

GEOCHEMICAL AND GEOPHYSICAL REPORT
ON THE I.D.S. 1-16 CLAIMS
HELD BY COMINCO LTD.
CLINTON M.D. 51°121'S E

WORK DONE DURING AUG. 5 - SEPT. 3/66
BY D.L. COOKE UNDER THE
SUPERVISION OF W. RICHARDSON,

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GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE I.D.S. 1-16
MINERAL CLAIMS, RAYFIELD RIVER PROPERTY
CLINTON M.D., 51°121°SE

Located claims on which assessment work is requested:

<u>Claim</u>	<u>Credit Requested</u>
I.D.S. 1	1 year
I.D.S. 2	1 "
I.D.S. 3	1 "
I.D.S. 4	1 "
I.D.S. 5	1 "
I.D.S. 6	1 "
I.D.S. 7	1 "
I.D.S. 8	1 "
I.D.S. 9	1 "
I.D.S. 10	1 "
I.D.S. 11	1 "
I.D.S. 12	1 "
I.D.S. 13	1 "
I.D.S. 14	1 "
I.D.S. 15	1 "
I.D.S. 16	1 "
	<u>16 years</u>

Work was done on these claims from August 5 to September 3, 1966.

REPORT BY

D.L. COOKE, Ph.D., EXPLORATION GEOLOGIST

UNDER THE SUPERVISION OF J. RICHARDSON P.ENG.

DLC:sa
November 15, 1966

C O M I N C O L T D.
TRAIL, B.C.

GEOCHEMICAL AND GEOPHYSICAL REPORT OF THE I.D.S. 1-16
MINERAL CLAIMS, RAYFIELD RIVER PROPERTY
CLINTON M.D., 51°121°SE

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GEOCHEMICAL AND GEOPHYSICAL REPORT ON THE I.D.S. 1-16
MINERAL CLAIMS, RAYFIELD RIVER PROPERTY
CLINTON M.D. 51°12'10"E

1. SUMMARY

This report deals with a geochemical and magnetometer survey undertaken on the I.D.S. 1-16 claims of the Rayfield No. 1 group during the period August 5 to September 3, 1966. The geochemical survey was completed on August 18, and the magnetometer survey performed between August 19 and September 3, 1966.

As a result of the geochemical and geophysical work performed, it is requested that one (1) year's assessment credit be applied to each of the following sixteen (16) located mineral claims owned by Cominco Ltd:

<u>Name of Claim</u>	<u>Record Number</u>	<u>Date Recorded</u>
I.D.S. 1	10468	August 23, 1965
" 2	10469	" " "
" 3	10470	" " "
" 4	10471	" " "
" 5	10472	" " "
" 6	10473	" " "
" 7	10474	" " "
" 8	10475	" " "
" 9	10476	" " "
" 10	10477	" " "
" 11	10478	" " "
" 12	10479	" " "
" 13	10518	September 3, 1965
" 14	10519	" " "
" 15	10520	" " "
" 16	10521	" " "

Total value of assessment credits requested on the above claims is \$1,600. Total expenditures on the geochemical and geophysical survey is \$4,100.

This report with accompanying maps and statement of expenditures is hereby submitted to apply to the required assessment work.

2. INTRODUCTION

Geochemical and geophysical methods were employed in this survey. The geochemical work involved the collection of soil samples and analytical determination of their copper content, and the geophysical work consisted of the measurement of magnetic intensities using a magnetometer. The main purpose was to locate and delineate anomalous areas that might suggest the presence of commercial quantities of copper.

The survey was conducted by D.L. Cooke, Ph.D., Geology, University of Toronto under the supervision of J. Richardson, Professional Engineer, B.A., University of Toronto. D. Houle and C.E.F. Huckvale ably assisted in the field survey.

The claim group is located 15 miles due east of 70 Mile House on the Cariboo Highway at latitude 51°20' and longitude 121°05' west. Access is by way of 30 miles of gravel road from 70 Mile House. The claims lie along the immediate east side of the Rayfield River.

The topography of the area is in general subdued (elevation 3,000-3,500 feet) with several deeply incised stream valleys. The area is covered by sparse pine, poplar and fir, interspersed with patches of cattle range and meadows. Many small alkali lakes and swamps are found in this area as a result of poor drainage.

Geochemical work consisted of the collection of soil samples and their analysis for total copper content using dithizone as the colorimetric reagent. Sensitivity of the analytical method under field laboratory conditions was ± 10 ppm. Survey control was provided by chain and compass-surveyed base line from which traverse lines were run 400 feet apart. Samples were collected at 100-foot intervals along traverse lines, analysed, and the results plotted on the accompanying map (plate RR-66-2). Anomalous areas ($+100$ ppm copper) were contoured to simplify the interpretation of the results.

A Sharpe MF-1 fluxgate magnetometer was employed for the geophysical survey. This instrument measures the vertical magnetic component in gammas and has a maximum resolution of ± 5 gammas. Control for the magnetometer survey was accomplished by first establishing values for stations at 100-foot intervals along the base line. The established values for base line stations then determined the amount of diurnal correction to be applied to any traverse line station in the area. Magnetometer readings were arbitrarily increased by 1,000 gammas after applying the diurnal correction in order to convert negative readings to positive values. The results were plotted and contoured using a contour interval of 200 gammas. The values for the vertical component of the magnetic field at each station, corrected to ± 10 gammas, are shown on the accompanying map, (plate RR-6-3).

3. GEOLOGY

The area is characterised by a continuous blanket of glacial till and drift. Rock exposure is poor and occurs over about one percent of the area. In places the angularity of boulders suggests that these fragments are not far removed from bedrock.

The main rock type is a grey to white syenite with marked tabular structure. Mineralization is sparse and consists of essentially small amounts of bornite occurring within the syenite.

Several northwesterly trending topographic depressions are present but the widespread extent of drift cover obscures the geological significance of this feature.

4. RESULTS

Geochemical Soil Survey

The anomalous geochemical results, indicated on plate RR-66-2, occur in small isolated areas scattered over the claim group. The largest anomaly is approximately 900' x 200' and is located south of the lake occurring in the central part of the I.D.S. claim group. There are no large anomalous areas suggesting the presence of a major orebody. Even within the anomalous zones copper content is not very high, and fall within the 100-300 ppm range.

The small scattered anomalies may represent small pockets of low-grade copper mineralization close to the surface, or in the case of some of the areas to the northwest they may represent anomalous amounts of copper unrelated to any immediately underlying mineralization but, accumulated in swamps bordering small isolated lakes.

Magnetometer Survey

The results shown on plate RR-66-3 display a somewhat erratic variation of magnetic intensity over short distances. Although the reason for this feature is not immediately evident, it should be noted that the diurnal variations were in many instances as large as the values recorded by the magnetometer. The consistently low magnetometer readings suggest that the area is underlain predominantly by a single rock formation. Only minor amounts of magnetite were noted in exposures of syenite, and the presence of these small amounts of magnetite account for the low magnetic response obtained. The few areas of higher magnetic response outlined, with few exceptions, do not coincide with areas carrying anomalous concentrations of copper. Neither is there any apparently strong positive correlation between geochemical anomalies and magnetometer lows.

Since the anomalous magnetic zones do not all correspond to the geochemically anomalous areas, one might infer that there is no

distinct magnetic feature associated with mineralization. The weak magnetic highs are most likely due to local concentrations of magnetite within the syenite mass - a feature commonly observed in syenitic intrusions.

6. CONCLUSIONS

The geochemical survey has outlined small isolated areas which are probably underlain by small pockets of copper mineralization within the syenite intrusion. It may be concluded from the magnetometer survey that there is no uniform magnetic feature, expressed as highs or lows, associated with the anomalous geochemical zones. The magnetic response obtained was probably too low to be of significance in locating anomalous geological features.

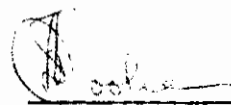
REFERENCES

- (1) Heddle, D.W., 1965, Property Examination Report, I.D.S. Group, Clinton M.D., C.M. & S. (unpublished).
- (2) Gifford, R.G., 1966, Property Examination Report, Pot claims, Clinton M.D., C.M. & S. (unpublished).
- (3) Map 3-1966, 1966, Bonaparte River, British Columbia, Geological Survey of Canada.
- (4) Tipper, H.W., 1964, Bonaparte River West Half (92 PW) Map-Area, Geological Survey of Canada, pages 71-75. *pp. 25-1*
- (5) Cooke, D.L., 1966, Rayfield River Property - Field maps and notes, Cominco Ltd. (unpublished).

ATTACHMENTS


- (1) Geochemical Soil Survey, Rayfield River, Clinton M.D., Scale 1" = 400 feet; plate RR-66-2.
- (2) Magnetometer Survey, Rayfield River, Clinton M.D., Scale 1" = 400 feet; plate RR-66-3.
- (3) Statement of Expenditures.
- (4) Statutory Declaration Relating to Expenditures.
- (5) Statement of Qualifications.

Report by:



D.L. Cooke
Geologist.

Endorsed by:


J. Richardson
Professional Engineer

DLC:sa

Trail Expl'n Office, Western District

November 15, 1966

Distribution: Mining Recorder (Clinton) (2)
Western Exploration, Trail (2)

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1966 GEOCHEMICAL AND GEOPHYSICAL SURVEY EXPENDITURES
I.D.S. GROUP OF CLAIMS, RAYFIELD RIVER PROPERTY,
CLINTON M.D.

GEOCHEMICAL AND GEOPHYSICAL WORK

Salaries (August 5 to September 3, 1966)

D.L. Cooke - 30 days at \$60/day	\$ 1,800
C. Huckvale - 19 days at \$25/day	475
D. Houle - 25 days at \$25/day	625

Transportation

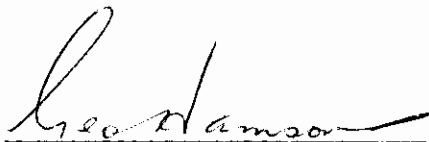
Truck - 1 month at \$400/month	400
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Analysis of Soil Samples

800 samples at \$1/each	800
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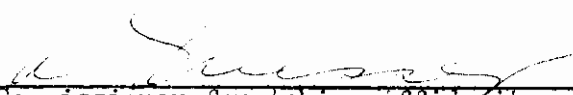
Total:	<u>\$ 4,100</u>
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Endorsed by:



G. Hamson
Accountant, Tadanac Operations

This is Exhibit "A" to the Statutory
Declaration of David Lawrence Cooke,
declared before me the day of
....., A.D. 1966.


A Commissioner for taking Affidavits
for the Province of British Columbia.

CANADA)	STATUTORY DECLARATION RELATING TO
)	EXPENDITURES ON A GEOCHEMICAL AND
PROVINCE OF BRITISH COLUMBIA)	GEOPHYSICAL SURVEY OF CERTAIN
)	MINERAL CLAIMS LOCATED IN THE
TO WIT:)	CLINTON MINING DIVISION

I, DAVID LAWRENCE COOKE, Geologist, of the City of Trail, in the Province of British Columbia, DO SOLEMNLY DECLARE:

1. That I am the person who prepared a geochemical and geophysical report as a result of surveys carried out on certain mineral claims by Cominco Ltd., as agents for the owners of the said claims.
2. That copies of the said report are being filed with the Mining Recorder at Clinton.
3. That attached hereto and marked with a letter "A" upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geochemical and geophysical survey of the said claims.

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

DECLARED before me at the
Municipality of Tadanac, in the
Province of British Columbia
this 20 day of
November, A.D. 1966.

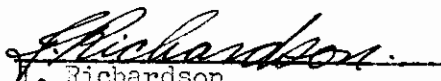
David Lawrence Cooke

J. J. [Signature]
A Commissioner for taking Affidavits for British Columbia

C O M I N C O L T D.
TRAIL, B.C.

STATEMENT OF QUALIFICATIONS

D.L. Cooke was responsible for conducting the geochemical and geophysical survey described herein. Dr. Cooke is a graduate geologist, B.Sc. University of New Brunswick, M.A. and Ph.D. University of Toronto, and has been employed in geological field work since 1959. During this time he has worked on various field projects as an exploration geologist before joining Cominco in 1966. I consider him a competent and experienced geologist.


J. Richardson
Professional Engineer

JR:sa
Trail Expl'n Office, Western District
November 15, 1966

COMINCO LTD.
TRAIL, B.C.

APPENDIX TO ACCOMPANY THE GEOCHEMICAL AND GEOPHYSICAL
REPORT ON THE I.D.S. 1-16 MINERAL CLAIMS, RAYFIELD RIVER
PROPERTY, CLINTON M.D., 51°12'1"SE

GEOCHEMICAL SURVEY

Soil Sampling

An orientation geochemical survey was conducted on the Rayfield River property prior to implementation of the detailed soil sampling program. In the orientation study, soil samples were taken at depths of 2", 6" and 12" from the A-1 to A-2, the B and C horizons respectively at each station located at 500 foot intervals along the baseline. Variations in the amounts of copper determined in the three horizons at each station was less than $\pm 10\%$. The A-1 and A-2 horizons immediately below a thin layer of organic material, consists of fine, sandy clay, while the B and C horizons contain from 20% to 40% pebbles and boulders.

For the detailed geochemical survey, soil samples of about $\frac{1}{2}$ pound were taken with a grub hoe from the A-1 and A-2 horizons which occurred within 1" to 3" of the surface. Prior preliminary work had indicated that such shallow sampling could give reliable results. Each sample was transferred at the sample site to a paper container, using a plastic spoon to avoid contamination, and appropriately numbered before shipping to a field laboratory.

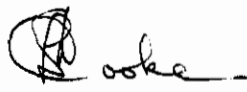
Analytical Procedure

The samples were dried and screened to pass 80 mesh. A 0.1 gm. portion of the minus 80 material was then transferred to a culture tube and digested in hot perchloric acid for approximately one hour. After digestion, each sample was diluted, and biquinoline solution added. Copper in the sample, which is extracted into the upper immiscible organic layer in the tube, causes the development of a red coloration; the intensity of which is proportional to the amount of copper present. Estimation of copper content was made by comparison with prepared standards. In this manner as little as 10 parts per million copper can be detected with a precision of $\pm 25\%$.

The biquinoline method is favoured over the more commonly employed dithizone method because of the following advantages:

- (1) Biquinoline is specific for copper and is not subject to interference from other metals such as Pb and Zn, which interfere in the dithizone reaction.
- (2) Standards are relatively stable, which avoids the necessity of preparing new ones daily.
- (3) The colour range before dilution is broad (10 to 3,000 ppm) eliminating the need for many tedious dilutions.
- (4) Non Toxic material are used.

Report by:


D.L. Cooke

Endorsed by:


J. Richardson

DLC:sa

Trail Expl'n Office, Western District

January 4, 1967

Distribution: Mining Recorder (Clinton) (2)✓
Western District Exploration (2)



