GEOPHYSICAL REPORT ON THE
EMILE GROUP OF CLAIMS, WHITEHORSE COPPER BELT
YUKON TERRITORY

FOR

QUATSINO COPPER-GOLD MINES LIMITED

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TABLE OF CONTENTS

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INTRODUCTION

The Emile group consists of 14 located mineral claims (Emile 1-14) as follows:

Claim name	Tag number
Emil 1	91218
2	91219
3	91220
4	91221
5	91222
6	91223
7	91224
8	91225
9	91226
10	91227
11	91228
12	91229
13	91230
14	91231

The direction of the claim lines is approximately 10 degrees north of east. The claims overlap portions of Pat 1, 2, 3 and 4 mineral claims to the south. Pat claims are not correctly plotted on the Government claims map.

A magnetometer survey was run over all but claims 6, 8 and the northern 500 feet of 5. John C. Lund, geologist, mapped these geophysically during May, 1965. The survey was undertaken in order to detail magnetic anomalies corresponding to those shown on the Government aeromagnetic map, 1341G.

The magnetometer survey was conducted by Dr. R. K. Germundson and Mr. Paul Allen. Mr. Hans Gloslee, Whitehorse, and a crew of 5 men

did the line-cutting and positioned the stations.

The men commuted daily from Whitehorse. Transportation was supplied by Mr. Glosleo.

Line cutting was started June 15th and magnetometer work on July 2nd. All work was completed July 22nd.

LOCATION AND ACCESSIBILITY

The property is about 10 miles south of Whitehorse near the southeastern border of the Whitehorse Copper Belt. Longtitude 134° 55' and latitude 60° 36' pass through the property. The Alaska Highway approximately parallels the northern boundary of the claims. A north-south secondary road (the original Carcross road) extends across the western set of claims. A jeep trail extends a short distance into the eastern set of claims from the Alaska Highway. In addition there are numerous trails on the property which were used by the United States Army during World War II for access to wood lots.

Whitehorse is serviced by the White Pass and Yukon Railroad, which begins at Skagway, Alaska. Canadian Pacific Air Lines schedules flights to Whitehorse daily except Sunday. Canadian National Telecommunications services the Yukon.

The area obtains electric power from a dam situated just upstream from Whitehorse, on the Yukon River.

CLIMATE

During the summer the weather is generally pleasant. The sun shines for 20 hours a day during June. The winters are harsh.

The rivers are open from early May until late October, but ice remains on the larger lakes until late June.

About half of the precipitation which falls on the area occurs as rain. The average rain and snowfall is 10.6 inches. Precipitation in the adjacent Coast Mountains to the south is much greater.

FLORA

Tree-line is about 4,000 feet above sea-level. Most of the forest growth is restricted to valley floors. Individual trees rarely exceed 12 inches in diameter. The most common tree is white spruce. Other conifers include lodgepole pine, alpine fur and black spruce. Aspen poplar and balsam poplar are the most common deciduous trees; birch is relatively uncommon. Deciduous bushes include willow and alder. The following varieties of wild fruit grow in the area: blueberries, cranberries, raspberries, currants, strawberries and Saskatoon berries.

Open valley bottoms generally supports mossy and peaty vegetation. Locally, as on the property, there is grassland suitable for grazing. Dwarf grasses, moss and heather prevail over the upland above tree-line.

FAUNA

The following animals are common throughout the Whitehorse map area: grizzly, black and brown bears, moose, wolves, wolverine, beaver, lynx, fox, rabbit and squirrel. Birds include eagles, hawks, ducks, ptarmigan, etc.; a complete list of these may be found in the publication by Godfrey (1951).

The most common fish are lake trout and grayling. Mosquitos and black flies are very abundant during June and July, and August and September, respectively.

HISTORICAL SKETCH

McConnell (1909) reported that the earliest copper discoveries in the Whitehorse Copper Belt were made by miners in 1897. The first copper claim, the Copper King, was staked in 1898. Most of the other important copper discoveries were staked prior to the end of 1899.

A shipment of 9 tons of rich bornite ore from the Copper King mine was made in 1900 (Kindle, 1963). High grade ore was mined periodically until 1915 at seven different properties.

Between 1920 and 1945 little exploratory work was done in the Whitehorse Copper Belt. Noranda drilled a few diamond-drill holes in 1947 and 1948. The Best Chance property was drilled in 1956 by Imperial Mines and Metals Limited. This company obtained additional favorable ground, and changed its name to New Imperial Mines in 1961. Diamond-drilling was commenced at the Arctic Chief property in 1961. At the present time New Imperial is planning for a mill-site.

PHYSIOGRAPHY

The Whitehorse Copper Belt lies in the Canadian Cordillera, in the southern part of the Yukon Plateau. This plateau is transtional with the Coast Mountains. Within the plateau, valleys 8 to 10 miles wide are 2,000 to 2,500 feet above sea-level. These valleys separate uplands which rise to 5,000 or 6,000 feet.

The main drainage for the Whitehorse map-area is the Yukon River. Wolf and Cowley Creeks flow northerly from the property in to the Yukon River.

One or more ice-sheets have covered the area (Wheeler, 1961).

GEOLOGY

Wheeler (1961) stated that most of the copper deposits of the Whitehorse map-area are of the contact metamorphic type. They are restricted mainly to the Whitehorse Copper Belt.

These copper deposits lie at or adjacent to the contact of the Coast intrusions with the limestones of the Lewes River Group.

The Lewes River Group is composed of greywacke, siltstone, argillite, tuff, andesite, basalt and limestone. It is Upper Triassic in age.

The Coast intrusions consist mainly of granodiorite, granite, quartz monzonite and quartz diorite. They are Cretaceous in age.

Kindle (1963) described 28 properties in the belt which contain copper. Bornite and chalcopyrite are the chief ore minerals. The ore is generally associated with a skarn composed of brown garnet, diopside, epidote, and tremolite. At the Arctic Chief mine, south-central part of the copper belt, ore is found in a magnetite-rich-skarn. Specular hematite is common in the Pueblo mine, north of the road leading to Fish Lake.

In addition to contact metamorphic deposits, the Keewenaw and Reservoir Lake occurrences are classified as the porphyry type (Kindle, 1963). The chalcopyrite and bornite occur in grey hornblende granite along poorly defined shear zones, or as disseminations in irregularly outlined fractured zones. This type of deposit is usually of low grade but may yield large tonnages.

Quartz veins carrying copper sulphides are rare in the copper belt. Some of the bornite and chalcopyrite are associated with quartz veins in the Copper King, and Empress of India mines, and the Scheelite claim. These veins also contain some scheelite.

Sulphide veins of bornite and chalcopyrite that form rich ore shoots in skarn rock are the most important veins.

Large amounts (0.03 to 0.06 per cent) of gallium are associated with the magnetite- and hematite-rich parts of the copper belt.

Both gold and silver assay low; a maximum of 0.135 oz. gold/ton, a little more or less than an ounce of silver/ton.

Molybdenite is present in some parts of the silicate-rich copper lodes.

There are relatively few exposures in the Whitehorse Copper Belt. The drift covered areas may overly important copper deposits. Magnetite rich skarns, which may be present, would be best outlined by magnetic methods of exploration.

The Emile group of claims is drift-covered.

MAGNETOMETER SURVEY

INTRODUCTION

Two D-I-M Sharpe magnetometers and Wilde transits were used during the magnetometer survey. Diurnal readings were taken morning and evening. For comparison purposes the stations along lines 750S and 1000S, base line A, were read simultaneously by both instruments. Base line stations for about 50 percent of the grid lines were also double-checked. It was then possible to adjust all readings in degrees of maximum swing, in terms of one magnetometer. The degrees of swing were later converted to gammas and the results plotted on the magnetometer plan (pocket).

Two base lines were established. Base line A follows the claim line connecting Emile claims 1, 2, 3, 4, 5, 6, 7 and 8. Base line B follows the claim line connecting Emile claims 9, 10, 11, 12, 13 and 14. The base lines trend about north 15 to 25° east.

Stations along the base lines were spaced at 250 foot intervals. Grid lines were then brushed for 1500 feet easterly and westerly (north 80° west) from the base lines. The stations were set up every 100 feet along the grid lines and marked by pickets. The grid network was done by the Brunton compass and chain method.

PREVIOUS WORK

During May, 1965, Mr. John C. Lund, geologist, did the magnetometer survey over Emile claims 6, 8 and the northern 500 feet of 5. A magnetic high was outlined.

The high trends northeasterly. It is about 900 feet long and 400 feet wide. It is situated in Emile claim number 8, west of base line A, between grid lines 1250S and 2000S, and stations 400 W and 1000 W.

PRESENT WORK

No marked magnetic anomalies were found. Magnetic trends correspond with those on the Government aeromagnetic map number 1341 G. In general the eastern half of the area shows lower readings that the western.

The flank of a possible high is situated along the northern edge of the property, claims 1 and 10. It is outlined by grid line 2,750 N and 3,000 N, stations 1200 E to 1500 E, base line A; and grid line 0, stations 1,000 W to 1,300 W, base line B. The readings range from about 3400 to 3910 gammas. The slight anomaly is of questionable significance.

Another slight high is situated across base line B between grid lines 750 S and 1250 S. Emile 4 mineral claim shows scattered highs.

Other relatively low and high magnetic readings on the property are too small and/or randomly spaced to be of importance.

SOIL SAMPLING

Soil samples were collected over those areas showing magnetic trends or anomalies. These were tested for copper using the Rubeanic acid method.

The results were negative. Nearly all of the samples did show traces of copper. This should be expected in an area where copper deposits are abundant.

SUMMARY AND CONCLUSIONS

Most of the known copper deposits in the Whitehorse Copper Belt contain insufficient magnetite to produce magnetic anomalies (Kindle, 1964). However, the anomalies outlined on Government aeromagnetic maps 1413 G and 1341 G could be important as magnetite and copper sulphides occur together at some of the properties.

Much of the copper belt is drift covered. The possibility of economic copper deposits occurring under the covered areas appears to be good. Drilling of magnetic anomalies, though extremely risky, in the belt where no outcrops are present, would be a primary mode of further exploration. Generally, bulldozer stripping is inefficient as the drift is too thick.

There are known porphyry copper deposits in the Whitehorse Copper Belt. These may occur in the granite or the Triassic and Jurassic sedimentary rocks. This type of discovery should be considered.

The present geophysical survey yielded poor results with respect to the occurrence of magnetic anomalies. This does not prove or disprove the absence of copper minerals under the property. The anomaly mapped by Mr. J. Lund may be the most significant.

NEW IMPERIAL MINES, LTD.

The company holds considerable ground in the Whitehorse Copper Belt. Dr. A.C. Skerl, Consulting Mining Geologist, reported the following in the company's annual report for 1964:

During the 15 months previous to December 31, 1964, approximately 40,000 feet of diamond drilling was completed that added 3,000,000 tons of proven and probable ore to the reserves.

The Kewanah deposit, about 1½ miles south of the Emile group of claims, has a probable reserve of 150,000 tons of copper averaging 1.10 percent copper.

Feasibility studies indicate that a profitable operation can be conducted with a mill of 2,000 tons per day capacity.

RECOMMENDATIONS

The geophysical mapping completed by Mr. J.C. Lund and Allen Geological Engineering covers the necessary assessment work for the claims. It is suggested that no further work be conducted on the property during 1965.

Any future exploration should include diamond drilling of the anomaly mapped by Mr. Lund.

Respectfully submitted

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by: _____

R.K. Germundson, Ph.D.

August, 1965.

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Alfred R. Allen, P. Eng.

REFERENCES

Geol. Surv. Canada, Aeromagnetic Maps 1341 G and 1413 G.

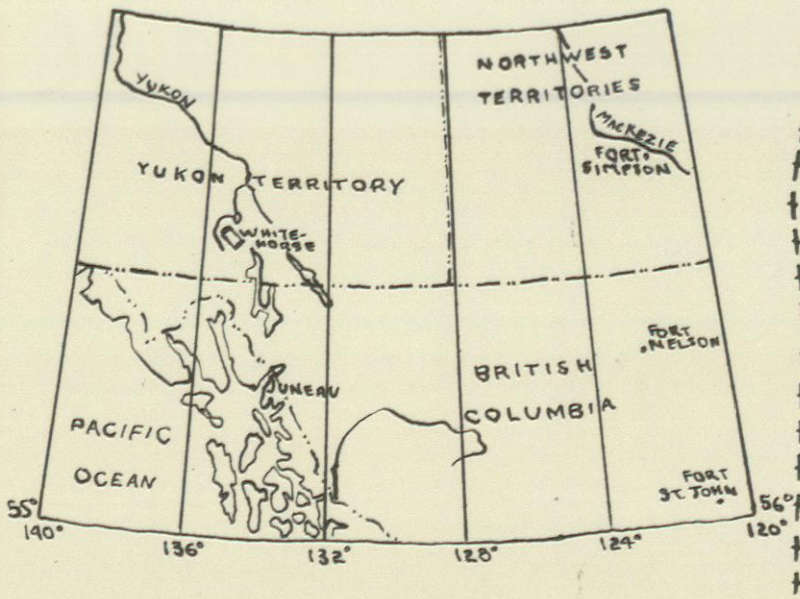
Kindle, E.D., 1964, Geol. Surv. Canada, Paper 63 - 41.

Skerl, A.C., 1965, in New Imperial Mines, Ltd., Annual Report, 1965

Wheeler, J.O., 1961, Geol. Surv. Canada, Memoir 312

Location Map
Emile Gp. of Mineral Claims
Whitehorse Copper Belt
Y.K.

Quatsino Copper Gold Mines Ltd.
Scale: 1" = 1 mile



Whitehorse Airport

Alaska Highway

White Pass Line

Yukon River

Emile Gp of Claims

Alfred R. Allen.

MAGNETOMETER PLAN

EMILE GROUP OF MINERAL CLAIMS
WHITEHORSE COPPER BELT Y.T.
QUATSINO COPPER GOLD MINES LTD

August 1965

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By:
R.K. Germundson

Pat 1

Pat 2 and 3

Pat 4

Emile 1

Emile 2

Emile 3

Emile 4

Emile 5

Emile 6

Emile 7

Emile 8

Emile 9

Emile 10

Emile 11

Emile 12

Emile 13

Emile 14

Base Line "A"

Base Line "B"

Alaska Highway

3250 S 3000 S 2750 S 2500 S 2250 S 2000 S 1750 S 1500 S 1250 S 1000 S 750 S 500 S 250 S 0

250 N 500 N 750 N 1000 N 1250 N 1500 N 1750 N 2000 N 2250 N 2500 N 2750 N 3000 N 3250 N

4500 S 4250 S 4000 S 3750 S 3500 S 3250 S 3000 S 2750 S 2500 S 2250 S 2000 S 1750 S 1500 S 1250 S 1000 S 750 S 500 S 250 S 0

LEGEND

- 3500 Gammas plus
- 3000 - 3500 Gammas
- 2500 - 3000 Gammas
- 2500 Gammas minus
- Claim Posts
- Grid line station
- Base line station
- Area previously mapped showing Magnetic anomaly

Scale: 1 inch = 200 feet