MAR 19690018: FLATHEAD

Received date: Dec 31, 1969

Public release date: Jan 01, 1971

REPORT

- ON -

REGIONAL PROSPECTING

- IN -

THE FLATHEAD AREA

FORT STEELE MINING DIVISION, BRITISH COLUMBIA

- for -

UNITED BATA RESOURCES LIMITED (N.P.L.)

1070 Elveden House
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- by -

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P.O. Box 609
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November 24, 1969

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INTRODUCTION:

This report has been prepared at the request of Mr. A.A.W. Kryczka, president of United Bata Resources Limited (N.P.L.). It describes the results of a prospecting programme carried out in the Clark, MacDonald, and Galton Ranges, Fort Steele Mining Division, southeastern British Columbia.

Approximately one month (August 20th to September 23rd, 1969) was spent by a two-man prospecting team carrying out reconnaissance prospecting in a portion of southeastern British Columbia (see maps 147-1 & 147-2). A number of showings were examined and character samples were taken from some of the better zones. Sketches of the geology and mineralization were prepared and are included in this report.

PURPOSE AND SCOPE OF EXPLORATION WORK:

This programme was initiated to follow up earlier field examination and general research which confirmed the presence of copper and lesser silver mineralization in portions of the Belt Series in southwestern Alberta.

A two-man prospecting team examined most of the B.C. side of the Clark Range which had been covered by claims of Akamina Minerals Limited in 1968. In addition, portions of the MacDonald and Galton Ranges were prospected where similar Belt rocks are known to outcrop.

The present work was necessarily of a reconnaissance nature since the programme was initiated late in the 1969 field season.

LOCATION, ACCESS AND TOPOGRAPHY:

The area is located in the southeastern corner of British Columbia and lies between latitudes 49°00' and 49°25' north, and longitudes 114°05' and 115°05' west. However, rocks of the lower part of the Belt Series outcrop in only about one quarter of the total area.

Access to the various parts of the area was gained via logging roads and seismic trails. Time and weather conditions did not permit examination of the more remote portions of the region.

The area lies in the Front Ranges of the Rocky Mountains and is characterized by north-northwesterly trending ridges of the Clark, MacDonald, and Galton Ranges. The principal valleys are those containing the Flathead and Wigwam Rivers.

Relief is in the order of 3,000 to 4,000 feet and the lower parts of the mountains are invariably tree covered. The lower parts of the ridges and the main valleys are heavily drift covered and exposures are limited, particularly in the western parts of the region.

REGIONAL GEOLOGY:

The Flathead area is underlain by a sequence of unmetamorphosed Precambrian and lower Paleozoic sediments with minor intercalated volcanic rocks. Most of these rocks have been thrust eastwards for varying distances and now unconformably overlie Lower Cretaceous and younger rocks.

The strata of special interest belong to the middle and lower parts of the Belt Series of late Precambrian age (e.g., Sheppard Formation, Purcell Lava, Siyeh, Grinnell and Appekunny Formations -- see figure 147-3). This part of the Belt Series consists largely of interbedded quartzites, sandstones, red and green argillites, as well as lesser amounts of limestone and dolomite. Some intermediate volcanic rocks are found within this sequence (e.g., the Purcell Lava and the lower portions of the Sheppard Formation).

Small intrusive bodies of two different ages cut the Belt Series. The older intrusives are sills and dikes of dioritic to gabbroic composition and are considered to be Precambrian in age. A few plugs of much younger (Tertiary ?) syenite and trachyte locally cut Belt strata.

MINERALIZATION:

The following is a summary of the writer's impression of the mineralization found in similar rocks in southwestern Alberta:

> "Basically, the mineralization occurs in two principal ways: (1) as chalcopyrite, chalcocite, bornite, and malachite in greenish and white quartzites within the Grinnell and Appekunny Formations; (2) as very fine-grained, disseminated chalcopyrite and chalcocite in the chilled margins of basic sills and dikes. Small amounts of silver always accompany the copper mineralization.

> The first type of mineralization is more common and although usually of low grade, and confined to narrow beds, can be traced intermittently for large distances (as much as 5,000 feet) within a given bed. This type appears to be stratabound and occurs as finely disseminated copper sulphides and carbonates in thin quartzite beds. These beds are commonly separated by varying thicknesses of barren green and red argillites and siltstones. Local remobilization has produced such features as partial replacement of argillite fragments by chalcocite, coatings of chalcocite and bornite on fracture surfaces and local rich "blobs" of bornite in more intense fault and shear zones.
>
> The second type of mineralization has resulted from the accumulation of copper from surrounding sedimentary rocks during the intrusion of the basic sills and dikes. This type of mineralization seems to be confined to the margins of these intrusives, but it too may be traced intermittently for long distances."

In the areas prospected in southeastern British Columbia, the copper mineralization is similar to that found on the Alberta side but is dominently found in thin quartzite beds within the Grinnell Formation. Some mineralization was also found in the Purcell Lavas and in quartzites within the Siyeh Formation.

In general, the mineralization is more sporadic and of lower grade than that found in Alberta. The mineralized quartzite beds appear to be thinner (2-4") in the lower parts of the Grinnell. Thicker quartzite beds are found in the upper parts of the Grinnell but they are almost always barren. No mineralization was observed within the Appekunny Formation or in the intrusive diorite sills and dikes.

DESCRIPTION OF SHOWINGS:

(1) ROCHE CREEK PASS:

Minor disseminated chalcopyrite was found in Purcell Lavas near the summit of Roche Creek Pass. A zone 10 to 15 feet wide, traceable for 150 feet along strike, contains sporadic mineralization where the lavas are in contact with a small body of intrusive syenite. Two chip samples were taken across this zone; one assayed 0.02% Cu, 0.005 oz. Au, and trace Ag across 10 feet. The other sample, across a 15 foot width at a point 50 feet east of the first, assayed 0.01% Cu.

Detailed prospecting over a large area surrounding this zone revealed no further mineralization (see figure 147-4).

(2) KISHINENA CREEK AREA:

Prospecting here revealed scattered, spotty copper mineralization in thin quartzite beds of the Grinnell Formation. A 200 foot section contains 18 quartzite beds averaging 2 to 4 inches in thickness which are mineralized with disseminated chalcopyrite, bornite, and chalcocite in scattered blebs and disseminations. Thicker beds of red and green argillite which make up the balance of the section are completely barren. A quartzite bed may be mineralized over a 15-25 foot strike length and be barren for the succeeding 200 to 400 feet along strike. This particular section is traceable in part for over 1,000

feet along strike and the mineralization continues to be very low grade and erratic. A character sample was taken of the best mineralization in a 3 inch bed. This sample assayed 0.41% Cu (see figure 147-5).

A ten-claim group on Kishinena Creek, belonging to Kaiser Resources, was examined. The claims cover rocks of the Appekunny Formation and no mineralization was seen.

(3) ST. ELOI CREEK AREA:

Much of the Grinnell Formation at this location is covered by claims owned by Akamina Minerals Ltd. Again, the mineralization is confined to thin quartzite beds within red and green argillite of the Grinnell. The quartzite beds are thicker here (3-10") but mineralization is again spotty, disseminated chalcopyrite and bornite. A total of 22 quartzite beds were counted in a 200 foot section of Grinnell, all of which are mineralized from place to place along an 800 foot strike length. However, it is impossible to find a quartzite bed which is continuously mineralized for at least 200 feet along strike. A typical sample across an 8 inch mineralized bed assayed 0.24% Cu.

There are several diorite sills in this area; however, no copper mineralization was noted in any of them.

(4) SAGE CREEK AREA:

In this area, a 400 to 500 foot section of Grinnell could be traced intermittently for over a mile along strike towards Commerce Peak and for 500 to 600 feet southeast of Sage Creek. Although there are many thin quartzite beds in this section, very few are mineralized and these contain only scattered low grade copper mineralization.

A 150 foot long trench was blasted across a typical section of the Grinnell by Akamina in 1968, and a sketch of this was made (figure 147-7). This illustrates the fact that relatively few of the quartzite beds in the succession are mineralized in this area. A representative sample across a 4 inch mineralized bed assayed 0.08% Cu.

Outcrops of Purcell Lava and Appekunny quartzite were examined and contain no visible copper mineralization.

A small group of claims, about 1½ miles southwest of the location described above, is held by Kaiser Resources Ltd. These claims were prospected and found to be underlain by barren Appekunny and sandstones and quartzites.

(5) HARVEY CREEK AREA:

A 100 foot thick limestone bed of the Mount Head Formation was prospected for about 3 miles along strike. It is intensely stained

with limonite and carries as much as 2 to 3% pyrite throughout the length prospected. It was considered worthy of prospecting since a similar pyrite-rich limestone in the Salmo area carries silver values. A grab sample of this material assayed only a trace of Ag.

(6) COULDREY CREEK AREA:

A known occurrence of barite (shown on G.S.C. map) was prospected here to see if there were any sulphides with the barite. This area is underlain by the Phillips and Roosville Formations which are near the top of the Belt Series.

The barite occurs in a vein varying from 3 inches to 1 foot wide which carries some quartz but is barren of sulphides. Some float of Purcell Lava was seen here but none could be found in place.

(7) RABBIT CREEK AREA:

A road cut exposes float and outcrops (?) of Grinnell quartzite beds which carry minor disseminated chalcopyrite, chalcocite, and malachite. The area is heavily drift covered but a thorough search revealed some outcrops of Grinnell argillites with a few thinner beds of quartzite. One such bed which was about 4 feet thick, was mineralized over the top 16 inches with minor amounts of chalcopyrite and malachite. A representative sample across this 16 inches assayed .01% Cu.

This showing appears to be of little importance; however, it is interesting in that this is the only outcrop of Grinnell discovered outside the main Clark Range Synclinorium. It is found some 22 miles west of the main belt of mineralization and would seem to indicate that areas quite remote from the Clark Range--Waterton Lakes area may contain copper mineralization in the Grinnell or in units correllative with it (e.g., Revalli Formation in northwestern Montana).

(8) PHILLIPS CREEK AREA:

A group of claims (approximately 25) known as the Val and Bake group, owned by Mr. Ivan Baker of Elko, B.C., are underlain by sedimentary and volcanic rocks of the Siyeh Formation and Purcell Lava. This group was optioned by Cominco in 1966 and some bulldozer trenching and sampling was carried out.

Chalcopyrite, bornite, and malachite are found as disseminated grains, and massive blebs in quartz-filled fractures in quartzite beds of the Siyeh Formation. One mineralized bed, which is up to 12 feet thick, is exposed for about 160 feet along strike by trenches. A chip sample across 4 feet of this mineralized bed assayed 0.42% Cu. Two other quartzite beds (6' & 8' thick respectively) contain minor disseminated copper sulphides and carbonates but are only traceable for short distances (20' - 30') because of overburden cover. A second showing was found about 6,000 feet west of the main showing where heavy malachite staining

and minor disseminated chalcopyrite are visible over a 15 foot width. Some mineralized float was found between these two showings.

The quartzite beds at both these showings are closely associated with intermediate volcanics (see figure 147-11) and the mineralization appears to be quite different from that found in the Grinnell Formation to the east. It is predominently fracture controlled and the host sediments are quite altered and silicified.

This is the most interesting showing found in the Flathead area because of the widths of mineralization and the potentially large strike length. However, a more detailed examination would be required to fully assess its potential.

A barite vein was also noted on the Val and Bake group. It is exposed by old hand trenches for a distance of about 400 feet along strike. For most of this distance it varies between 6 and 18 inches in width, but at the southeasternmost pit, the vein swells to about 10 feet wide over a 30 foot strike length. It could not be traced any farther to the southeast. A small tonnage of high-grade barite was mined from this lense some years ago.

ECONOMIC POTENTIAL:

The copper mineralization found in the Belt Series in southeastern B.C. is similar to that found in the Clark Range--Waterton Lakes area of Alberta, although of lower grade and primarily confined to quartzites within the Grinnell Formation. This mineralization is very low grade and confined to narrow beds within larger thicknesses of barren rock. Therefore, it is not considered to have any economic potential at this time.

It is significant that similar mineralization was found at other exposures of the Grinnell some 22 miles west of the Clark Range Synclinorium where most of the Grinnell Formation and accompanying copper mineralization is known to outcrop. This fact, together with evidence that similar stratabound mineralization is found in correlative sedimentary beds (Revalli Formation) in northwestern Montana, indicates that perhaps similar copper mineralization might be found on the west side of the Rocky Mountain Trench in Canada (e.g., in the Belt rocks which outcrop west of the Kootenay River and north of the international boundary).

SUMMARY AND CONCLUSIONS:

1. A reconnaissance prospecting programme was carried out by a two-man team in the Flathead area of southeastern British Columbia for a one-month period during August and September, 1969.

2. Copper mineralization similar to that found in southwestern Alberta was encountered at a number of localities primarily in quartzite beds within the Grinnell Formation. At two other localities, copper mineralization was found in Purcell Lava and in quartzites in the Siyeh Formation.

3. Copper mineralization in Grinnell quartzites was found at a new location outside the Clark Range Synclinorium about 22 miles west of the main Grinnell outcrop area in British Columbia.

4. With the exception of the showings on the Val and Bake claims at Phillips Creek, none of the mineralization found is considered to have any economic potential. The mineralized beds on the Val and Bake claims, although of low grade, are interesting because of the larger widths and potentially large strike length. However, additional work would be required to fully assess the potential of this property.

RECOMMENDATIONS:

Because copper mineralization was found in Grinnell rocks outside the Clark Range Synclinorium, and since at least one such occurrence of some importance is known to occur on the west side of the Trench in Montana, some consideration should be given to prospecting those Beltian rocks found west of the Rocky Mountain Trench in south-eastern British Columbia.

Respectfully submitted,
VERSATILE MINING SERVICES LTD.

James M. Dawson

James M. Dawson, M.Sc., P.Eng.

APPENDIX A

REFERENCES

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APPENDIX B

ASSAY RESULTS

BONDAR-CLEGG & COMPANY LTD.

geologists • geochemists • analysts • assayers

1500 PEMBERTON AVENUE, NORTH VANCOUVER. B.C.

Phone 988-5315

CERTIFICATE OF ASSAY

TO Versatile Mining Services

Box 609,

KAMLOOPS, B.C.

Report Number: A-29-385

Date Rec'd: October 2, 1969

Date Complt'd: October 8, 1969

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu						TOTAL VALUE PER TON (2000 LBS.)
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
6126	.005	.18	trace		.02	ROCHE CREEK PASS					
6127	-		-		.01	ROCHE CREEK PASS					
6128	-		-		.41	KISHINENA CREEK					
6129	-		-		.01	RABBIT CREEK					
6130	-		trace			HARVEY CREEK					
6131	-		-		.42	PHILLIPS CREEK					
6132	-		-		.08	SAGE CREEK					
6133	-		-		.24	ST. ELOI CREEK					

NOTE:
Rejects retained two weeks
Pulps retained three months
unless otherwise arranged.

Gold & Silver values reported on these sheets have not been adjusted to compensate loses and gains inherent in fire assay methods.

Gold calculated at $ 35.00 per ounce

[redacted]

Registered Assayer, Province of British Columbia

APPENDIX C

WRITER'S CERTIFICATE

VERSATILE
MINING SERVICES LTD.
P.O. BOX 609, KAMLOOPS, B.C.

TELEPHONE 374-6263

CERTIFICATE

I, James M. Dawson, of Kamloops, B.C. hereby certify that:

1. I am a geologist residing at [redacted], Kamloops, and employed by Versatile Mining Services Ltd. of P.O. Box 609, Kamloops, B.C.

2. I am a graduate of the Memorial University of Newfoundland--- B.Sc. (1960), M.Sc. (1963), and a member of the Association of Professional Engineers of B.C. I have practised my profession for six years.

3. I am the author of this report which is based on the results of a regional prospecting programme, as well as the study of various reports and maps.

4. I have no beneficial interest in United Bata Resources Limited (N.P.L.) or any of the properties discussed in this report, nor do I expect to receive any.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. M. DAWSON

VERSATILE MINING SERVICES LTD.

James M. Dawson

James M. Dawson, M.Sc., P. Eng.,
Geologist

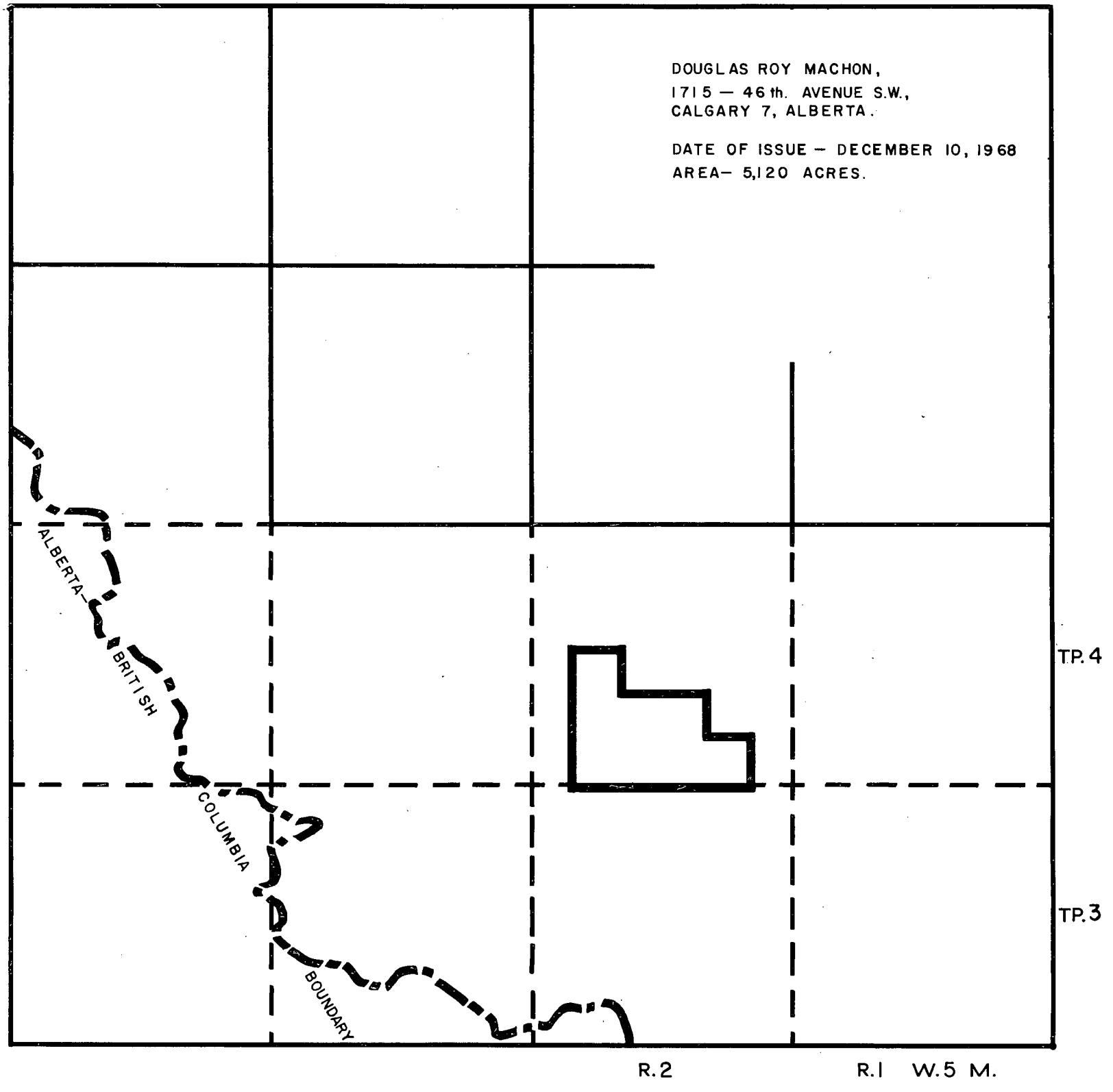
November 24th, 1969
Kamloops, B.C.

APPENDIX D

MAPS

(82G/8)

QUARTZ MINERAL EXPLORATION PERMIT No. 72



QUARTZ MINERAL EXPLORATION PERMIT No. 72