

CRAIGMONT COPPER

B- ZONE ORE

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MINERALOGICAL REPORT OF CRAIGMONT COPPER B-ZONE ORE

OBJECT

The object of this report is to report the mineralogical studies on Craigmont Copper B zone ore. The study was to obtain the mineralogy of the deposit with respect to mineral dressing problems and technicalities.

INTRODUCTION

The Craigmont property consists of a group of 157 claims located in the Promontory Hills, 10 miles northwest of Merritt, B. C. at an elevation of 4000 feet. Canadian Exploration Company optioned the property in November, 1957 and formed a subsidiary, Birkett Creek Mine Operators Ltd., in 1958 to operate the property during the development period.

The area is devoid of outcrops and the property was discovered as the result of drilling at the site of favourable geophysical and geochemical anomalies. The property is on the boundary of dioritic phases of the Guichon Batholith and the banded flows and tuffs of the Nicola volcanics. Intense alteration of the original minerals to chlorite, epidote, and orthoclase is common. The mineralization occurs along a shear zone which strikes N 80 E and dips steeply to the south. Large scale replacement of the volcanics by magnetite, specular hematite or both with inclusions of chalcopyrite, indicates the general mineralogy.

Mineralization is continuous for a length of 1750 feet across widths up to 200 feet. Probable ore reserves estimated in November 1957 showed 13 to 14 million tons of 18% copper and 17% iron.

MEGASCOPIIC EXAMINATION *Wow.*

Megascopic examination of picked specimens from two 1000 pound samples showed specular hematite with inclusions of chalcopyrite in an aplitic gangue. Considerable calcite was evident with the lamellae of the specularite intruding into it. The chalcopyrite occurred in small to medium sized blebs in the calcite and also in the specularite. Disseminated or small inclusions of chalcopyrite were observed in the specular hematite.

MICROSCOPIC EXAMINATION

Metallic minerals observed in the specimens in decreasing order of abundance were: specular hematite (85%), chalcopyrite(10%), magnetite (4%), and pyrite (1%).

SPEGLAR HEMATITE: 85%

-shiny gray and hardness of D to E.

-occurred as lamellae

?
-isotropic

CHALCOPYRITE: 10%

-good polish, brass yellow colour, and hardness of B.

?
-isotropic

MAGNETITE: 4%

-dull dark gray

-magnetic and hardness of F.

PYRITE: 1%

-observed as small cubes in hand specimen.

PETROLOGY

The following gangue minerals were observed in thin section.

1. Microcline--90%

-large plaid twinned crystals.

-probably clay mineral alteration of some grains.

2. Quartz--7%

-interstitial to microcline

3. Calcite--3%

-high positive relief

-high birefringence

-colourless

-also interstitial

The interpretation of this section indicates aplitic fragments in specularite. The percentages of the gangue minerals is true only for the observed

specimen as most hand specimens showed much greater percentages of calcite.

I believe that the sequence of deposition is magnetite, specular hematite, and chalcopyrite. The magnetite and hematite have replaced the limey gangue material. The chalcopyrite and calcite deposited simultaneously as indicated by the inclusions of chalcopyrite in the calcite. There is no evidence of replacement of the ore minerals in any of the specimens. From the mineral assemblage and the nature of the deposit I would classify it as Hydrothermal deposit of the Xenothermal type. The temperature of formation or deposition is probably in the range of 350°-450° C.

What is the indication of shallow depth.

PARAGENESIS AND THEORY OF DEPOSITION



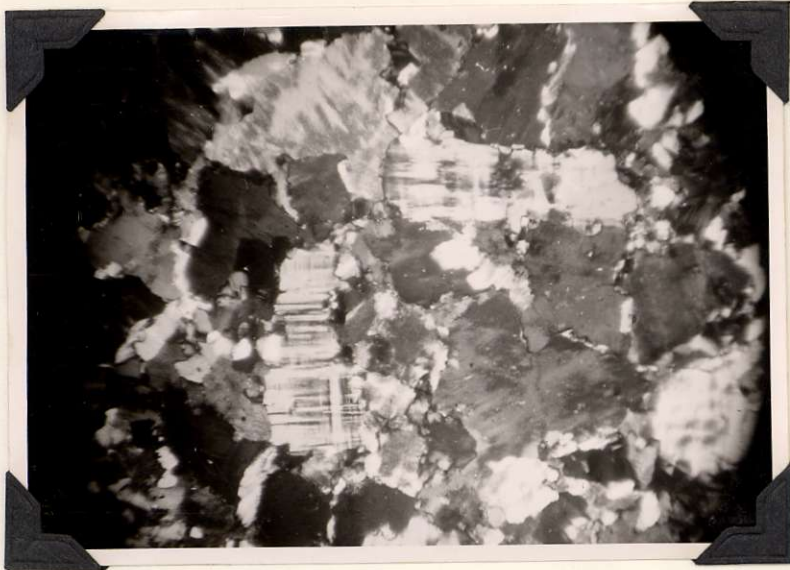
Calcite & Chalcopyrite have been deposited simultaneously.

(1) CHALCOPYRITE (WHITE) IN CALCITE GANGUE(x6)



Chalcopyrite-- white
Specularite--- grey
Gangue----- black

(2) CHALCOPYRITE INTERSTITIAL TO SPECULARITE (x6)



Microcline
Sugary Quartz

(3) THIN SECTION OF APLITIC GANGUE



Chalcopyrite-- white
Specularite--- grey
Calcite----- dark grey

Simultaneous deposition

(4) INTERSTITIAL CHALCOPYRITE AND CALCITE IN SPECULARITE (x160)

APPLICATION TO MINERAL DRESSING

This ore is definitely not of a refractory nature with respect to mineral dressing. Grinding of the ore to approximately 50% passing 200 mesh would liberate the copper from the gangue and to a great extent from the hematite. Inclusions of chalcopyrite between the plates of specularite tend to indicate fine grinding if a copper free iron product is required. These inclusions are

usually near a massive piece of chalcopyrite and probably would be floatable as a middling requiring further grinding and cleaning. A saleable iron product would require almost complete removal of the copper as the acceptable copper content is 0.05%. As the specularite will tend to cleave between the lamellae, the copper should be exposed and hence moderately floatable with normal reagents.