp. 113-132.

Hoy, T. and
Goutier, F., 1986;

Rea Gold (Hilton) and Homestake Volcanogenic Sulphide-Barite Deposits, South Eastern British Columbia; Geological Field Work, 1985; B.C. Ministry of Energy, Mines and Petroleum Resources Paper 1986-1; pp. 52-68.

Preto, V.A., 1981;

Barriere Lakes - Adams Plateau Area; Geological Field Work, 1980; B.C. Ministry of Energy, Mines and Petroleum Resources Paper 1981-1; pp. 15-23.

Rampton, V.N., Gleeson, C.F.,
Thomas, R.D. and Paradis, S.,
1986;

Geochemical Exploration in Areas of Shallow Till: Some Case Histories; Canadian Institute of Mining and Metallurgy Bulletin, December 1986; pp. 67-74.

Reaugh, L.W., 1986;

News Release by Rea Gold Corporation; June 9, 1987.

Schiarizza, P.A. and
Preto, V.A., 1984;

Geology of the Adams Plateau - Clearwater Area; B.C. Ministry of Energy, Mines and Petroleum Resources Preliminary Map 56, September, 1984.

Shevchenko, G., 1986;

Assessment Report, Diamond Drilling on the Cad Claim Group, Kamloops

Mining Division; Noranda Exploration
Company Report; February 1986.

Sinclair, I.G.L., 1986;

The Use of Till Geochemistry as an
Exploration Tool in South Eastern
Ontario; Canadian Institute of Mining
and Metallurgy Bulletin, December
1986; pp. 75-78.

J. M. ASHTON and ASSOCIATES LTD.
CONSULTING ENGINEERS

→ IDP
I doubt if we
want this
Get back to me
ASAP

Telex: 04-53392
Fax (604) 685-0147

Suite 1451 United Kingdom Building
409 Granville Street
Vancouver, B. C., Canada V6C 1T2

Tel. (604) 685-6477

7 November 1989

Minnova Inc.
4th Floor
311 Water Street
Vancouver
British Columbia
V6B 1B8



Privileged and Confidential

Attention: Mr. Alex Davidson, Exploration
Manager, Western Canada

Re: Russ Group Mineral Claims
Adams Lake, British Columbia
Owners: J.D. Graham & J.M. Ashton

Dear Alex:

J.D. Graham and the writer are seeking an option for our Russ Group Mineral Claims as shown generally on the accompanying map. This map shows a revised staking plan relative to the one shown in the accompanying report because some of the claims did lapse and were re-staked.

Our terms are described on the accompanying General Terms of Agreement.

Should Minnova be interested we would appreciate your earliest reply as one of the terms requires a commitment to perform at least one years assessment work on the claims. The expiry dates as shown in the report are self explanatory.

Yours very truly,

Jack

J.M. Ashton, P.Eng.

Copy: J.D. Graham

JMA:sla

Terms of Option Agreement
For Russ Group Mineral Claims

<u>1.0 Cash Payments</u>	<u>Amount (\$)</u>
a) On signing an agreement	3,000
b) On first anniversary	5,000
c) On second anniversary	10,000
d) On third anniversary	20,000
e) Subsequent anniversaries following third anniversary, minimum annual royalty	25,000

2.0 Work Commitments

- a) On signing a letter of intent commit to perform at least one years assessment work on the claims.
- b) Spend a minimum of \$50,000 on exploration during the second year option period.
- c) Spend a minimum of \$100,000 on exploration during the third year option period.
- d) Spend a cumulative total of \$400,000 before the fourth year option period.
- e) Upon the expenditure of \$600,000 become vested in the property.

3.0 Royalty Payment

In the event of production pay to the Vendors a 3.0% Net Smelter Return royalty.

4.0 Area of Mutual Interest

The area of mutual interest shall include only that ground shown on the claim map as the Windy Claims. In the event of an agreement this open ground shall be staked for the benefit of the agreement.

5.0 Return of Claims to Vendors

In the event the Option Agreement is terminated the mineral claims shall be returned to the Vendors with a minimum of 3 years assessment work thereupon.

6.0 Access

The Vendors shall have reasonable access to the data gathered and to the mineral claims during exploration and/or development.

7.0 Annual Reports

Each of the Vendors shall receive an annual report of exploration and/or development work performed.