

1908

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL REPORT  
ON THE RAT NOS. 1-20 CLAIMS, SITUATED THREE  
MILES EAST OF THE NORTH END THUTADE LAKE  
OMINECA MINING DIVISION  
57°02' N. 126°47' W

| <u>Group</u> | <u>Number of Claims</u> | <u>Credit Requested</u> |
|--------------|-------------------------|-------------------------|
| Rat #1       | 20                      | 1 year each             |

Located claims on which assessment work credit is requested are as follows:-

| <u>Claim</u>          | <u>Record No.</u>        | <u>Credit Requested</u> | <u>Total</u> |
|-----------------------|--------------------------|-------------------------|--------------|
| Rat 1-20<br>inclusive | 59676-59695<br>inclusive | 1 year each             | 20           |

Work was done on these claims during the period July 20 to August 23, 1968.

REPORT BY

D.L. COOKE, Ph.D.,

UNDER THE SUPERVISION OF

J. RICHARDSON, P. ENG.

DLC:mk  
June 6, 1969  
Vancouver, B.C.

COMINCO LTD.

WESTERN DISTRICT

EXPLORATION

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ON THE RAT NOS. 1-20 CLAIMS, SITUATED THREE  
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57°02' N. 126°47' W

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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. **1908** MAP.....

DLC:mk  
June 6, 1969  
Vancouver, B. C.

C O M I N C O L T D.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL REPORT  
ON THE RAT NOS. 1-20 CLAIMS, SITUATED THREE  
MILES EAST OF THE NORTH END THUTADE LAKE  
OMINECA MINING DIVISION  
57°02' N, 126°47' W

INTRODUCTION

This survey consists of concurrent geological mapping, prospecting, and soil sampling, which was done to determine whether copper mineralization occurs in the property.

The survey was conducted by R. C. Armstrong, assisted by M. J. Casselman and R. A. Thomas under the supervision of D. L. Cooke, Ph.D., and J. Richardson, P. Eng.

The Rat claims are located in the Omineca Mining Division, at latitude N 57°02', and longitude W 126°47'. Elevation is approximately 5000-5500 ft. The prospect is situated three miles east of the north end of Thutade Lake, and at the south end of a lake locally known as Duncan Lake (Plate PC-68-10).

Access is by fixed or rotary winged aircraft from Smithers (190 miles).

HISTORY

No previous staking or work is known to have been done in the area covered by the Rat claims.

GEOLOGY

The property is located within an area of Triassic volcanic rocks on the western side of the Omineca-Cassiar intrusions. Rock exposure on the property is estimated at approximately five percent, and occurs mainly on a ridge in the northern section of the claim group. The southern section of the property is generally covered by soil and glacial drift.

Monzonite and quartz feldspar porphyry intrusions, of undetermined extent, have intruded andesite and rhyolite flows of the Takla Group. Quartzite zones within the volcanic sequence may be sedimentary or may be metasomatic in origin. The volcanic rocks, in general, are massive except in the vicinity of the intrusions where they are strongly fractured and impregnated with pyrite. Small exposures of conglomerate occur at the southwestern edge of the property. These sedimentary rocks probably belong to the Sustut Group of Cretaceous to Tertiary age (Plate PC-68-10).

The intrusive rocks are monzonite, feldspar porphyry and quartz feldspar porphyry. The monzonite which is equigranular to slightly porphyritic in texture, consists of potash feldspar, plagioclase, biotite, and hornblende. Plagioclase phenocrysts and hornblende in the feldspar porphyry are set in a grey aphanitic groundmass. The quartz feldspar porphyry has a similar texture, but also contains phenocrysts of quartz.

Fracturing is pronounced in the andesite and quartz feldspar porphyry. Prominent shear and fracture sets have the following attitudes: East/90°, N50°E/50°W, North/70°E, and N40°W/90°.

No copper mineralization was located. However, pyrite in amounts of 2%-10% occurs within the fractured intrusive and volcanic rocks both as disseminations and fracture fillings.

## GEOCHEMISTRY

Soil samples were collected and analyzed for copper using the Unicam SP 90 Atomic Absorption Spectrophotometer. Molybdenum was determined colorimetrically using thiocyanate.

### Soil Survey:

A total of 110 soil samples were taken where possible from the B horizon (red-brown), and if not available, the A horizon. Sample depth ranges from 6 to 12 inches. All samples were taken with a Manitoba pick and placed in Kraft sample bags.

Survey control was provided by chain and compass for the location of claim lines. The two claim location lines were used as base and tie lines. Soil sample lines and locations were controlled by pace and compass. Sample spacing is 200' along traverse lines approximately 800' apart.

### Sample Preparation:

The respective soil horizon samples (A,B) are first dried overnight in an oven at 110° C, and then subjected to sieving with a minus 80 mesh/sq.in. nylon screen. A 0.5 gram portion of each screened sample is weighed into a 16 X 150 mm. pyrex test tube and 5 ml. of 10% HCl added. The sample is next digested for one hour at 95° C in a water bath, and on removal from the water bath a further 5 ml. of 10% HCl is added, using an automatic pipette to ensure complete mixing. The mixture is allowed to settle and equilibrate for a period of from one to two hours, and then analyzed by atomic absorption.

### Atomic Absorption Analysis:

The SP. 90 Unicam atomic absorption Spectrophotometer accepts a small portion of the extract which is aspirated into an Oxygen-Acetylene flame. The flame temperature is sufficient to dissociate most of the sample into the atomic state. The amount of sample absorption of the line spectrum of the particular element being analyzed for is compared to the amounts obtained by previously carefully prepared standards. The values of the standards are plotted on log-log paper with percent absorption against concentration in  $\mu\text{gm/ml}$ . The amounts of copper are read from the graph in  $\mu\text{gm/ml}$  and these values are multiplied by a dilution factor of 30 ( $0.5 \mu\text{gm/ml}$ .) thus giving readings in ppm copper.

### Molybdenum Analysis:

A Torsion Balance is used to weigh out 0.2 gram of the screened sample into an 18 X 150 mm pyrex test tube. Molybdenum is extracted by fusing the sample with a standard pyrosulphate, cooling the fused mass, adding 10 ml of 10% HCl, and allowing the mixture to sit in a hot water bath. A 5 ml. aliquot is transferred to a 16 X 150 mm. test tube and 1 ml of ammonium thiocyanate is added. After mixing thoroughly, 1 ml of stannous chloride solution is added, and the mixture is shaken until the red coloration disappears. Water is added to bulk the specimen to the 10 ml mark and  $\frac{1}{2}$  ml. isopropyl ether added. The test tube is stoppered, and shaken for 30 seconds. The phases are allowed to settle and the colour produced is compared against carefully prepared standards containing known amounts of molybdenum. The concentration of molybdenum in each sample is thus determined to the nearest 1 ppm.

## CONCLUSIONS

Rock exposure amounts to about 5% on the claim group. A program of geological mapping and prospecting failed to locate copper mineralization, but indicated the presence of abundant pyrite. The results of the soil sampling survey shows that small amounts of copper and molybdenum are dispersed in the soil and glacial cover that masks portions of the rocks underlying the area.

REFERENCES:

- (1) Lord, C.S., 1948, McConnell Creek Map-Area, Cassiar District, British Columbia, G.S.C. Memoir 251.
- (2) Rat Group - Field Notes, R.C. Armstrong, D.L. Cooke, M.J. Casselman, R. A. Thomas

ATTACHMENTS

- (1) Statement of Expenditures
- (2) Statutory Declaration of Expenditures.
- (3) Plate PC-68-10, Geology and Soil Survey, Rat Group, 1" = 400'.
- (4) Statement of Qualifications.

Report By



D.L. Cooke, Ph.D., Geologist

Endorsed By



J. Richardson,  
Professional Engineer.

DLC:mk

June 6, 1969

Distribution:

|                           |   |
|---------------------------|---|
| Mining Recorder, Smithers | 2 |
| Vancouver, Exploration    | 1 |

EXHIBIT "A"

C O M I N C O L T D.

EXPLORATION

WESTERN DISTRICT

1968 GEOLOGICAL SURVEY EXPENDITURES  
 RAT GROUP, SOUTH OF DUNCAN LAKE  
 OMINECA MINING DIVISION  
 94E-2

SUB-MINING RECORDER  
 RECEIVED  
 JUN 12 1969  
 M.R. # 36,095E \$ 121<sup>00</sup>  
 VANCOUVER, B. C.

SALARIES

|   |       |       |
|---|-------|-------|
| 1 Geologist (R.C. Armstrong)                      |       |       |
| 3 days July 20 - Aug. 23 @ \$40/man day           | \$120 |       |
| 2 Field Assistants (M.J. Casselman,<br>R. Thomas) |       |       |
| 3 days July 20 - Aug. 23 @ \$30/man day           | \$180 |       |
| 1 Senior Geologist (D.L. Cooke)                   |       |       |
| 2 days July 20 - Aug. 23 @ \$50/day               | \$100 | \$400 |

CAMP SERVICES

325

TRANSPORTATION

|                                       |  |         |
|---------------------------------------|--|---------|
| Charter helicopter 8 hrs. @ \$140/hr. |  | \$1,120 |
|---------------------------------------|--|---------|

SOIL SAMPLING

|                          |       |     |
|--------------------------|-------|-----|
| 110 Cu analyses @ \$1.50 | \$165 |     |
| 45 Mo analyses @ \$2.00  | 90    | 255 |

|                    |  |         |
|--------------------|--|---------|
| TOTAL EXPENDITURES |  | \$2,100 |
|--------------------|--|---------|

Signed J. Richardson  
 J. Richardson, P. Eng.

This is Exhibit "A" to the Statutory Declaration of  
 J. Richardson, declared before me the 9th day of  
 June, 1969 A.D.

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

DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA.  
To Wit:

In the Matter of

STATUTORY DECLARATION RELATING TO  
EXPENDITURES ON A GEOLOGICAL  
SURVEY OF THE RAT MINERAL CLAIMS  
PROPERTY OF COMINCO LTD.  
OMINECA MINING DIVISION.

SUB-MINING RECORDER  
RECEIVED  
JUN 12 1969  
M.R. # 36095E \$ 101<sup>00</sup>  
VANCOUVER, B. C.

I, JAMES RICHARDSON, Professional Engineer

of the City of Vancouver

in the Province of British Columbia, do solemnly declare that

- I do personally know D. L. Cooke who prepared the accompanying geological report as a result of a survey carried out under my supervision on certain mineral claims situated in the Omineca Mining Division, owned by Cominco Ltd.
- Copies of the said report are being filed with the Mining Recorder in Vancouver.
- Attached hereto and marked with the 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 geological survey of the said claims showing in addition the dates during which those making the said survey performed their work.

And I make this solemn declaration conscientiously 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 9th  
day of June 1969, A.D.

*James Richardson*

*[Signature]*  
A Commissioner for taking Affidavits for British Columbia or  
A Notary Public in and for the Province of British Columbia

**In the Matter of**

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.....

.....

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**Statutory Declaration**  
(CANADA EVIDENCE ACT)

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C O M I N C O L T D.

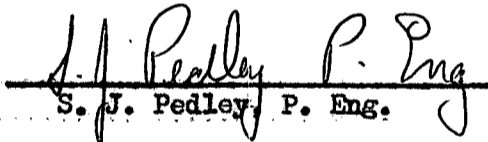
EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

D. L. Cooke was responsible for carrying out the geological-geochemical survey on the RAT Group of claims and for the preparation of this report. Mr. Cooke graduated as Bachelor of Science from the University of New Brunswick in Honours Geology 1959. He obtained his MA degree in Geology from the University of Toronto in 1961 and obtained his Phd in Geology at Toronto in 1966 and has been working in a responsible capacity with Cominco Ltd. since May 1, 1966.

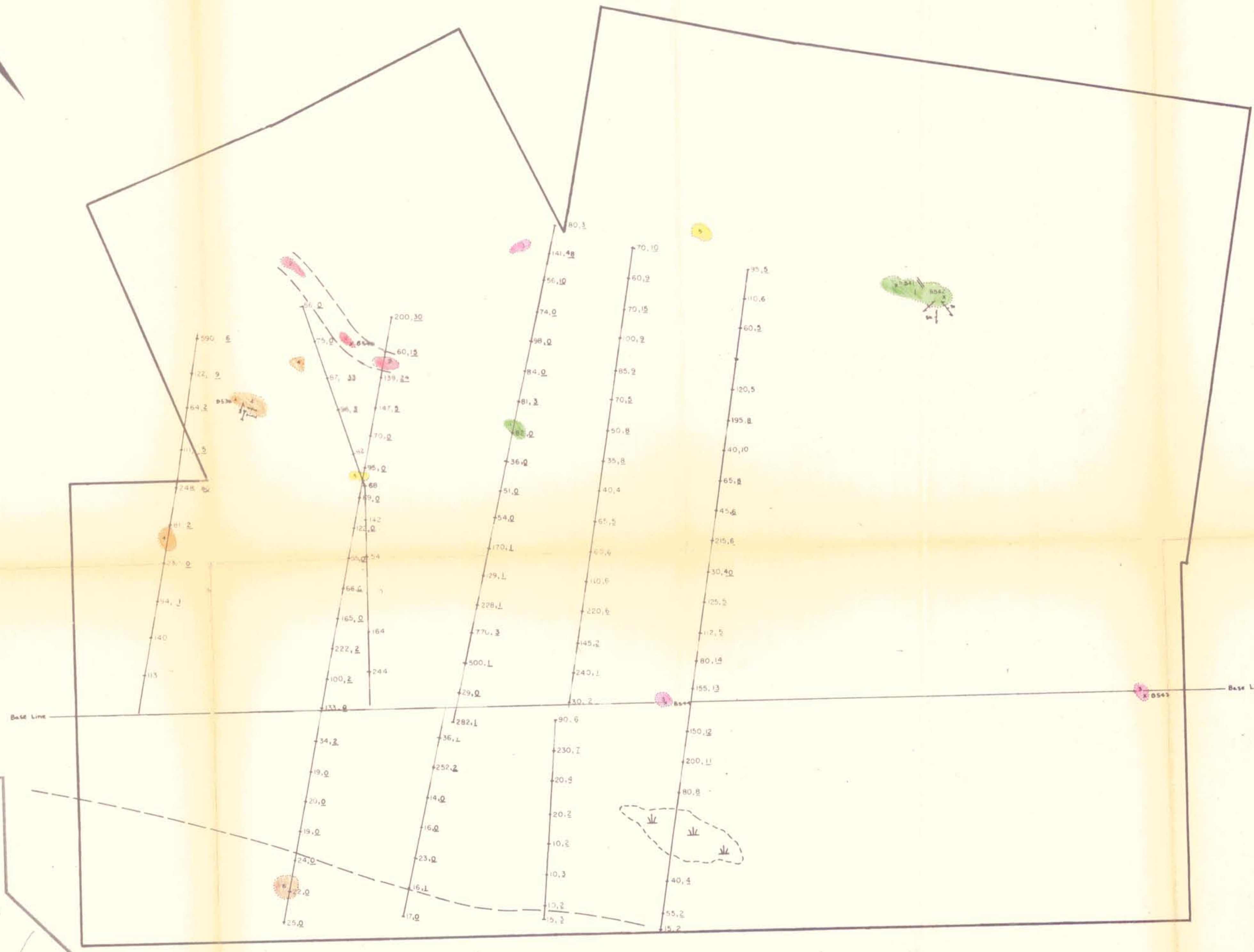
I consider him to be an experienced and capable geologist.

  
S. J. Pedley, P. Eng.

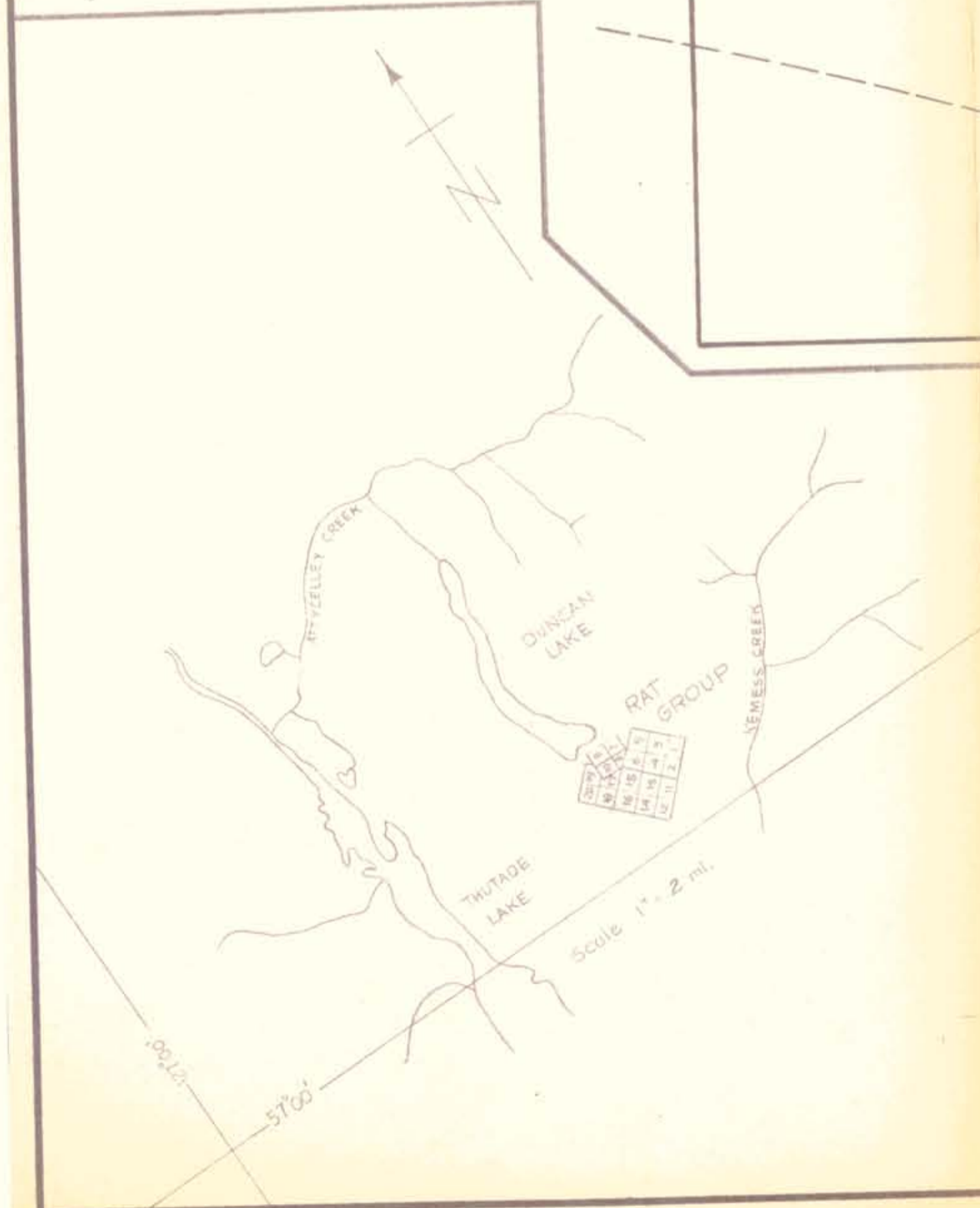
for J. Richardson, P. Eng.







- GEOLOGICAL LEGEND**
- Rock sample
  - Geological contact
  - Outcrop
  - Strike and dip - Shears
  - " " Fractures
  - SUSTUT GROUP - Conglomerate
  - Feldspar porphyry and latite porphyry
  - Quartz feldspar porphyry
  - Monzonite and monzonite porphyry
  - TAKLA GROUP - Quartzite
  - Andesite, Altered andesite
  - Soil sample location and results  
40 ppm Cu, 4 ppm Mo



1908

TO ACCOMPANY GEOLOGICAL-GEOCHEMICAL  
REPORT ON THE RAT 1-20 CLAIMS INCLUSIVE  
DATED JUNE 6, 1969  
by: *Booke*

|                  |                   |                                      |                      |
|------------------|-------------------|--------------------------------------|----------------------|
| Drawn by: D.L.C. | Traced by: G.K.T. | GEOLOGY AND SOIL SURVEY<br>RAT GROUP | NTS 94 E 2           |
| Revised by: Date | Revised by: Date  |                                      |                      |
| OMINECA M.D.     |                   | Scale: 1" = 400'                     | Date: SEPT. 20, 1968 |
|                  |                   |                                      | Plate: PC-68-10      |