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GEOLOGICAL AND GEOCHEMICAL REPORT

on the Cassiar Moly Property - Liard Mining Division, B.C.

INTRODUCTION

The Rusty, Daphne and Hazel groups of claims are owned by Value Line Minerals Ltd. of Calgary, Alberta. For the purposes of this report, the area is referred to as "Cassiar Moly."

Detailed geological mapping and soil sampling was carried out by Associated Geological Services personnel in July and August, 1967 in an area of approximately 6 square miles.

LOCATION, ACCESSIBILITY AND TOPOGRAPHY

The claims are located within north latitudes 59° 12' and 59° 14' and west longitudes 129° 47' and 129° 56', 6 miles south-southwest of the town of Cassiar in the Liard Mining Division. They are situated immediately south of Lang Creek, a tributary of Dease River.

Access is afforded easily by excellent, all-weather gravel road, from Watson Lake, a distance of 100 miles and thence by an old logging road for a distance of 4 miles, then by new access road 3 miles to the property. Watson Lake, at Mile 635 Alaska Highway, is served daily by CPA from Vancouver, B. C. and Edmonton, Alberta. It is also the outfitting and supply centre of the area. In the latter part of the period, 2.5 miles of access road from the camp to some of the molybdenite occurrences and the southern part of the property was completed.

Topography in the property is rugged and the relief ranges from 3500' to a maximum of 7200'. The topographic features resulting probably from limited alpine glaciation are cirques, sharp ridges and spines.

PROPERTY

Cassiar Moly property consists of the following mineral claims (Figure 2):

Eloise No's 3 - 12	Daphne No's 5, 6, 7, 9
Rusty No's 1 - 12	Hazel No's 1 - 31, 33, 35
Tail No's 1 - 16	X No's 1 - 10, 13 - 22, 25 - 32 34 - 36

In the latter part of period some of the claims were abandoned and restaked as shown in Figure 3.

HISTORY

The area referred to as the Cassiar Moly property, comprises of 106 mineral claims, roughly 6 square miles, embracing the area south of New Jersey Zinc's copper and molybdenum property. A location map is shown in Figure 1. The first important discovery outside the map area is a copper-molybdenum deposit on the property of New Jersey Zinc. This deposit has been explored by several geophysical methods, trenching and several thousand feet of diamond drilling. However, conclusive results have not been drawn yet from the trenching and diamond drilling on the property.

Value Line Minerals Ltd interest in the area started in the latter part of 1966. Property examination was made by Mr. H.W. Agnew shortly after the discovery of some molybdenite occurrences in several parts of the area and staking of more claims has been continued since then.

FIELD METHODS

Geology -

Rock types on the property and immediate vicinity were mapped using provisional map sheet No. 104 p/4 printed by the Department of Mines from air photographs (1.25" = 1 mile).

A map with a scale 1" = 400' (Figure 4) was made in the claim area and the geology was plotted. A baseline running E-W was laid out in the southern portion of the property. Horizontal control consisted of a combination of nylon chain and compass surveys around the outcrops and mineral showings and pace and compass traverses for areas prospected outside the property. Corrected barometer readings for vertical control were used.

Ten molybdenite showings were cleaned out and chip sampled. Copco rock drill cuttings (dust of about 80 mesh) driven normal to the dip of pegmatite quartz-veins of about 3' deep were also collected and submitted for assays.

Geochemical Soil Survey -

Traverse lines were laid at right angles to the base line, 200 feet apart. Soil samples at depths 6 - 14 inches were collected by means of shovel at 100 foot intervals. Most of the samples consisted of rusty disintegrated rock. The soil profile was very poorly developed.

Grid layout and assay results are plotted on Figure 4.

GEOLOGICAL SETTING

H. Gabrielse (1960) gives the following introduction to the general geology of the area:

The consolidated rocks in the Cassiar area consist of argillite and slates of the Atan group of lower Cambrian Age. Intrusive into them are the Cassiar Intrusions mostly porphyritic granite, granite and quartz monzonite of Jurassic and/or Cretaceous age. Cutting these intrusive rocks are quartz latite, aplites, pegmatite quartz veins and related acid dykes. A thick deposit of gravel, talus and morraine obscures the bedrock over large areas, and as a result most good exposures are confined to higher elevations.

LOCAL GEOLOGY

Figure 4 is a detailed geological map showing the major features of the property.

The oldest rocks, argillites and slate, members of the Atan group (after Gabrielse) of lower Cambrian age were mapped in the northeastern part of the area. They are thinly banded, fine grained, cherty and easterly dipping. Near the contact with the Cassiar intrusives, they are intrusively metamorphosed to skarn and hornfels.

Granite and porphyritic granite of the Cassiar Intrusions underlie the greater part of the area mapped. The rocks are coarsely crystalline, pinkish grey and essentially made up of pink feldspar, plagioclase, quartz and biotite. Hornblende is a relatively minor mafic mineral. Porphyroblasts of pink feldspar (probably orthoclase) as much as 2 inches in length were noted locally in the granite and near contacts with sedimentary rocks. In some instances the pink feldspars and quartz phenocrysts are predominant and the ground mass is subordinate making it appear like a granite porphyry. In

addition to this, dark, siliceous inclusions (dioritic rock) were noted in several places. These inclusions comprise roughly equidimensional, homogeneous bodies, commonly circular in section, and generally less than a foot in diameter and consisting essentially of plagioclase, hornblende and biotite.

Localized along the eastern and western borders of the quartz latite are relatively thin bodies of coarsely crystalline quartz monzonites. They are white to pink, medium grained consisting essentially of 3 mm. to 1/2 inch phenocrysts of potash feldspar, plagioclase, and quartz in a matrix of quartz, feldspar and minor sericite. Mafic minerals are generally lacking except for a border zone with a fair percentage of biotite at the northeast end of the Rusty Group of claims. This rock type grades with increasing size of phenocrysts, into granites. This rock is probably a less altered phase of granite.

Intrusive into the granite and apparently confined to the central part of the property is a quartz latite stock. It is elongated in a north-south direction, measures 800 feet in width in the northern appendage and about 200 feet in the south over a length of approximately 2000 feet. The quartz latites are fine to medium grained, aquigranular rocks, containing about equal amounts of orthoclase, plagioclase and quartz with minor biotite and/or hornblende. In most cases they are host to molybdenite, chalcopyrite and magnetite mineralization in varying amounts.

Acidic dykes (aplite) and pegmatite quartz veins are common throughout the area and intrude all the rock types mapped. They range from a few inches to 14 feet in width.

Acidic dykes are abundant in the metamorphosed sediments along the eastern contact of the granite and are also common in the intrusive rocks. The dikes range in width from 2 inches to a foot and many are highly irregular. They are fine grained, containing quartz and feldspar.

Pegmatite quartz veins occur in all of the above mentioned intrusive rock types and contain large blebs of Molybdenite.

METAMORPHISM AND ALTERATION

Contact metamorphic processes involving the addition of quartz have converted the sedimentary rocks adjacent to the intrusives to hornfels. The hornfelsed rocks grade into the characteristic argillites and slates of the area.

Hydrothermal activity associated with the period of mineralization has produced alteration of the intrusive rocks and as such is confined both within the zone of mineralization and barren zones. Sericitic alteration of pink

feldspars was noted in and near the mineralized zone and adjacent to shear zones. In addition to this, minor silification has taken place adjacent to quartz veins.

STRUCTURE

The attitude of the contact of the quartz latite stock with that of the quartz monzonite in the western part is not well known. The eastern contact, with local variations, dips at an angle of 65° to the west.

Intrusive rocks within and outside the mineralized zone are transected by numerous joints. A major joint set strikes northeast and dips steeply to the northwest. A complimentary near vertical set trends northwest.

Numerous shear zones were noted in the area mapped where they have the same trends as the joint pattern. These shears may be pre-mineralization, for many of the wider mineralized quartz veins apparently follow such.

Two major faults were mapped in the central part of the property. Both strike northeast and dip steeply to the northwest. Although they are difficult to identify as pre-mineral faults, it was postulated to be such. Possibly these faults originated at this time, as is suggested by the apparent concentration of better looking mineralization in the vicinity of such faults.

MINERALIZATION

The zone of molybdenite mineralization is concentrated within the quartz latite stock, elongated in a north-south direction. It measures approximately 1000 feet and is between 200 to 600 feet wide, between elevation 6100' and 6900'. Within and outside the mineralized zone, higher grade shoots of molybdenite mineralization occurs

Molybdenite mineralization occurs in pegmatitic quartz veins. The veins range 6 inches to 12 feet in width. Molybdenite occurs along the boundaries of the quartz veins and to a lesser extent is disseminated within the veins and matrices of the wall rocks in rosette-like clusters one-quarter to one-half inch in size. The best molyildenite bearing quartz veins noted in quartz latite and granite were 8 feet and 12 feet wide respectively and showed good mineralization.

As a general rule molybdenite bearing quartz veins strike N 10° E with steep easterly dip.

In addition to the above mentioned occurrence, molybdenite was also noted to occur as fracture-filling and such are common within the quartz latite

stock in the vicinity of the major faults mapped. Hairline fractures in the southern end of the mineralized zone consist entirely of molybdenite Molybdenite is found to a lesser degree coating slip planes representing movement along pre-existing fractures.

Disseminated pyrite, which may be contemporaneous with the molybdenite mineralization, is widespread in the pegmatitic quartz veins. Minor amounts of chalcopyrite and magnetite associated with molybdenite were also noted.

Controls for the localization of molybdenite mineralization in the area are not fully understood. Molybdenite bearing quartz veins and fracture filling are numerous in areas of intense fracturing particularly in the northeast corner of the quartz latite stock where two faults were noted.

Quartz latite appears to be the most favourable host rock, commonly containing much molybdenite both in numerous quartz veins, fracture fillings, and as disseminations in the matrix.

CONCLUSIONS

All geological evidence gathered from detailed mapping and prospecting supplemented by comparative studies of major molybdenum properties in central British Columbia definitely indicate further comprehensive exploration of the property.

It should be mentioned that in normal practice several diamond drill holes would be drilled first to properly sample the mineralized zone. However, in this case, such a program is inadvisable. Adverse conditions such as rugged topography, inadequate water supply (minimum 1000 feet lift from the nearest source), short season (July-August only), and unreliable results of surface drilling (collecting sludges, etc) renders the property unfavorable for a drilling program.

Respectfully submitted,

S. D. Wilkinson

for /

Benjamin B. Marcus
Project Geologist

T S L Laboratories Limited

ASSAYERS
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CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM Associated Geological Services Limited

REPORT NO. V-2677

SAMPLE(S) OF ROCK

Sample No.	Gold (Au)oz:ton	Silver (Ag)oz:ton	Copper (Cu)%	Molybdenum (Mo)%
49501	---	---	---	1.69
49502	---	---	---	0.48
49503	---	---	---	2.20
49504	---	---	---	2.01
49505	---	---	---	3.20
49506	---	---	---	0.94
49507	---	---	---	0.58
49508	trace	---	---	0.58
49509	0.005	---	---	1.58
49510	---	---	---	0.41
49511	---	---	---	0.07
49512	trace	---	0.11	2.21
49513	---	trace	0.07	0.46
49514	trace	---	0.07	3.60
49515	trace	---	0.02	2.25
49516	---	---	---	0.53
49517	---	---	---	0.20

oz:ton - Troy ounces per 2,000 lbs.

DATE September 14, 1967 SIGNED

DIVISION OF TECHNICAL SERVICE LABORATORIES