

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
Report by M.R. Murrell, B.Sc.
Under the Supervision of J. Richardson,
P. Eng. Claims held by Cominco Ltd.
Work done during the period July 13
to July 17, 1969. 94E/2W

2406

2406

COMINCO LTD.

FINAL GEOLOGICAL - GEOCHEMICAL REPORT ON THE

RAT GROUP

94-E2

REPORT BY

M. R. MURRELL, B.Sc.

ENDORSED BY

J. RICHARDSON, P. ENG.

SUB-MINING RECORDER
RECEIVED

APR 25 1970

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VANCOUVER, B. C.

EXPLORATION

WESTERN DISTRICT

Geochemical and Geological 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 mark is requested are as follows:

<u>CLAIM</u>	<u>RECORD NO.</u>	<u>CREDIT REQUESTED</u>	<u>TOTAL</u>
RAT 1-20 inclusive	59676-59695 inclusive	1 year each	20

Work was done on these claims during the period July 13 to July 17, 1969.

Report by

M.R. MURRELL, B. Sc.

Under the Supervision of

J. RICHARDSON, P. Eng.

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

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Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 2406 MAP

C O M I N C O I T D.

EXPLORATION

WESTERN DISTRICT

Geochemical and Geological Report
on the RAT Nos. 1-20 Claims, Situated
south of Duncan Lake, three miles east of
the north end of Thutade Lake
Omineca Mining Division
57°02' N 126°47' W
NTS 94E-2

INTRODUCTION

This survey consists of concurrent geological mapping, prospecting, and soil sampling which was done in an effort to locate copper mineralization on the property.

The survey was conducted by D. Anderson, assisted by D.N. LeNobel under the supervision of D.L. Cooke, PhD, 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 feet. 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.

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

HISTORY

The RAT claims were staked by Cominco in 1968 to cover intrusive rocks that suggested a porphyry copper situation. Soil sampling in 1968 consisted of 110 samples that were analyzed for copper and molybdenum. An initial program of geological mapping was carried out in 1968. During 1969 an additional 117 soil samples were obtained and fill-in geological mapping was undertaken.

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 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.

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° , N 50° E/ 50° W, North/ 70° E, and N 40° 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 using the Unicam SP 90 Atomic Absorption Spectrophotometer Molybdenum was determined calorimetrically using thiocyanate.

Soil Survey

A total of 117 soil samples were taken in 1969 where possible from the B horizon (red-brown), and if not available, the A horizon. Sample depth ranged 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 feet along traverse lines approximately 400 feet apart.

A statistical analysis for Mo content was carried out by B.W. Smee. Background was found to be less than 10 ppm Mo. Anomalous values are greater than 15 ppm Mo. Copper soil samples are considered anomalous when exceeding 100 ppm Cu.

Sample Preparation

The respective soil horizon samples (A,B) are first dried overnight in an oven at 150° F and then subjected to sieving with a minus 80 mesh/sq. in. stainless steel 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 20% HNO_3 is added.

The sample is next digested for one hour at 95° C in a water bath. During this hour it is shaken vigorously at 15 minute intervals. On removal from the water bath it is bulked to 10 ml. with demineralized water, ensuring 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.

Results from the standard are plotted on graph paper of absorption vs. concentration in micrograms/ml. Absorption readings are taken for the samples and concentration in micrograms per ml. is read directly from the graph. This reading is multiplied by a standard dilution factor of 20, thus giving a reading in ppm copper.

Molybdenum Analysis

A Torsion Balance is used to weigh out 0.2 gram of the screened sample (-80 mesh) into an 18 x 150 mm pyrex test tube. Molybdenum is extracted by fusing the sample with potassium pyrosulphate, cooling the fused mass, adding 10 ml. of 10% HCl, and allowing the mixture to sit in a hot water bath at 95° C for $1\frac{1}{2}$ hours with frequent agitation. The mixture is allowed to settle, then 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 $\frac{1}{8}$ 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 is less than 5% on the claim group. The geological mapping and prospecting carried out in 1969 located malachite in one outcrop, but no sulphide copper mineralization was found. Pyrite was relatively abundant, however. The results of the soil sampling survey shows that small amounts of copper and molybdenum are dispersed in the soil and glacial cover that mask most of the rocks that underlie the area.

References

1. Lord, C.S. - 1948 - McConnell Creek Map Area, Cassiar District, British Columbia. G.S.C. Memoir 251.
2. RAT Group - 1968 Field Notes - R.C. Armstrong, D.L. Cooke, M.J. Casselman, R.A. Thomas.
- 1969 Field Notes - D. Anderson, D.N. LeNobel.

Attachments

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

Report By: _____

M.R. Murrell
M.R. Murrell

Endorsed By: _____

J. Richardson
J. Richardson
Professional Engineer

Distribution

Mining Recorder, Smithers (2)
Vancouver, Exploration (1)

April 10, 1970
MRM/lmc

COMINCO LTD.EXPLORATIONWESTERN DISTRICT

1969 Geochemical and Geological
Survey Expenditures RAT Group
South of Duncan Lake
Omineca Mining Division
94E-2

Salaries

1 Geologist (D. Anderson) 4 days (July 13-17) @ \$45/man day	\$180.00	
1 Geologist (M. Murrell) - Report and Preparation 2 days (April 8-9) @ \$45/man day	90.00	
1 Field Assistant 4 days (July 13-17) @ \$35/man day	140.00	\$410.00

Camp Services

350.00

Transportation

Otter and Beaver Support	622.40	622.40
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Soil Sampling

117 Cu @ 1.50	175.50	
227 Mo @ 2.00	554.00	<u>729.50</u>

(110 of which were collected
in 1968, analyzed in 1969)

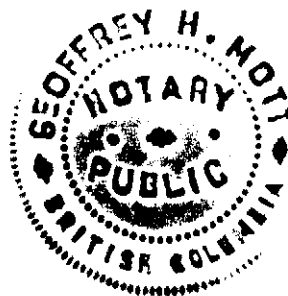
Total \$2,111.90

Signed:

J. Richardson
J. Richardson, P. Eng.

This is Exhibit "A" to the Statutory
Declaration of J. Richardson, declared
before me the 22 day of April, 1970

Geoffrey H. Mott
A Notary Public in and for the Province
of British Columbia



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

In the Matter of

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

I, JAMES RICHARDSON, Professional Engineer

of the City of Vancouver

in the Province of British Columbia, do solemnly declare that

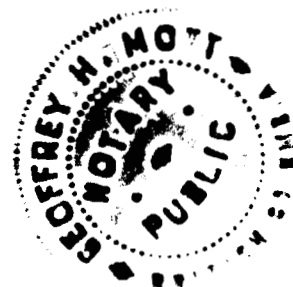
1. I do personally know M. R. Murrell who prepared the accompanying geological and geochemical report as a result of a survey carried out under my supervision on certain mineral claims situated in the Omineca Mining Division owned by Cominco Ltd.
2. Copies of the said report are being filed with the Mining Recorder in Vancouver.
3. 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 22nd
day of April 1970, A.D.

J. Richardson

Geoffrey H. Mott
A Notary Public in and for the Province of British Columbia.



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EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

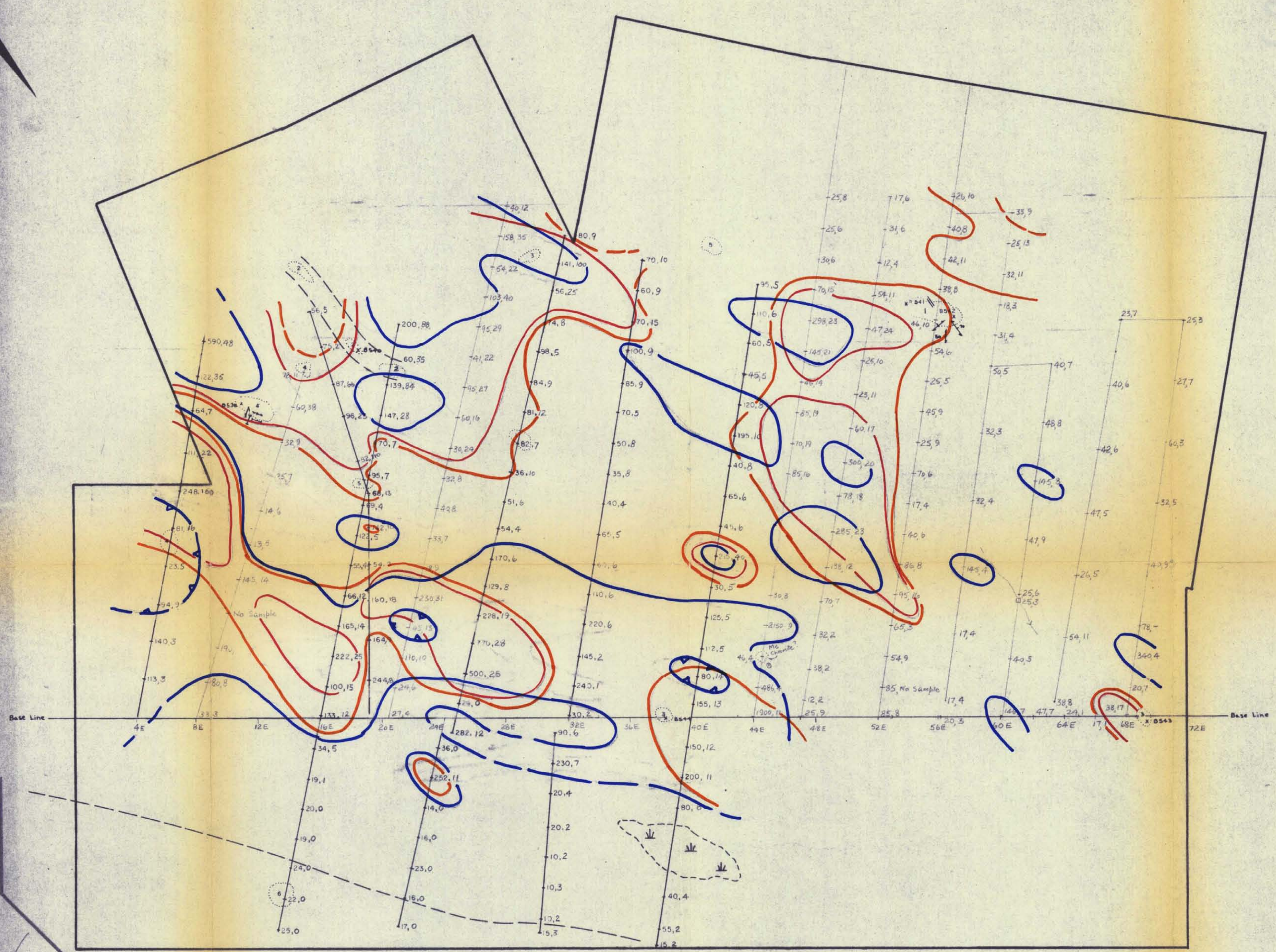
D. L. Cooke was responsible for carrying out the geological-geochemical survey on the RAT group of claims. Dr. Cooke graduated as Bachelor of Science from the University of New Brunswick in Honours Geology 1959. He obtained his M.A. degree in Geology from the University of Toronto in 1961 and obtained his Ph.D. in Geology at Toronto in 1966, and worked in a responsible capacity with Cominco Ltd. from May 1st, 1966, to January 31st, 1970.

The report was prepared by M. R. Murrell. Mr. Murrell graduated as Bachelor of Science from the University of Alberta, Edmonton, in Honours Geology, 1966. He has been working with Cominco Ltd. since June 1st, 1966.

I consider Dr. Cooke and Mr. Murrell to be experienced and capable geologists.

Signed:


J. Richardson, P. Eng.

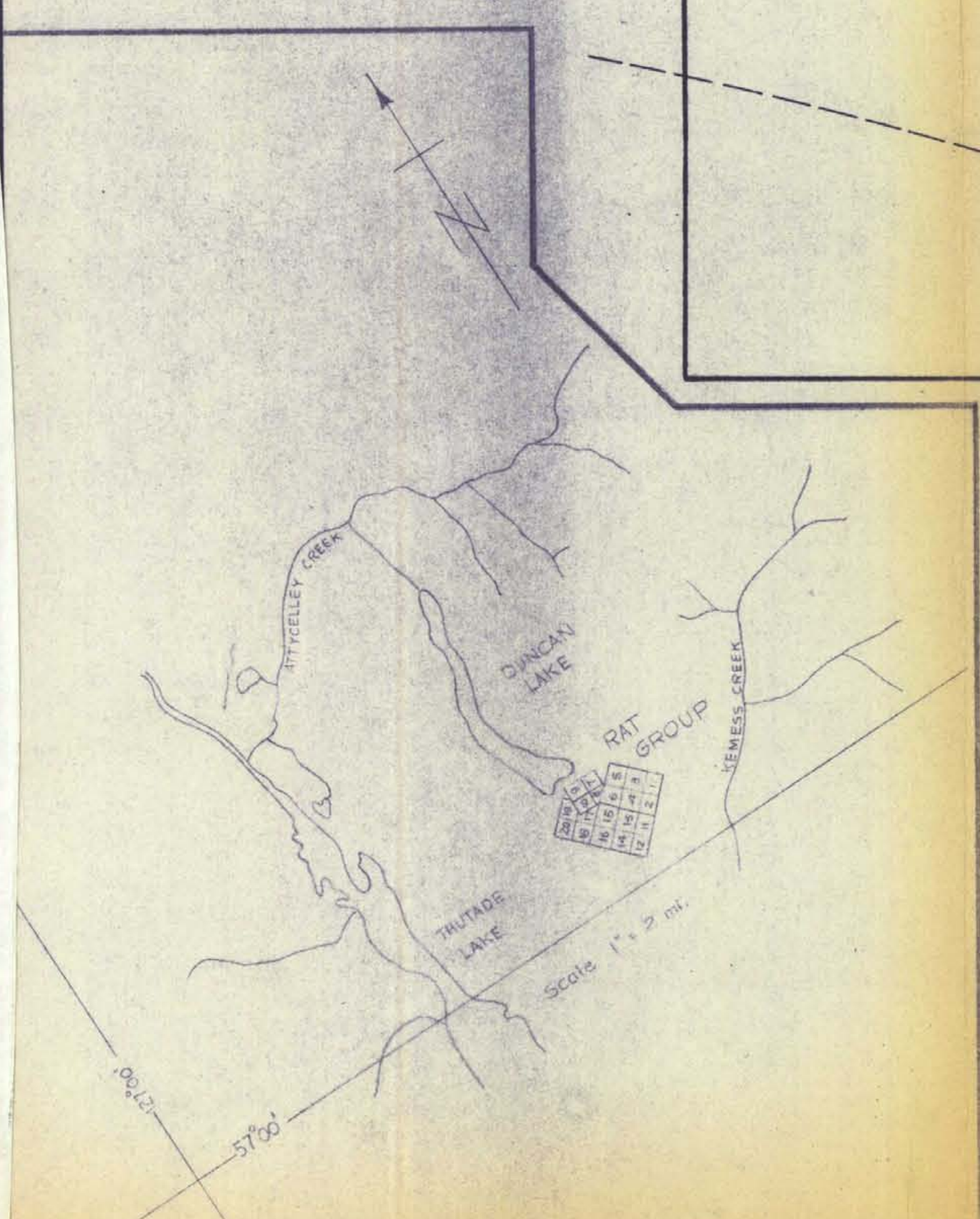


GEOLOGICAL LEGEND

- 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 pp. Cu, 4 ppm Mo
- + 100 ppm Copper - Anomalous
- + 15 ppm Molybdenum - Anomalous
- + 10-15 ppm Molybdenum - Probably significant

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **2406** MAP #1

2406



To accompany Geochemical and Geological Report
on the RAT 1-20 claims inclusive
dated April 10, 1970
by *[Signature]*

Drawn by: D.L.C.	Traced by: G.K.T.	GEOLOGY AND SOIL SURVEY	
Revised by: Date	Revised by: Date	RAT GROUP	
EG + D.L.C. Nov 13/69		OMEGA M.D. N.T.S. 94 E 2	
		Scale: 1" = 400'	Date: SEPT. 20, 1969 Plate: PC-68-10