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REPORT

on

GEOLOGY OF

Mo CLAIM GROUP

92-F

for

HOGAN MINES LTD.

by

CORDILLERAN EXPLORATION CORPORATION LTD.

May 10, 1967.

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INTRODUCTION

This report summarizes the results of geological mapping carried out by J.M. Dawson of Cordilleran Exploration Corporation Ltd. during the period of April 10 to 22, 1967, on the "Mo" Claim Group, St. Vincent Bay, for Hogan Mines Ltd.

About 15 of 46 claims were geologically mapped and prospected. The results of this work are shown on the enclosed 400 scale plan.

Mapping control consisted of pace and compass traverses and a 1" = 400' scale topographic base map prepared from air photographs. Lateral distortion of several hundred feet was noted on the base map.

Detailed geological notes are included in Appendix "A".

SUMMARY AND CONCLUSIONS

Geological mapping has demonstrated that the property is entirely underlain by batholithic intrusive rocks. These are divided into three distinct units, or phases, as follows:

(1) Medium to fine grained diorite (1st phase).
(2) Medium to coarse grained quartz monzonite (3rd phase).
(3) Fine grained aplitic rock (2nd phase) - quartz diorite to quartz monzonite in composition, with coarse patches of quartz monzonite and granodiorite.

The genetic relationship of these rocks is given in Appendix "A".

Unit (3) is mineralized with MoS_2. It occupies parts of claims #4, #5, #6 and #41 in an area 2000' x 3500' which is oriented NNW. Geochemical work done in the area suggests that MoS_2 may occur in other units. However, examination of outcrops strongly supports the notion that rock Unit (3) is the principal control of mineralization. Molybdenite occurs primarily as coatings and veinlets in a steeply inclined fracture system that has a trend of 340° T. Intrusive unit 3 is abruptly terminated in the SE direction and appears to be pinching out northwestward. However, 1/2 mile northwest, across Brooks Lake Valley, it has been found on Claims Nos. 40 and 21.

Mapping has clearly defined the MoS_2 mineralization in terms of a zone and geological control. It will now be necessary to sample the zone as it is presently known and investigate possible extensions to the northwest.

RECOMMENDATION FOR FURTHER WORK

1. Sample the mineralized zone as it is presently known by boring a section of large diameter diamond drill holes approximately along a line extending from the NE to the SW corner of Claim #6.

2. Do broadly based prospecting, geochemical sampling and geological mapping to investigate possible extensions of the mineralized zone to the NW.

Respectfully submitted,

CORDILLERAN EXPLORATION CORPORATION LTD.

Albert F. Reeve, P. Eng.

A P P E N D I X "A"

GEOLOGY NOTES

APPENDIX "A"

GEOLOGY NOTES Mo CLAIM GROUP

HOGAN MINES LTD.

by

J.M. Dawson

Cordilleran Exploration Corporation Ltd.

General Outline of Geology

The area is underlain by intrusive rocks of the coast crystalline belt. They are generally considered to have been intruded in Late Cretaceous and earlier times. A mass of older, predominantly dioritic rock (1) is intruded by a body of medium to coarse grained granitic rock (2) which varies from quartz monzonite to granodiorite in composition. A fine grained phase of the more acid rock is found in some places near the contact between the diorite and quartz monzonite - granodiorite. This fine grained rock (3) is intimately associated with irregular tongues and blobs of coarser grained material varying from quartz diorite to quartz monzonite in composition. The molybdenite mineralization seems to occur predominantly along fracture planes and in quartz veins within this fine grained phase of the quartz monzonite.

Detailed Geology

(1) The dioritic rocks vary from medium to fine grained types. The dominant mafic mineral is hornblende and no quartz is visible. No gneissosity or foliation was observed. There are some zones of alteration in the diorite, particularly near faults or shears. The hornblende is sometimes converted to shreds of biotite and chlorite and a pinkish staining of the feldspars also occurs. Pyrite is found in these rocks in zones of intense fracturing.

(2) The quartz monzonite is best exposed along the beach (Mo claims #10, 12, 14, 16). It is a medium to coarse grained leucocratic rock, generally containing 20 - 30% visible quartz. The dominant mafic mineral is biotite; however, hornblende is important locally. Generally the rock seems very fresh and unaltered, although it is cut by faults and numerous basic dykes. Several blobs of dioritic rock were observed as zenoliths within the quartz monzonite. Also inclusions or "phases" of a felsite porphyry were seen within this rock type. In the localities where hornblende becomes the main mafic constituent, the amount of visible quartz decreases to a considerable extent.

* (3) The aplitic rock, or fine grained phase of the quartz monzonite occupies an elliptical zone about 4000 feet

*MoS_2 bearing

long and up to 2000 feet wide, trending approximately 330° T. This zone appears to pinch out to the southeast. However, to the northwest similar rocks are found on the opposite side of the Brooks Lake Valley in the area covered by Claims Mo Nos. 40 and 21. The aplitic rock is generally fine grained to aphanitic in texture and is usually greyish in colour. In places it looks porphyritic with the development of larger crystals of feldspar. The texture sometimes appears trachytic due to the development of long needle-like crystals of hornblende. There are many irregular masses or "phases" of coarser grained rock intimately associated with the aplite. They vary somewhat in composition but are usually quartz deficient. These coarser grained blobs generally show some kind of alteration - i.e. chloritization of mafics and pinkish or greenish discoloration of feldspars. In some places mafic minerals are virtually absent and the rock is composed primarily of pink-coloured feldspars. On its northwest side the aplite grades over about 50 - 100 feet into medium grained quartz monzonite.

All the rocks in the map area are cut by numerous basic dykes. They are best exposed along the shore of St. Vincent Bay where sometimes they comprise over 15% of the exposed outcrop. They range from a few inches to over 30 feet in thickness and nearly always trend north to northwesterly. They are generally fine grained and greenish black

in colour; some are porphyritic in part, the phenocrysts being plagioclase. Some of the outcrops along the roads are poorly exposed but seem to contain irregular masses of fine grained, greenish rock. Upon close inspection these are seen to be faulted fragments of basic dykes. No greenstone remnants or pendants were seen in the map area. A few fine grained, dense, pink felsite dykes also cut the earlier rocks.

Structure

The dominant structural trends appear to strike between 0° - 330° T. Most of the major faults as well as nearly all the basic dykes trend in this direction. One of the two main joint sets follows this trend as well. Most of the fractures and/or quartz veins carrying molybdenite mineralization are seen to trend in this direction. The two major joint sets appear to trend (1) 340° T/ steeply dipping and (2) 260° T/ steeply dipping. There also appears to be two other sets which are fairly strongly developed on the property (3) 115° - 135° T/ moderately SW (4) 050° - 035° T/ moderately SE. In addition there are many other fractures and minor shears which do not appear to follow any simple pattern. Fracturing is more intense in some areas than in others and often varies a great deal from place to place in a single outcrop area. Where outcrops are

better exposed - e.g. trenches and road cuts, more fractures are seen than are exposed on a weathered surface. For these reasons it does not seem possible to make an accurate statistical analysis of the total amount of fracturing from point to point within the map area. There are at least two major faults and many others of smaller magnitude. The amount of displacement cannot be determined, so size is estimated by the amount of topographic expression - i.e. linears, or width of the faulted or sheared zone. Many of the smaller faults have 1 - 2" of crushed material between their walls. The most prominent fault zone is found along the lower road near the east-west boundary between claims Mo #6 and Mo #8. This fault zone appears to be at least 300 feet wide and consists of many en echelon faults offset about 30^{o} from the trend of the zone. Mineralization appears to be later than this faulting since molybdenite is found in two quartz veins cutting across the shattered and faulted rock.

Mineralization

The mineralization consists of pyrite and lesser amounts of molybdenite which occur as (1) thin smears along fault walls, (2) coatings or crusts along joints and minor fractures, and (3) irregular streaks and larger disseminated blebs in quartz veins. At one place molybdenite was observed in small pea-shaped blebs scattered thmugh a pinkish felds-

pathic rock, in an area about 1 foot by 6 inches. Pyrite is much more common than molybdenite and can be in about 75% of the fracture planes seen in the mineralized zone. Small amounts of chalcopyrite were observed in a few spots; however, it is so fine grained that it is difficult to distinguish it from pyrite. Malachite staining was noticed in about five locations. Traces of yellow molybdic ochre are more common than malachite along fracture surfaces. Magnetite was seen in a few places and is so fine grained that it might be confused with molybdenite. Most of the molybdenite was observed along road cuts or in trenches. It is only rarely found on the weathered surface of an outcrop. The visible evidence of mineralization on weathered surfaces consists of limonitic crusts along the traces of fractures or shears and limonite and pyrite in quartz veins. The MoS_2 mineralization seems to prefer the greyish aplite more than the quartz monzonite or diorite. The only times it is found in these rocks is when they are closely associated with the aplite.

Most of the occurrences of MoS_2 were noted along north to northwest trending (steeply dipping) fractures or faults. It also occurs in quartz veins which fill fractures trending in this direction (maximum thickness of quartz veins - 5 inches). To a lesser extent it occurs as fracture fillings and in quartz veins along other less prominent joint directions. In only one case was MoS_2 seen as disseminated

blebs within the host rock.

Most of the MoS_2 occurrences were seen along 340° trending fracture planes. These are best developed and the lower road runs approximately along strike in this direction. The rock tends to break more easily in this direction and consequently this plane (or planes) is exposed to best advantage. In the outcrops which have trenches, molybdenite can usually be seen where the rock has been freshly exposed and little evidence of it can be seen on the weathered surface. It is also possible that the MoS_2 along some planes has been leached out and carried away by ground water. For this reason it would be very difficult to estimate grade even by bulk sampling of surface exposures.

Summary of Geological Events

The sequence of events appears to have been as follows:

1) Emplacement of the dioritic mass.

2) Intrusion of the aplite just before the emplacement of the main body of quartz monzonite.

3) Intrusion of the quartz monzonite into the diorite and aplite, with many tongues and blobs cutting the main body of aplite.

4) Formation of the N to NW trending joints and faults.

5) Intrusion of the basic dykes along many of the N to NW trending fractures.

6) Formation of the 260° trending fractures and faults, displacing many of the dykes; formation of other less important fractures and some movement along the 340° trending faults.

7) Introduction of pyrite, molybdenite and chalcopyrite with some silica along joints and faults.

8) Later movement along previously formed fractures and faults.

A P P E N D I X "B"

GEOLOGY MAP

1" = 400'

Mo. Nº 1
Mo. Nº 2
Mo. Nº 3
Mo. Nº 4
Mo. Nº 5
Mo. Nº 6
Mo. Nº 7
Mo. Nº 8
Mo. Nº 9
Mo. Nº 10
Mo. Nº 11
Mo. Nº 12
Mo. Nº 13
Mo. Nº 14
Mo. Nº 15
Mo. Nº 16
Mo. Nº 19
Mo. Nº 20
Mo. Nº 25
Mo. Nº 26
Mo. Nº 27
Mo. Nº 28
Mo. Nº 29
Mo. Nº 30
Mo. Nº 41
Mo. Nº 42
Mo. Nº 43
Mo. Nº 44
Mo. Nº 45
Mo. Nº 46

BROOKS LAKE

ST. VINCENT BAY

LEGEND

- ATTITUDE OF FRACTURES — INCLINED, VERTICAL
- FAULT
- OUTCROP AREA
- TRENCH
- GEOLOGICAL CONTACTS

MINERAL OCCURENCES

Py.	PYRITE
Cpy.	CHALCOPYRITE
Mo.	MOLYBDENITE
Mag.	MAGNETITE

- 1200 CONTOUR INTERVAL 100'
- ROAD
- DOZER CUT
- TRAIL

① MEDIUM TO FINE GRAINED DIORITE — MASSIVE, UNFOLIATED, CONTAINING FEW INCLUSIONS OF OLD ROCK — CUT BY BASIC DYKES.

② MEDIUM TO COURSE GRAINED QUARTZ MONZONITE — VARYING IN COMPOSITION TO GRANODIORITE, CONTAINING SOME SMALL PATCHES OF FELSITE PORPHYRY AND XENOLITHS OF DIORITE. — CUT BY NUMEROUS BASIC DYKES.

③ FINE GRAINED APLITIC ROCK — VARYING FROM QUARTZ MONZONITE TO QUARTZ DIORITE IN COMPOSITION AND CONTAINING MANY IRREGULAR PATCHES OF COURSER GRAINED QUARTZ MONZONITE AND GRANODIORITE. PROBABLY AN EARLIER PHASE OF (2) MOLYBDENITE BEARING.

NOTE: TOPOGRAPHIC BASE MAP BY LOCKWOOD SURVEY CORP. LTD.

inches
centimetres
This reference scale bar has been added to the original image. It will scale correctly only if the image, therefore it can be used as a reference for the original size.

HOGAN MINES LTD.

GEOLOGY MAP

Mo CLAIM GROUP

SCALE: 1" = 400'

BY CORDILLERAN EXPLORATION CORPORATION LTD.

VANCOUVER, B.C. BY J.M.DAWSON

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — A. F. REEVE