



3846

REPORT ON A
GEOLOGICAL SURVEY

done on the

PR GROUP

104G/12E

of

EMPIRE METALS CORPORATION LTD. (N.P.L.)

on behalf of

SWISS ALUMINIUM MINING CO. OF CANADA LTD.

by

Hanspeter Schielly, D.Sc., P.Eng.

Claims: PR 1 - 20

Rec. Nos. 56406 - 56425

Location: 25 miles south-southwest of Glenora, Dokdaon-Strata Creek valleys.

N.T.S. 104 - G - 12

Lat. 57°31' N

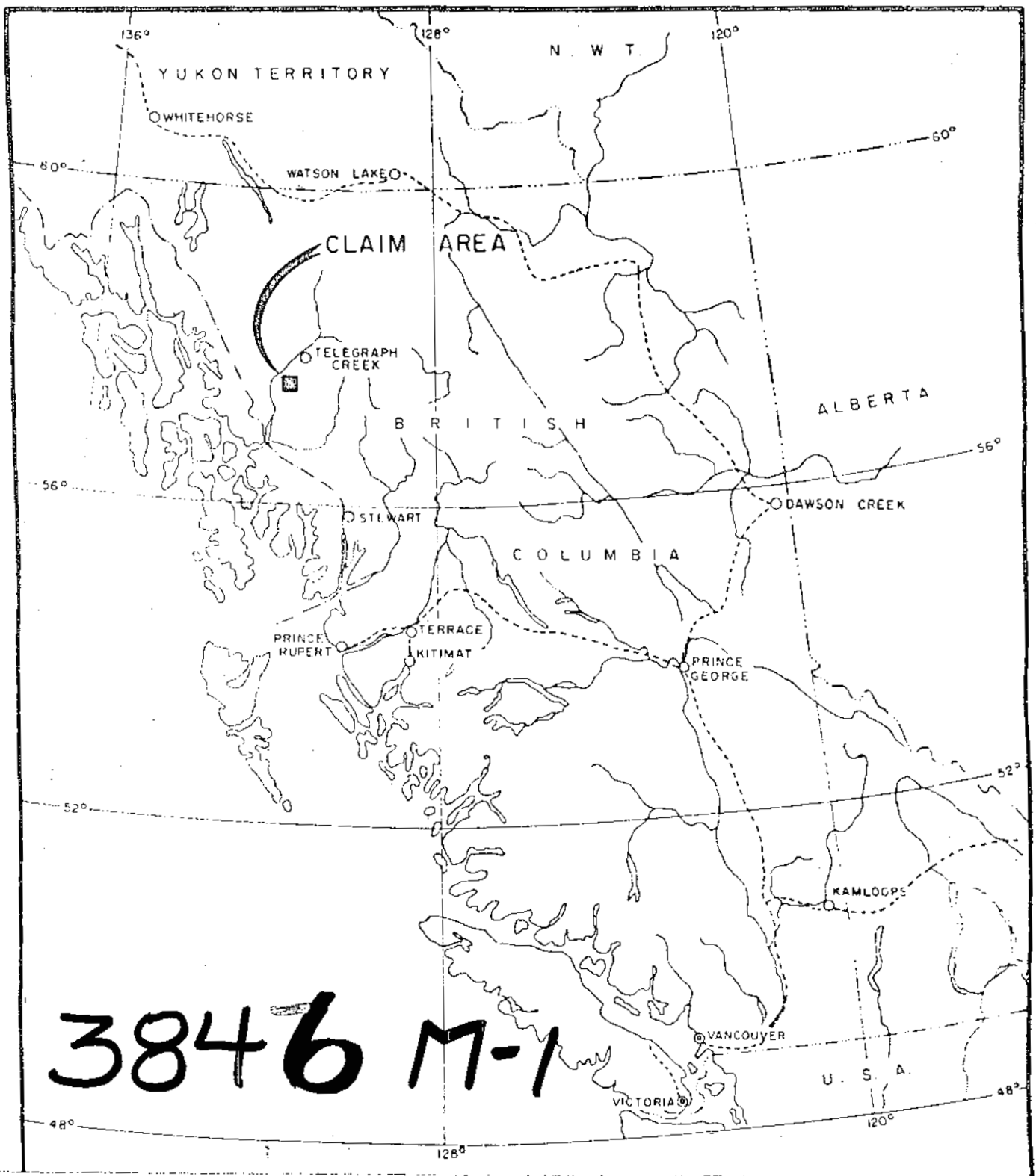
Long. 131°32' W

Dates: June 8th - August 4th, 1972

Vancouver, B.C.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3846 MAP

September, 1972



EMPIRE METALS CORPORATION LTD. (N.P.L.)

PR GROUP

CLAIM LOCATION MAP

57°31' N - 131°32' W

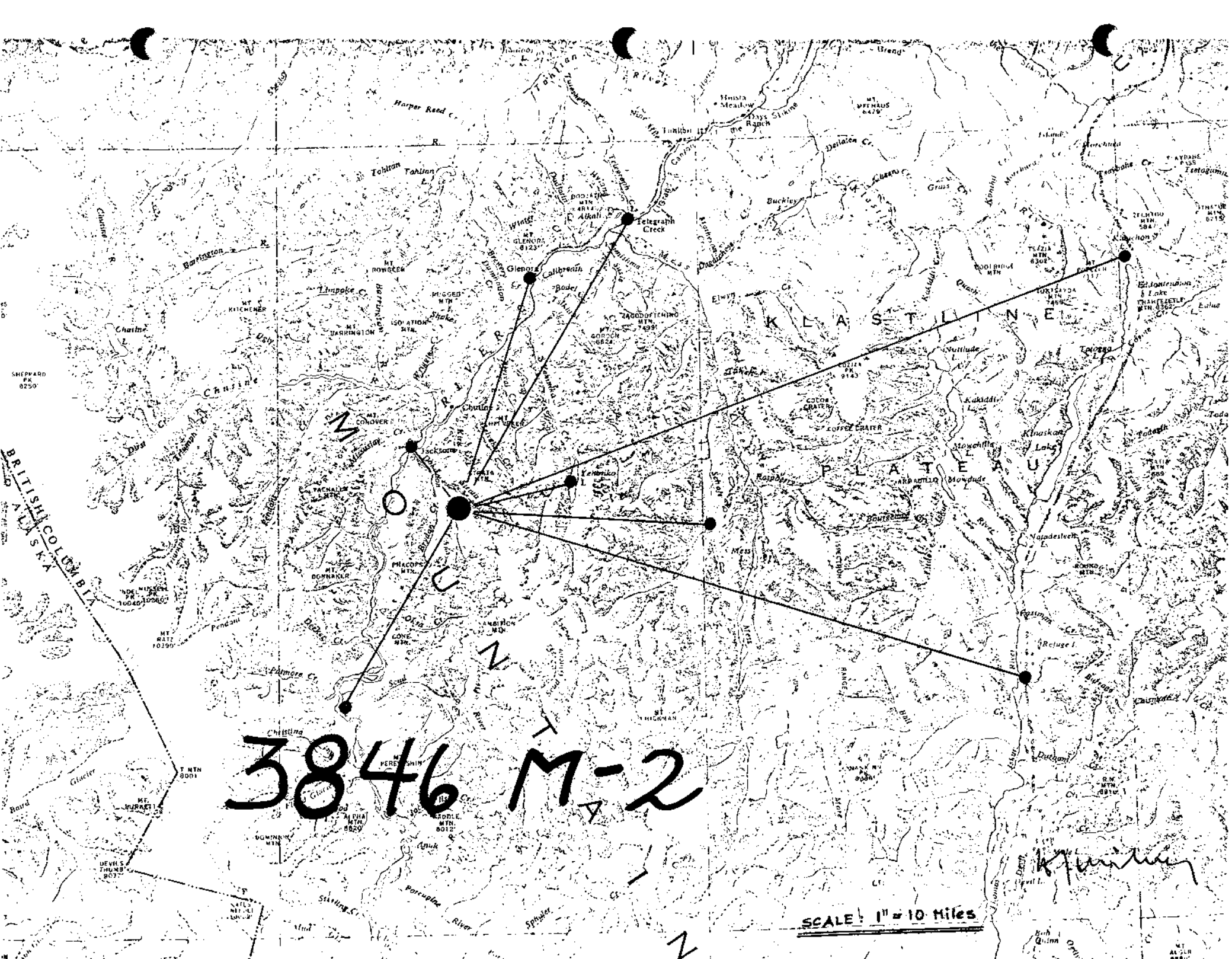
LIARD MINING DIVISION



Department of
Mines and Petroleum Resources

ASSESSMENT REPORT

NO. **3846** #1



3846 M-2

SCALE: 1" = 10 Miles

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Department of
Mines and Geology
NO. **3846** #2

1. ABSTRACT

Helicopter supported geological mapping was carried out on the PR Group and its nearer surrounding. Special attention was given to the extensive occurrences of copper stains, which were related to calcopyrite mineralization associated with syenitic dikes and parallel shears. Ore grades of any sizeable bodies were not encountered during this survey, but the frequency of the copper mineralization and its favourable geological setting are thought to rectify further work as recommended in this report.

2. INTRODUCTION

2.1. Titles

The PR Group contains 20 claims, the

PR 1 - 20, Record Nos. 56406 - 56425

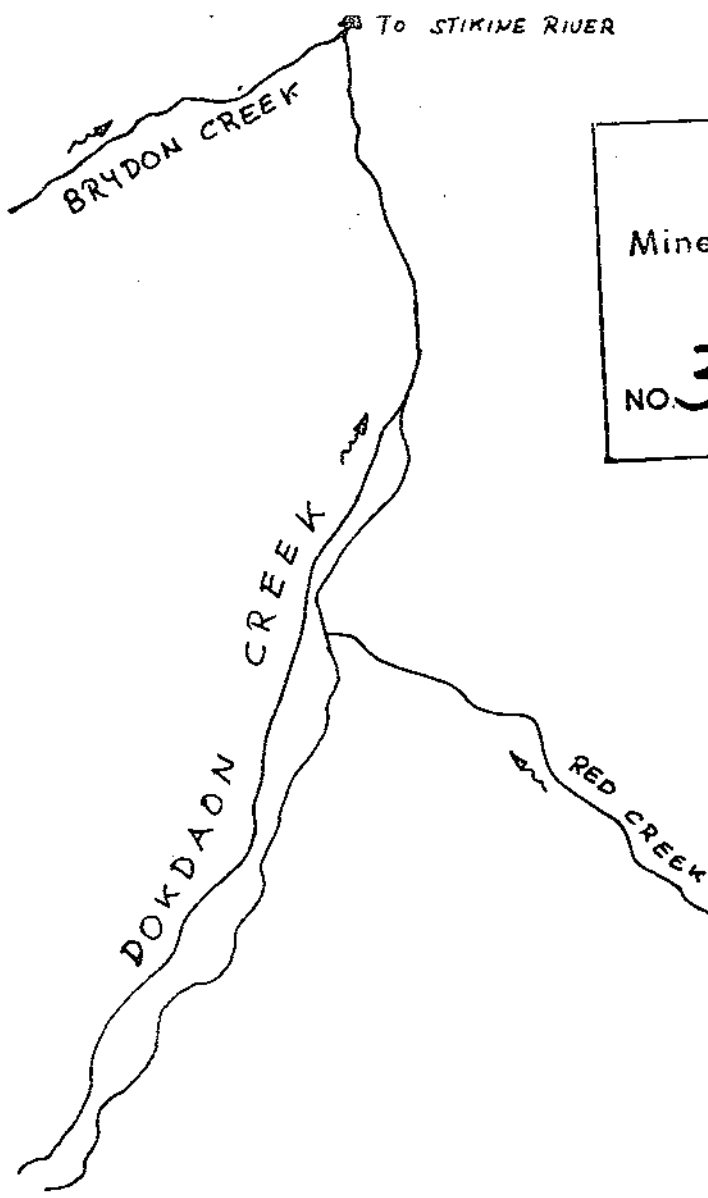
All claims are owned by Empire Metals Corporation Ltd. (N.P.L.) and are presently under option to Swiss Aluminium Mining Co. of Canada Ltd.

2.2. Property Location

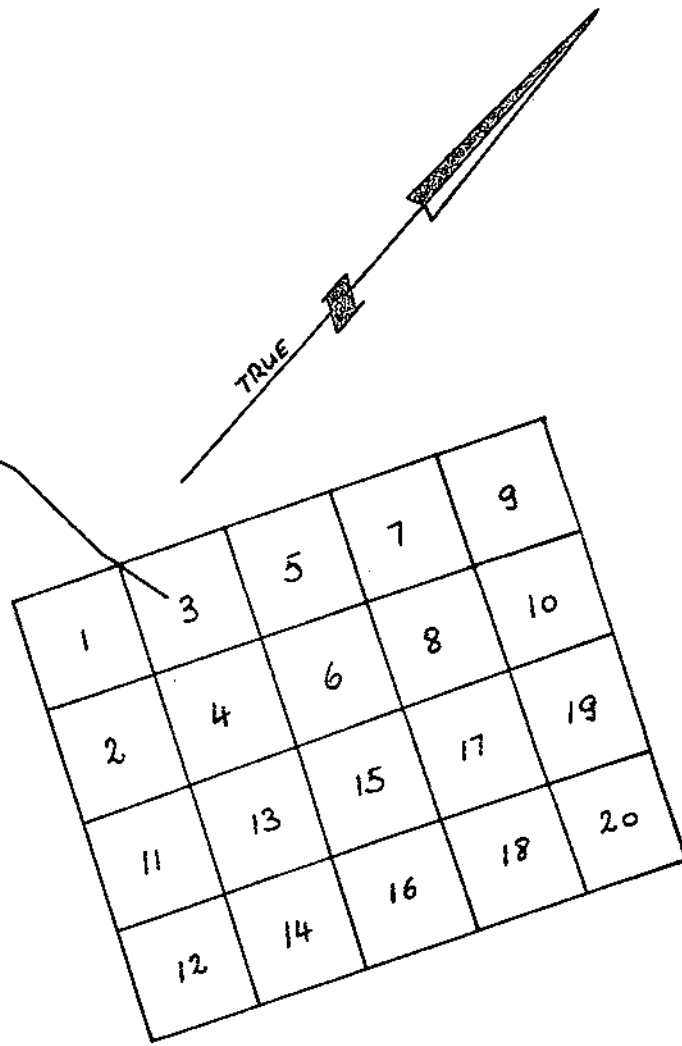
A location map showing the property situation is enclosed.

2.3. Access

Access to the property is quite complicated. The nearest air bases are Telegraph Creek (Gravel, Otter) at some 32 miles, Yehiniko Lake (Water planes and gravel strip for Otter) at some 15 miles, Iskut Village (Gravel, DC-3) at some 60 miles, Burrage River (Gravel, DC-3) at some 70 miles, Scud River (Gravel, DC-3) at some 25 miles, Schaft Creek (Gravel, DC-3) at some 25 miles. Facilities at these strips are generally poor, the best being presently Schaft Creek (Liard Copper). Road access is presently to Telegraph Creek or Glenora Landing at some 32 resp. 25 miles from the property. No regularly schedules barges are presently cruising the Stikine River, which is however navigable from Wrangell (Alaska) till Telegraph Creek, passing the old Jackson Landing at the Dokdaon Creek mouth at some 10 miles from the property. Direct access from these above air-road-river bases would be by helicopter.



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **3846** MAP **#3**



EMPIRE METALS CORPORATION LTD. (N.P.L.)

PR GROUP

MINERAL CLAIM MAP

Approx. Scale: 1" = 1/2 Mile



2.4. Preface

The Swiss Aluminium Mining Co. of Canada Ltd. holds a large claim block of Empire Metals Corporation Ltd. (N.B.L.) under option. The PR Group is part of this option.

During the field season 1972 and while diamond drilling was in progress elsewhere on the optioned claims, a preliminary geological survey was conducted on the PR Group using helicopter support. The program was fully conducted and supervised by the writer with some assistance of field helpers.

The PR claims had been staked in fall, 1971 to cover an area of anomalous silt copper values. The 1972 program was to determine the geological background of the silt anomalies.

3. GEOLOGICAL SURVEY

3.1. General Statement

The claim area lies in the broad "Stikine Arch". Triassic volcanics are intruded by stocks and "plugs" of quartz monzonite, granodiorite and diorite of the Coast Range Batholith. Stocks and dikes of syenite also intrude the volcanics; tabular bodies of rhyolite intrude the granitic rocks and the volcanics. Young dikes of andesite or latite intrude all other rock types.

The general effects on the intermediate and basic volcanics, after being fractured and intruded by young syenitic rocks, are metamorphism to hornfels or metadiorite, and alteration and sulphide mineralization. Low temperature alteration minerals such as chlorite and epidote are widespread. The major sulphide minerals are pyrite and chalcopyrite. The geology of the property and vicinity is plotted on enclosed geological map.

3.2. Local Geology

Triassic-Cretaceous

A sequence of volcanics and interbedded sediments of possibly Triassic age underlies the claim area.

3.2.1. Andesitic and Basaltic Volcanics

This unit consists mainly of andesitic and basaltic volcanic rocks (flows, breccias and tuffs) with interbedded sediments. Dominant rocks are of massive andesitic flows which vary in grain size from aphanitic to coarse grained. Much of the area has undergone contact metamorphism and hydrothermal alteration possibly related to the Coast Range Intrusion and obliterating the original nature of the rocks.

Two main types of volcanics predominate in the relatively unaltered rock. One type is a fine to medium grained, greenish-gray rock with about 60% plagioclase and mafics of hornblende and pyroxene. When viewed with a hand lens, the volcanics are generally crystalline although, in a few instances, definitely fragmental material can be seen, and the rocks are properly called tuff or breccia. The other type of volcanics is a feldspar porphyry with subhedral, angular plagioclase phenocrysts which make up about 40 - 50% of the rock. The rest of the material is a fine grained, grayish groundmass.

3.2.2. Sedimentary Rocks

Some sediments were found interbedded with the volcanics. They consist of siltstone, mudstone, limestone, conglomerate and breccia. These were mapped as a single unit and differentiated on the map. The most predominant rocks in this unit are massive, fine grained, greenish-gray siltstone and mudstone. Some of the beds are likely tuffites. Breccia and interformational conglomerate were found interbedded with the finer grained sediments. They are, in general, similar in composition to the siltstone.

3.2.3. Syenite

Many dikes of syenitic material occur in the area. These vary greatly in texture and mineralogy. A single dike is usually mineralogically consistent although in some cases zoning occurs. Some dikes have pegmatitic cores.

Most of the syenite dikes are characterized by the absence of quartz, a low percentage of mafics, and a very high content of potassium feldspar. They are aptly described as pink dykes.

The most common sort of syenite is the porphyritic form. This form is composed of a fine grained pink to gray groundmass with large feldspar phenocrysts (1" - 4" long) which make up a good 40 - 50% of the rock. Many dikes have feldspars which exhibit a well formed trachytoid texture parallelling the contacts. The feldspars are usually of a potassium variety and pink in colour. Plagioclase occurs in these rocks but it is not an important mineral. This rock type often contains up to 10% but usually less than 5% mafic material. Intrusive phases of fine grained, pink rock syenite are often difficult to identify from the volcanic formation.

3.2.4. Coast Range Intrusive

Coast Range intrusives occur frequently on the property. These rocks consist of coarsely granular hypidiomorphic granitic material. Their mineralogy is 10 - 20% quartz, 20% mafics (biotite and hornblende), 0 - 15% potassium feldspar, approximately 50% plagioclase and 3 - 5% magnetite. Most of this rock is very fresh and unaltered.

Cretaceous and/or Tertiary

3.2.5. Rhyolite Sequence

Tabular bodies of rhyolite cut across part of the property, striking about 20° mainly. These are believed to be sills which follow the bedding of the volcanics. The rhyolite is younger than the Triassic volcanics although it appears to be interbedded with them.

The rhyolite is, in general, a fine grained, white, feldspar rich rock which has visible quartz phenocrysts. The quartz is often scarce and barely identifiable. Some of the rhyolite is aphanitic and has a marked fissility. Where the rock is coarser grained it has a sugary texture with very poorly formed equigranular

feldspar phenocrysts. The rhyolite contains usually less than 3% but never more than 10% mafic material. The mafic material usually consists of biotite which commonly has undergone extensive leaching.

3.2.6. Porphyritic Dikes - Andesite and Latite

Minor volcanic dikes occur on the property and, to a greater extent, off the property. These are porphyritic andesite or latite. They have a fine grained, soft, gray groundmass and subhedral plagioclase phenocrysts which make up 40% of the rock. They are distinctive from other young volcanic dikes and they appear to be younger than the fine grained andesite described below.

3.2.7. Fine Grained Andesite Dikes

Fine grained andesite dikes are the youngest rocks in the area. They cut all joints, all other rock types, follow faults, and postdate all alteration and mineralization.

They consist of green to gray, fine grained and soft fresh andesitic material. They occasionally contain up to 25% plagioclase phenocrysts. They form tabular bodies a few inches to 30 feet across.

3.2.8. Surficial Soils

Surficial soils may date back to Tertiary times but seem to be mostly of Pleistocene origin. Residual soils are scarce but slope talus and moraine cover most of the area.

3.3. Structures

There are two main lineations observed on the property.

Bedding of the volcano-sedimentary formation goes parallel with the rhyolite dikes or sills, striking about 160° - 180°. This structure normally dips vertical or steeply westwards.

The other dominant strike is represented by shears and syenite dikes striking about 10 - 30° with vertical dips.

3.4. Alteration, Mineralization

A mineralized area above Strata Creek was first detected by stream geochemistry before the PR claims were staked. The mineralization occurs in a large area of dioritized volcanics cut by syenite, rhyolite and andesite dikes.

Some diorite floats below the rock bluffs carry massive chalcopyrite with associated pyrite. Chalcopyrite occurs in zoned veins with pyrite. The copper is restricted to the centre of the veins with the pyrite bordering it. Near the top of the ridge at least two narrow massive chalcopyrite pyrite veins occur in outcrop. The chalcopyrite did not exceed 6" in width whereas the pyrite was up to several feet across. The inaccessibility of most of this area prevents a good estimate of the length of these occurrences, which are most probably of only limited lateral extent.

The sulphide veins and syenite dikes strike 20° and form possible an echelon series of veins. This area is mostly inaccessible and mineralization was positioned on the map by detecting copper carbonate stain from cliffs and by inspecting float in the talus area. The massive chalcopyrite-pyrite appears to extend under talus to the east of the main outcrop.

Just west of the claim boundaries on the hill above Dokdaon Creek at least six quartz veins occur in the volcanics. A chip sample four feet wide across a vein assayed 11.31% Cu, 3.5 oz/ton Ag, 0.01 oz/ton Au, tr MoS₂, nil Pb. This showing area is located on the LLK and DOK claim groups outside the Empire Metals property.

Only minor hornfels alteration was observed associated with some malachite stains along the syenite dikes.

There is, however widespread dioritization of volcanics which has most certainly no direct relation with the observed copper mineralization but should be directly related to the Coast Range intrusion.

3.5. Summary

During this preliminary geological survey some favourable geological setting was discovered on the PR Group claims. Copper staining appears widespread and massive chalcopyrite was

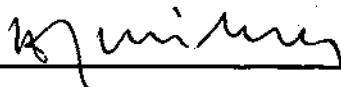
C E R T I F I C A T E

I, Hanspeter Schielly, of 2203 - 1160 Haro Street, Vancouver 5, British Columbia, DO HEREBY CERTIFY THAT:

1. I am a Registered Professional Engineer of the Province of British Columbia.
2. I am a graduate of the Swiss Federal Institute of Polytechnique (E.T.H.) of Zurich, Switzerland, Dipl. Ing. Geol. ETH in 1961, and Dr. Sc. Nat. in 1964.
3. I have practised my profession as an engineer and as a geologist in Europe, South America and North America for the past eleven (11) years.
4. I have personally conducted the geological survey on the PR Group as described in this report.
5. I am the Managing Geologist of Swiss Aluminium Mining Co. of Canada Ltd., and that I have no other interests in the property nor in securities of above company.

Vancouver, B.C.

September, 1972



Hanspeter Schielly, D.Sc., P.Eng.

observed in shear like structures. Syenite dikes striking about NNE appear to be favourable locations of copper staining, and a shear ("vein") containing massive calcopyrite seems to follow a similar trend.

The limited scope of the survey has been fulfilled by establishing the background on which further work will be based on.

4. CONCLUSION, RECOMMENDATIONS

It is concluded that the results of this preliminary geological survey are definitely attractive enough to warrant continuing work. The full area, including places outside the present claim boundaries, is to be investigated in much more detail. There appears to be considerable potential to find extensive and hopefully economic grade copper mineralization of a vein type, mostly associated with NNE striking dikes and shears. The density of these structures is enough to represent a good potential.

It is recommended to establish geological mapping in a scale of 1" = 400', to perform geochemical soil sampling on 400' spaced grid lines striking about N - W and to perform magnetometer survey on same grid. An evaluation of this work will provide data on whether further work might then be warranted.

Respectfully submitted,

Vancouver, September 22, 1972


Hanspeter Schielly, D.Sc., P.Eng.

Appendix II

(PR)

PERSONNEL & DATES

<u>Name + Address</u>	<u>Position</u>	<u>Dates of Work</u>	<u>Days</u>
Hanspeter Schielly 2203-1160 Haro Str. VANCOUVER 5, B.C.	Geologist	June 8-10, 15 August 1, 2	4 2
Xaver Abt 187 Industrial Road WHITEHORSE, Yukon	Cook + Camp Attendant	June 8-10 August 1, 2, 4	3 3
Al Archibald 187 Industrial Road WHITEHORSE, Yukon	Helper	June 9, 10 August 1, 2	2 2

K. J. M. M. M.

(PR)

C O S T O F S U R V E Y

Professional and Technical Services

Geologist	6 days x \$ 125.--	= \$ 750.--
Cook	6 days x \$ 40.--	= \$ 240.--
Helper	4 days x \$ 30.--	= \$ 120.--

Related Costs

Camp Rental	6 days x \$ 10.--	= \$ 60.--
Board	16 man/days x \$ 5.--	= \$ 80.--
Draughting, printing, xerox etc., report		= \$ 250.--
Transportation (helicopter) 2 ¹ / ₂ h x 250.--		= \$ 625.--

Total applicable costs = \$ 2125.--

These above costs are property related costs only and do not include preliminary compilation of previous data, administration costs, transportation to and from Vancouver and other costs

Declared before me at the not normally applicable for assessment credits.

of _____, in the
Province of British Columbia **VANCOUVER, B. C.**
day of _____, A.D.

SEP 27 1972

[Signature]
Sub-Mining Recorder
A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia

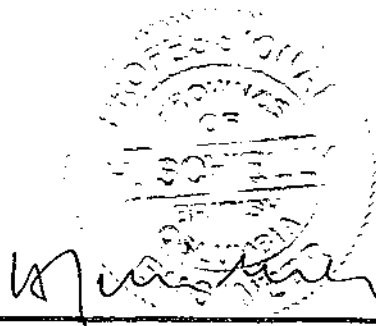
[Signature]
[Signature]

A F F I D A V I T R E C O S T O F S U R V E Y

I, Hanspeter Schielly of 2203 - 1160 Haro Street, Vancouver 5, British Columbia, DO HEREBY SOLEMNLY DECLARE that the geological survey done on the PR Group of Empire Metals Corporation Ltd. (N.P.L.) and under option to Swiss Aluminium Mining Co. of Canada Ltd. was conducted during the field season of 1972 and is described in this report. The data were obtained by Swiss Aluminium Mining Co. of Canada Ltd. at a total property related cost of at least \$ 2125.-- as set out under "Cost of Survey" in this report.

AND I make this solemn declaration concientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act".

DECLARED before me
at the City of Vancouver,
in the Province of
British Columbia,
this _____ day of
_____, A.D., 1972

A circular professional seal for a Professional Engineer in the Province of British Columbia. The seal contains the text "PROFESSIONAL ENGINEER" and "PROVINCE OF BRITISH COLUMBIA". A handwritten signature is written across the seal.

Hanspeter Schielly, D.Sc., P.Eng.

SWISS ALUMINIUM MINING
COMPANY OF CANADA LTD



PR GROUP

EMERAL METALS CORPORATION LIMITED (N.P.)

GEOLOGICAL MAP

CONTRACTOR:

SCALE: 1" = 1000'

INDEX:

DATE: SEPT. 20, 1972

BY: H. SCHIELLY, D.Sc., P.Eng.

LEGEND:

TERTIARY - RECENT

Surficial Soils

CRETACEOUS AND/OR TERTIARY

Andesite Dikes

Morphitic Dikes, Breccia, Intrusive Rocks

Rhyolite Sequence

TRIASSIC - CRETACEOUS

Coast Range Batholith

Dyranite Sequence

Dioritized Xenonites

Andesites + Basalts, Tuffs

Sediments

Surficial Cores

Copper Minerals

Airphoto Lineation - Erosion
Contours
Faulting

Department of
Mines and Petroleum Resources

ATTACHMENT REPORT

NO. 3846 MAP #4

M-4
3846