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CANADIAN EXPLORATION LTD.

PRELIMINARY REPORT

ON THE

GEOLOGY AND ORE DEPOSITS

OF THE

H.L.M. PROPERTY

HARRISON LAKE, B.C.

By

H. W. Hendry,

Geologist,

April 2nd, 1939.

(I think reasonably well of Hendry's work)

SKETCH
of
MAIN SHOWINGS

SCALE 1" = 200'

May 2nd 1938

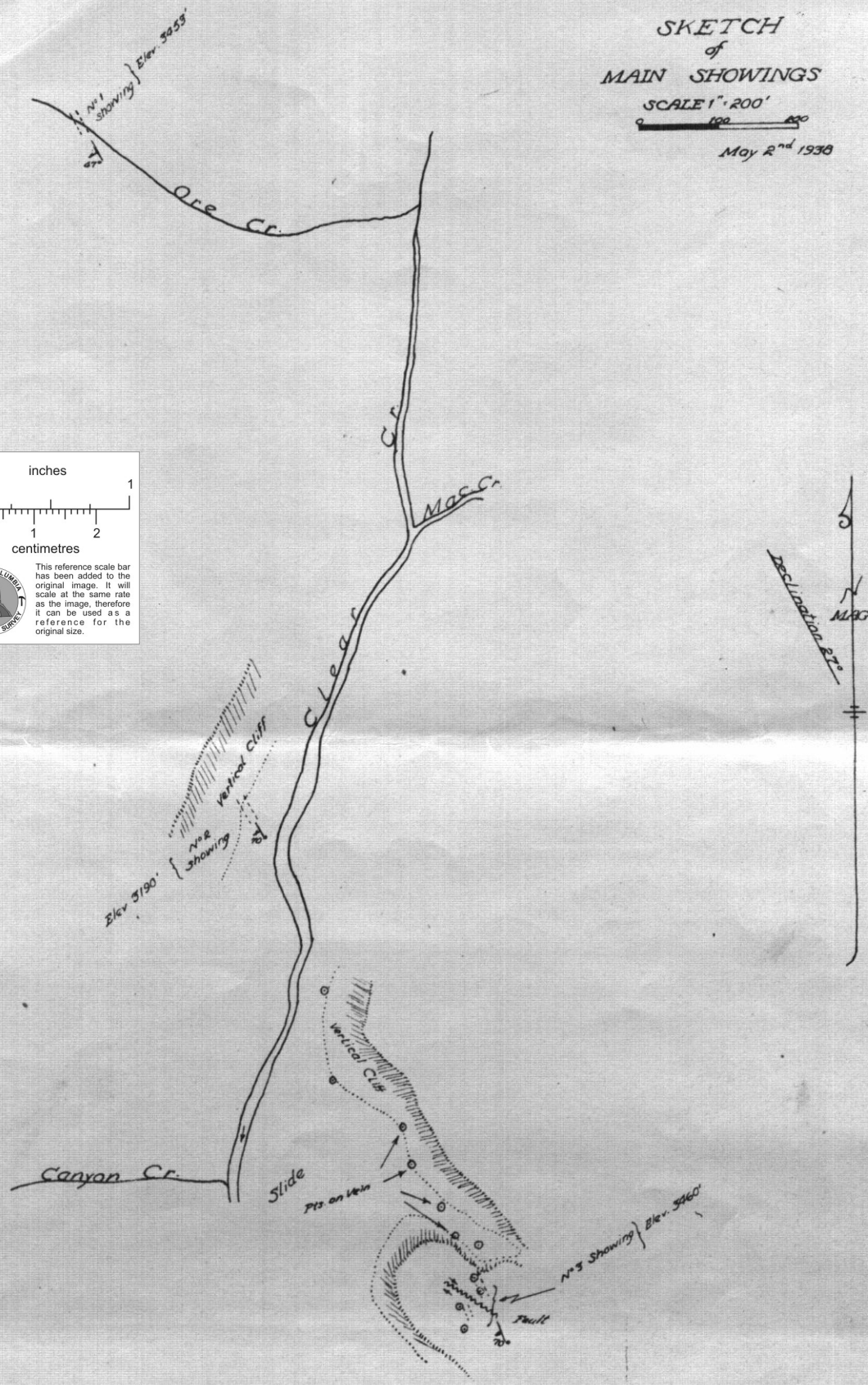
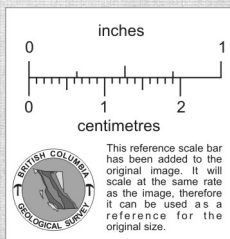


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REPORT ON THE GEOLOGY AND ORE DEPOSITS OF THE

H.L.M. PROPERTY, HARRISON LAKE, B. C.

INTRODUCTION:

A general preliminary report on the H.L.M. Property was submitted on November 12th, 1937. The reader is referred to this report for: topography, size, location of property, etc.

This report deals with the work completed on the property up to April 27th, 1938.

As a result of snow conditions it has been impossible to do more than uncover the showings at the most accessible points and to map the geology at the lower elevations, on the property.

DESCRIPTION OF WORK DONE:

The work that has been done on the showings consists chiefly of the removal of snow from points where the vein was previously known to exist. Hand drilling and blasting was done at only one point on the vein.

At the point marked No. 1 showing (on Map No. 1) the snow was removed for a distance of approximately 30 feet along a mineralized quartz vein. Open cuts were made to uncover the vein some 20 feet on either side of the above cut but it was not picked up as an abnormal amount of snow made the determination of the exact position of the vein impossible.

At the point marked No. 2 showing (on Map No. 1) snow was removed to expose a 50 foot section of a mineralized quartz vein. It was impossible to trace the vein any further in either direction as, to the north-west it goes almost vertically up a 250 foot cliff, while to the south-east it is covered by Clear creek and a large rock slide. (bearings magnetic).

At the point marked No. 3 showing (on Map No. 1) snow was removed from a section of the vein for some 15 feet south-east from the edge of the bluff. At this point in the vein it appeared that the molybdenite had been oxidized leaving a greyish white material in cavities or "vugs" in the quartz. In order to obtain some depth on the vein and determine whether this was so, several shots were put in. The depth obtained was approximately 4 feet; the apparent oxidation of the molybdenite was still present at this depth.

A second cut was made to uncover the vein about 10 feet further to the south-east. No shots were put in at this point.

Two more cuts were made to uncover the vein at 10 and 25 feet, respectively, from the above cut. Some difficulty was met with in finding the vein in the first of these cuts as a fault has produced a shift of about 30 feet. The vein was not encountered in the second of these cuts, probably because of further faulting.

No attempt was made to uncover the showings marked No. 4 and No. 5 because of abnormal snow conditions and slides.

No systematic method of geological mapping could be adopted because of the small number of rock outcrops exposed. Thus the geology should be considered quite preliminary and subject to change. The geology was "tied in" to survey lines on the property.

DESCRIPTION OF SHOWINGS:

No. 1 Showing

This showing is located on Ore creek (see location on Map No. 1). Directly in the creek the mineralized zone is approximately 30 inches in width and consists of 3 quartz stringers, 11, 3 and 2 inches wide respectively. These stringers occupy fractures in a highly altered rock, at this point, probably a mica schist.

These veins are all mineralized with molybdenite, it being present in the form of solid bands, which occupy fractures in the quartz itself and also between the quartz and the wallrock; in places the bands attain a width of 1/2 inch, though they are usually about 1/4 of an inch wide. It is apparent, however, that the fracturing of the quartz was the controlling factor in the formation of the molybdenite bands, there being no mineralization at points where the quartz is not fractured or not free from the wallrock.

The 11 inch vein is the most highly mineralized, having bands of molybdenite from 1/4 to 1/2 inch wide along its walls. These appear to be fairly persistent along both walls in the length of the vein exposed. The two narrow stringers are mineralized in a similar manner, though the bands are not as wide nor nearly so uniform in their distribution as in the 11 inch vein.

No. 2 Showing

This showing is located on Clear creek approximately 260 feet below No. 1 (see Map No. 1). It consists of a quartz vein which might be distinctly a separate vein or a faulted portion of that at No. 1 showing; it has approximately the same strike and dip as the above described vein and has a width varying from 1 to 3 feet.

The vein at this point is fairly well mineralized with molybdenite. It would appear, however, that the narrow parts contain as much mineral per square foot of cross section as the wider portions. In other words there were just as many fractures produced in the quartz at its narrowest portions as at its widest, these being subsequently filled with molybdenite.

The molybdenite occurs in narrow bands which occupy fractures in the quartz. On the footwall side of the vein, for a width of approximately 2 inches, these bands are very closely spaced giving an especially high grade portion of mineralization. Some bands are also present

on the hanging wall side of the vein, with little or no mineralization in the central part. No molybdenite is present between the quartz and the wallrock.

Considerable movement has taken place in the quartz in a direction parallel to the plane of the vein both before and after mineralization. The first is indicated from the presence of the fracture bands of molybdenite and the second is evidenced by the slickenside effect produced along the planes of these mineralized fractures.

The vein at this point cuts a biotite granite, to be called "A" type granite.

No. 3 Showing

This showing is located on the east side of Clear creek approximately 270 feet above the elevation of the creek. It is the extension to the southward of the same vein described at No. 2 showing.

At the point on the bluff, above the creek, where the lead outcrops it is about 2½ feet wide. It appears to be very barren on the surface. However, occupying cavities or "vugs" in the quartz is a soft greyish white material which was thought to be an oxidation product of the molybdenite in that minute flakes of molybdenite were sometimes present around the borders of these "vugs". This material failed to react to any tests for molybdenum and its determination has not been made, to date.

The bands of molybdenite are present in the vein at this point but occupy only a very narrow zone in the quartz. Also the molybdenite occurs in a very fine form, being so fine in places that its presence is indicated only by a blue coloring of the quartz; it is consequently low grade when taken across $2\frac{1}{2}$ feet. The vein is "frozen" to the wallrock and as a result no mineralization is present along the walls of the vein.

The vein continues along its strike for about 25 feet from the edge of the bluff and is then faulted to the westward some 30 feet. The fault strikes approximately south 50 degrees east (mag.). It is quite probable that the vein has been faulted again as it was not picked up in an open cut only 30 feet further to the southward.

As the vein is traced to the south along its strike, the mineralization continues to be of a very fine character and low grade.

In the total distance uncovered the vein varies from 1 - $2\frac{1}{2}$ feet.

This showing is located close to the contact of the two granite types.

No. 4 Showing

This showing is located in Young creek (see Map No. 1) approximately 250 feet east of Clear creek. It consists merely of a narrow stringer of quartz, well mineralized with molybdenite. It strikes nearly parallel

to Clear creek. No work was done at this point.

No. 5 Showing

This showing is located on Brown creek (see Map No. 1) about 1000 feet west of Clear creek. It consists of a series of parallel quartz stringers, which strike north 85 degrees west (mag.).

In a width of 8 feet, at one location, there are 4 parallel quartz stringers which average from 4 to 5 inches. Two of these are well mineralized with molybdenum which occur as bands along the sides of the stringers. The other two stringers are not mineralized at the point examined but might contain some mineralization at other points along their strike.

Another stringer, with the same strike as the above series, occurs about 50 feet farther up Brown creek and apparently belongs to the same fracture system. The molybdenite occurs in bands along the walls of this stringer.

These quartz stringers occupy fractures in the belt of schistose rocks on the west side of Brown creek. They do not appear to be present in the acid granite on the opposite side of the creek.

Miscellaneous Showing

Besides the above described showings there are many narrow quartz seams well mineralized with molybdenite occupying fractures in the various rock types. These stringers are of interest only in that they show the degree of mineralization in the area. In the vicinity of No. 3

showing, cutting the biotite granite, and up Brown creek these stringers are especially abundant.

GENERAL GEOLOGY:

The area mapped, to date, is overlain by a series of igneous intrusive rocks, chief among which is granite.

From the following field evidence it is apparent that there are two ages of granite in the area, one being intrusive into the other -- for convenience they will be termed "A" and "B" granite.

1. "A" has a typical banding or gneissic structure formed as the result of metamorphism while "B" is fresh and completely unaltered.
2. "A" is more basic in composition, and contains a fairly high percentage of biotite -- also some hornblende was observed in some specimens -- whereas "B" contains very minor amounts of biotite and no hornblende; biotite is entirely lacking in some specimens.
3. In "A" the feldspar is chiefly a white plagioclase while in "B" it is chiefly a buff orthoclase.
4. "A" contains a much lower percentage of quartz than "B"
5. Some of the quartz veins observed appear to have their source in "B" and to occupy fractures in "A".

From the fact that "A" is gneissic and that it appears to be the host rock for the molybdenum bearing quartz veins it is considered to be the older granite and "B" is considered to be intrusive into it.

"A" GRANITE:

This granite is a medium grained, greyish colored rock. Although classified as a granite it probably varies from a granite to a grano-diorite and at some points even to a diorite. The main constituent minerals of the rock are quartz, feldspar and biotite mica, the latter mineral constituting roughly 25 per cent of the total.

This formation has been metamorphosed as evidenced by the banding of the biotite mica and the altered appearance of the minerals in some of the specimens; the metamorphism has, however, varied greatly in intensity at different points. It overlies the largest part of the area mapped and extends on both sides of Clear creek from Canyon creek to the north (mag.)

"B" GRANITE:

This granite is a medium grained buff colored rock consisting chiefly of quartz and feldspar with minor amounts of biotite mica. Specimens were also observed in which molybdenite occurs as a constituent mineral of the rock. This formation does not appear to have suffered any alteration.

"B" granite extends on both sides of Clear creek from Brown to Canyon creek. It appears to occupy a relatively narrow zone in a north-south direction.

BELT OF SCHIST:

Extending on both sides of Clear creek between slide and Brown creeks and forming the southern boundary of the "B" granite, is a belt of highly metamorphosed granitic and dioritic rocks. Generally these rocks are medium to fine grained with a characteristic external banding effect produced, in part by jointing and an internal schistose structure. This banding and schistosity strikes from south 60 degrees east to east-west (mag.). It is thought that these rocks were metamorphosed as a result of the intrusion of "B" granite.

DYKES:

Dykes are numerous in the area and cut the "A" granite and the schistose rocks. None has been observed cutting the "B" granite. The types present are pegmatite, aplite, and quartz porphyry.

The pegmatite dykes observed vary in width from several inches to several feet. They are coarse grained and the constituent minerals are quartz, feldspar and minor amounts of mica. All the pegmatites observed are intrusive in the schistose formation.

Aplit. dykes are numerous both in the schistose

rocks and in "A" granite in the vicinity of No. 2 showing. They do not appear to have any common direction of strike and vary in width from one to several feet. They are fine grained and light buff in color.

Narrow quartz seams mineralized with molybdenite and occupying fractures in the aplite were noted in several instances.

Quartz porphyry dykes were observed intruding "A" granite and the schistose rocks. In some cases they appear to be upwards of 25 feet in width. The dyke rock consists of medium to large phenocrysts of quartz and quartzite in a fine grained brownish colored groundmass.

Quartz seams mineralized with molybdenite were also observed in a porphyry dyke on Canyon creek.

A large quartzite dyke, mineralized with white iron, is present on both sides of Clear creek, extending up Power creek to the east and Slide creek to the west. Its width is over 30 feet. It has been traced for a horizontal distance of over 1/2 a mile and no doubt extends much further.

ORE DEPOSITS:

The only mineralization which appears to be of interest at the present time is that of the quartz veins. Molybdenite has been observed as a constituent of the younger granite but not nearly in any sufficient quantity

to be economic. Also some of the dykes in the area contain some molybdenite, not as a constituent of the rock, but in tiny quartz seams which occupy fractures in the rock. As far as observed these are of no economic interest.

In the quartz veins the molybdenite occurs, chiefly, in bands parallel to the strike of the vein. These bands vary from ~~bands~~ 1/2 inch in width along the walls of the vein to minute seams in the quartz itself. Only a very small amount of molybdenite occurs as impregnations in the quartz and this at only one or two points in the veins.

That the molybdenite occurs as disseminations in "B" granite, as a constituent mineral would suggest that this granite was the probable source of the molybdenite mineralization in the area. Also, the quartz veins known to date mineralized with molybdenite, appear to have their origin in the "B" granite.

Sampling and general observation indicate that the grade of mineralization in the main vein increased in a north-west (mag.) direction from No. 3 showing, or in other words increases in a direction away from the probable source of the molybdenite, namely the "B" granite. The vein at No. 3 showing is located either in the "B" granite or very close to it and is almost barren of any mineralization, whereas at No. 2 showing the

mineralization is of a much higher grade. It is probable, then, that the grade of mineralization will be still higher to the north-west (mag.) of No. 2 showing.

No direct proof has been obtained in the field of a definite fracture system in the area though topographic conditions appear to indicate the presence of such a fracture system.

The presence of a canyon with almost vertical walls some 250 feet high on Clear creek would suggest a large fault zone, though no displacement along the creek is in evidence. Also the canyons in which Brown, Slide and Power creeks flow would suggest similar conditions of fracturing, they being in a north-west, south-east direction or in line with the Coast Range Batholithic structure. However, until further work is done it cannot be determined whether or not these topographic features are related to any structural conditions in the area.

SAMPLING:

Five samples were taken at points where samples had not been previously taken. These samples can be considered representative of the parts of the vein from which they were taken.

<u>Sample</u>	<u>Location</u>	<u>Width</u>	<u>Weight</u>	<u>Gold</u> ozs/ton	<u>Molybdenum</u> %
No. 1	No. 5 showing approx. 40' from bluff	12"	4 lbs.	0.02	0.2
No. 2	No. 5 showing approx. 30' below edge of bluff on cliff side	14"	9 lbs.	0.02	trace
No. 3	No. 5 showing approx. 20' below point where No. 2 sample was taken	14"	4 lbs.	trace	0.2
No. 4	No. 2 showing approx. 40 ft. above Clear Creek	16"	5 lbs.	0.01	1.7
No. 5	No. 2 showing approx. 30 ft. above No. 4	12"	40 lbs. cut to 9 lbs.	0.01	0.9

RECOMMENDATIONS

It is recommended that further stripping be done to the north-west (mag.) on the veins exposed at No. 1 and 2 showings and that examination work be done in the vicinity of No. 5 showings.

Also that the "E" granite zone, and especially the contacts of the "D" granite and other formations in the area be thoroughly prospected.

Respectfully Submitted
April 2nd, 1938
H. W. J. Hendrick