PRELIMINARY REPORT OF THE REGIONAL MAPPING PROJECT (118° 29'00" W. - 118° 32'20" W., 49° 00' N. - 49° 03'20" N.)

Mine Manager

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OF THE

REGIONAL MAPPING PROJECT

(118° 29'00" W. - 118° 32'20" W.,
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PHOENIX COPPER DIVISION

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INTRODUCTION

The field work in this area was done by the writer during the summer (July, September, October) in 1969 as the rigional mapping project for the Granby mining company ltd., Phoenix Copper Division.

The area is bounded by meridians 118° 29'00" W. and 118° 32'20" W. and 49° 00' N. (international Boundary) and 49° 03'20" N. and covers an area of about 6.46 square miles.

Geologic field data were plotted directly on the topographic map (detailed topographic map was prepared of this area, using the most recent airphotos available, by McElhanney Serveying and Engineering of Vancouver, on a scale of 1 inch = 1,000 feet) by use of brunton compass and altimeter.

During this mapping , large area of the southern half of the Wet grid was found to be covered with glacial till. Therefore soil samples were taken in the overburden area on a 200 foot grid spacing. The remainder of the grid, where outcrops were numerous, was sampled on a 400 foot spacing. (Ref., 1969 Exploration Report by Jim Paxton)

The northern part of on this mapped area was done by Mr. H. Kim.

Thin sections for this report are now under the study by Mr. Chris Van Houten.

PREVIOUS WORK

Geologic studies in this region had been made by Brock (1903, 1905) in the Boundary Cr. mining district, British Columbia.

More recent mapping studies in this area were completed by Little (1957) on the 1- degree quadrangle, Kettle River East Half, British Columbia and the report Early Tertiary Stratified Rocks, Green Wood map area (82 E/ 2), British Columbia was compleated by J. W. H. Monger in 1968.

TOPOGRAPHY

Within the area, the dominant topographic features is the Valley of Kettle river. The Kettle river is a fast flowing stream. The valley itself is characterized by such glacial fluidal features as eskers, kame, terraces, and kettles.

Relief is moderate; altitudes range from about 1740 to 4140 feet. The highest point in the area is 4142 feet on Eagle mountain, 1500 feet north of the power line. The lowest point is Grand Forks at an elevation of 1740 feet.

GEOLOGY

The oldest rocks in the area are the metamorphic rocks of West Grand Forks Mountain. They are probably pre-permian in

age. They have been correlated with the metamorphic rocks of Tenas Mary and St. Peter's Cr. in the Curlew Quadrangle, Ferry County, in Washington state.

The West Grand Forks Mountain metamorphic rocks have been divided into the following petrofacies units; Quartz-biotite schist (Sch) and phyllite (Ph). Quartz-biotite schist is exposed in an area of West G.F. Mt. and beside the #3 highway 1000 feet southeast of Spencer. On the West side of the West G. F. Mt., quartz-biotite schist is not well exposed became of a thick mantle of till, so their relationships are uncertain.

Quartz-biotite schist is a fine grained equiglanular schist. The preferred orientation of platy and prismatic minerals imparts a strong schistosity to the rock. Different proportions of the main constituents produce contrasting layers in various shades of gray, though the overall appearance is dark gray because of the biotite and hornblende content.

Gray phyllite is aphanitic and homogeneous in hand specimen, though in places it contains lighter gray laminae that commonly are more silty than the adjacent darker gray laminae. It characteristically weathers to shsdes of brown. The parallel alignement of minute scales imparts a well developed foliation and a silky luster to the rock.

The limestone of the Middle Triassic age is made of

the bedded(Lsbl) and massive(Lsml) light colored limestone, which lies to the south of Eagle Mt., and in the southern part of the area. Between the above mentioned areas there is gracial till. Also several small limestone outcrops occur on the east side of Eagle Mountain. Green argillite(Ag) and massive chert(C) are intercalated in the limestone.

Sharpstone conglomerate lies on the limestone, and consists of angular chert fragments in an argillaceous matrix. It extends from south Eagle Mountain northward.

Jurassic andesite flow rock is distributed on Eagle Mountain on the east, west and southeastern slopes and a small exposure occurs along beside #3 highway.

Except for the east slope of Eagle Mountain the andesite is the common andesite(Anl). But on the west slope of Eagle Mt., contact type andesite(An3) is thought to be in contact with limestone. This rock appears to be bedded(?) and reacts with hydrochloric acid. The colour is green to pale green and the whethered surface is gently waved or platy. Several small limestone outcrops are surrounded by this rock along the power line. Therefore the andesite flow might be shallow depth in this area.

A small body of Cretaceous(?) serpentine(Sp), is located

1500 feet south from the Eagle Mt. Relatively large serpentine bodies occur in H. Kim's area. In H. Kim's area between Goat Mountain and Hardy Mountain serpentine is steeply in contact with andesite.

The Curlew Quadrangle Ferry County, Washington state, geologic report noted, " Sheared contact of the serpentine mass evidently is a control of gold-copper mineralization, for the workings of the Morning Star Mine and several prospects are principally along this contact " In this area, serpentine is no evidence.

Cretaceous(?) granodiorite is exposed on the Southern Mountain (grid; N.10000-15000N, 115000E) in contact with diorite. In hand specimen, this rock is medium grained, equigranular, and consists of quartz, plagioclase,orthoclase and biotite. This granodiorite probably belong to the Nelson intrusions, but their relations are not definitely known.

Tertiary diorite bodies (Do2, Do3) occur on the west slope of Eagle Mountain and above mentioned Southern Mountain. The diorite occurs mainly in two varieties in this area, a biotite diorite(Do2), diorite with dark green hornblende(Do3). (This rock classification was made by J. Paxton)

Monzonite is exposed on the south slope of Eagle Mt. in contact with diorite. Monzonite and diorite are intimately associated, but their age relations are not definitely known.

Several syenite dykes intrudes Pre-Permian quartz-biotite schist on West G. F. Mt. and intrudes middle Triassic limestone on south west side of Eagle Mountain.

FOLDING AND FAULTING

Folding, in this area consists of minor folds in West G.F. Mt. quartz-biotite schist, and limestone area.

Faulting, in the area comprises three main faults. The west slope of Eagle Mt. fault is defined by a fault breccia zone of limestone. This fault trend is N40°W, dipping is 41°SW. Spencer thrust fault trend is east-west, dipping is 30°-35° south. West side of G.F. Mt. fault, trend is N30°-40°E, dipping is same as above. Their age are unknown.

MINERAL SHOWINGS

The previous principal mine in this area was the Yankee boy and Yankee girl gold , silver mine. (Ref., Gov. memoir 1900,1905,1919,1920,1924,1925,1930,1931,1934-1936)

Several quartz veins similar to those in the mine are relatively intrusive to diorite bodies in the southern area.

All those quartz veins are of no economic value in present. On the east and west slope of Eagle Mountain, pyrrhotite, chalcopyrite occurrences have been exposed by pitting and bulldozer stripping in the limestone and andesite(An3) area. Massive pyrrhotite and minor pyrite, chalcopyrite mineralization occur as lenses and pods replacing the limestone and contact area between limestone and andesite. These mineralized zones occur primarily at the contact of the sediment- limestone contact and appear to be replacement deposits.

CONCULUSION

1. This area consists of metamorphic rocks of West G.F. Mt., sedimentary rock of limestone, argillite, chert, volcanic andesite, igneous serpentine, diorite, granodiorite, dikes in ranging Pre-Permian to Recent age.

2. The interesting mineralized area is the east and west slopes of Eagle Mountain.

3. The mineralization consists primarily of pyrrhotite with minor pyrite, chalcopyrite. It occurs as lenses and pods replacing the limestone and in the contact area between limestone and andesite.

Respectfully Submitted

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