

2047

GEOCHEMICAL AND GEOPHYSICAL
REPORT ON
TRO-BUTTLE MINES LTD. PROPERTY
MORRISON LAKE, OMINECA M. D.
UNDER OPTION TO
CANADIAN SUPERIOR EXPLORATION LIMITED

CLAIMS: KOFIT 1-188 (55306-55493)

LOCATION: 45 MILES NE OF SMITHERS,
B. C. 55° ~~125° E~~
 126° S.E

SEPTEMBER 9, 1969

W. RAINBOTH, P. ENG.

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NO. **2047** MAP

INTRODUCTION

The present report deals with a combined geochemical, magnetometer and electromagnetic survey with a number of I. P. checks over seven weak EM conductors.

The property is located 45 air miles north-east of Smithers, B. C., and covers the South end of Morrison Lake. It completely surrounds the Noranda Morrison property on which a possible porphyry copper type ore body is located. The camp was set up on Hatchery Arm of Babine Lake, three miles South of Morrison Lake. It is accessible by air or by boat from Smithers Landing, (45 miles by road from Smithers). A 4-wheel drive road leads from the camp to the property, a distance of about 2 miles. A helicopter was used to good advantage in the more remote sections of the property.

The ground is held by Tro-Buttle Mines Limited and is under option to Canadian Superior Exploration Limited. Claims on which work was done are the KOFIT 1, 2, 11-17, 20, 23-30, 33, 35-66, 95, 97-116, 118, 130, 132-137, 139-160, 162-186.

The work was done by a four man crew moving as a unit taking soil samples and magnetometer readings at 200-foot intervals and EM readings at 100-foot intervals. Paced traverses were flagged and run East-West approximately 800 feet apart. Line miles of readings and sampling completed totalled 61.25 miles.

The purpose of the work was to locate a porphyry copper-type ore body similar to the nearby Noranda and Granisle mines. The mineralization on the Noranda property is indicated by the above 3 types of surveys. The work was started on May 24, 1969 and completed on July 31, 1969.

Personnel involved were W. Rainboth, Regional Supervisor; B. Kahlert, Project Supervisor; D. Johnson and D. Gibson, Geophysical Operators; D. White and W. Sellmer, Helpers. Cost of wages and equipment rentals totalled \$15,942.05.

Qualifications of Geophysical Operators are as follows:

D. Johnson	-	1966	-	Noranda Exploration, EM, Magnetometer Operator
		1967	-	" " " " "
		1968	-	" " " " "
D. Gibson	-	1966	-	Homestake Exploration - I. P. Helper
		1967	-	Seigel Associates - I. P. Operator
		1968	-	Canadian Superior Exploration - Magnetometer Operator

GEOCHEMISTRY

1. A total of 1551 soil samples were collected at 200-foot intervals with a steel auger. Several detailed lines checking previous anomalies were sampled at 100-foot intervals. Where present, a rusty, brown horizon was sampled, at depths of generally less than 18 inches. Profile sampling in the area indicates that a true "B" horizon is poorly developed and, where present, is usually below sampling depth; thus the samples were collected from the "A" horizon. This is contrary to accepted geochemical practice, but nevertheless the efficacy of the method has been proven in the area.

2. The samples were packaged in soil sample envelopes supplied by Canada Envelope Company of Montreal and made of "High Wet Strength, Kraft" brown paper with a wet strength of 32 lbs., measuring 3 1/2 inches by 8 1/2 inches when the flap of the envelope is folded.

3. The samples were partially dried in the field by suspending them in the bags under the roof of a tent. The bags have holes pierced in them for stringing several together for this purpose. In the laboratory, the samples were dried in a warm oven while still in the bags. The samples were screened through an 80 mesh nylon screen, the fines being used for analysis.

4. The tests for total copper and total molybdenum were all carried out in the laboratory of Falconbridge Nickel Mines in Vancouver. No field tests were carried out.

5. The tests were performed as follows:

(a) Total Copper

A sample of the fines from screening the dried sample was digested with fuming perchloric acid for four hours in a pyrex beaker. The siliceous sediment was allowed to settle and the solution diluted to a measured volume with distilled and de-metallised water. An aliquot of the test solution was then taken and analysed for copper using an atomic absorption spectrophotometer manufactured by Perkins-Elmer. Carefully prepared standards were used for control and the copper analyses were carried out by Falconbridge Nickel Mines Ltd. in Vancouver, as were those for total molybdenum.

(b) Total Molybdenum

A 1/4 gram sample of the fines was fused in a nickel crucible with 1 gram of a fusion mixture made up of 5 parts anhydrous sodium carbonate, 4 parts sodium chloride and 1 part potassium nitrate. The mixture was fused until frothing ceased and allowed to cool, then 2 millilitres of water added. After standing for several hours, the solution and melt were transferred to a calibrated test tube and adjusted to 5 millilitres with water. The solution was then boiled until the melt disintegrated. A 2 millilitre aliquot of the resulting solution was pipetted into 2 millilitres of 2 1/2% hydroxylamine hydrochloride solution contained in a test tube. The tube was shaken to liberate carbon dioxide and left to cool below 30°C. Half a millilitre of 1% dithiol solution (hydrochloric acid) was then added and the mixture shaken gently at intervals over a period of 20 minutes. The resulting green colour developed was compared with a series of similarly prepared standards containing differing amounts of molybdenum. The standard matching the colour of the sample solution was found and knowing the amount of molybdenum therein the amount of the unknown was found via the formula:

$$\text{molybdenum in ppm} = 10 \times \frac{\text{micrograms of molybdenum in the matching standard.}}{\text{micrograms of molybdenum in the standard solution}}$$

RESULTS

The only areas found worth follow-up were the two anomalous areas previously known near the discovery.

1. Anomaly up to 286 ppm Cu, 1,200' x 500' centred on Line 288E at 266N. This was drilled with no evidence of copper mineralization. The copper is considered to be transported from the discovery area about 3,000 feet uphill to the northeast.

2. Anomaly up to 1,120 ppm Cu and 70 ppm Mo about 2,000 feet by 500 feet centred on L 292E at 327N. The area was trenched and very weak, uneconomic copper mineralization and no molybdenum mineralization was reported by geologist B. Kahlert.

ELECTROMAGNETIC SURVEY

All known porphyry copper type ore bodies in the Babine area respond to the Crone Standard, Dual Frequency (480-1800 cps) JEM unit, utilizing a coil separation of 200', which was the method used here. In known deposits, sufficient fracture filling sulphides exist throughout to produce a moderate conductivity. This conductivity is slightly higher than the clay beds that blanket most of the area. The clay beds create a problem, as they can produce a background rise of up to 15° resultant dip angle at 1,800 cps. The conductivity of a near-surface ore-body would be expected to be slightly greater than the clay beds, but the combination of conductivity of clay plus ore could be greater than 30° resultant dip angle (1800 cps). Theoretically, the 480/1800 cps ratio for clay beds should be about 0.1, while that of sulphides closer to 0.5. It was found much more reliable to check any interesting anomalies with I. P., rather than the two frequency method.

Weak EM conductors were located in the following areas:

1. Line 238N, 180E - 210E
2. Line 230N, 175E - 170E
3. Line 246N, 230E - 247E
4. Line 222N, 240E - 262E
5. Line 350N, 135E - 161E
6. Line 374N, 130E - 157E
7. Line 406N, 210E - 226E

All were checked with I. P. traverses and indicated to be due to conductive overburden.

MAGNETOMETER SURVEY

A total of 1,434 magnetometer readings were taken at 200-foot intervals on the EM traverses. The instrument used was the Sharpe MF-1 Direct Reading Fluxgate Magnetometer.

The survey was not done to establish geological structures, but to indicate ore, either correspondent with EM conductors, or beyond the depth of penetration of the EM configuration. Known orebodies in the area show as magnetic anomalies of over 200 gammas either as highs because of introduction of magnetite with copper mineralization, or as lows due to hydrothermal destruction of magnetite in the host rock.

Two magnetic anomalies warranted follow-up:

1. A 1,200 foot wide magnetic high on L246N from 190E to 202E rose 300-400 gammas above a 250 gamma background. It was drilled and found to be underlain by non-magnetic argillite. Magnetic boulders were found in the

overburden by geologist B. Kahlert and offer an explanation for the anomaly.

2. A second magnetically anomalous area was spread over lines 390N to 422N from 238E to 252E. I. P. traverses conducted over these lines show only even, low-intensity chargeability profiles. Prospecting and geological mapping in the area showed that the anomaly was probably due to one or more magnetic dykes cutting the siltstones in this area.

INDUCED POLARIZATION SURVEY

Eleven induced polarization survey lines totalling 29,000 feet were done to check E. M. conductors and magnetic anomalies. In addition, a further 6,600 feet of line was surveyed to check and detail an I. P. survey completed in 1968.

A Seigel Mark VII Time Domain (pulse type) Induced Polarization Unit with 25 watt power supply was used. This unit has a current-on time of 2.0 seconds and an integrating time of 0.65 seconds. The dipole-dipole array with 200 foot "a" spacing was employed.

Known economic mineralization in the area has been checked across hundreds of feet giving chargeability responses of up to 40 milliseconds. Nothing approaching this was found (maximum was 12 milliseconds) and all the EM conductors are considered due to conductive overburden effects.

SUMMARY - CONCLUSIONS - RECOMMENDATIONS

A combined EM, magnetometer and soils survey was carried out on the Tro-Buttle property on Morrison Lake. I. P. traverses were also done over EM conductors and a magnetic anomaly.

Weak EM conductors were found. I. P. checks indicated all were due to overburden effects. Several I. P. traverses run over a magnetic anomaly in the northeast quadrant of the property gave negative results. Prospecting in the area indicated that the magnetic anomaly was due to one or more dykes carrying magnetite.

One other magnetic high (300 gammas above background) was found and drilled. Non-magnetic argillite was intersected in the hole, but magnetic boulders were found in the overburden that would explain the magnetic high.

No new geochemical anomalies were located, but two known anomalous areas were detailed. One was drilled and was concluded to be due transported soil and boulders. The other was trenched and uneconomic copper

mineralization was found.

From the results of the surveys and follow-up, no further work can be recommended.

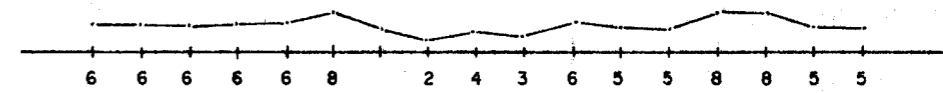
W. Rainboth

W. Rainboth, P. Eng.,
Geologist.

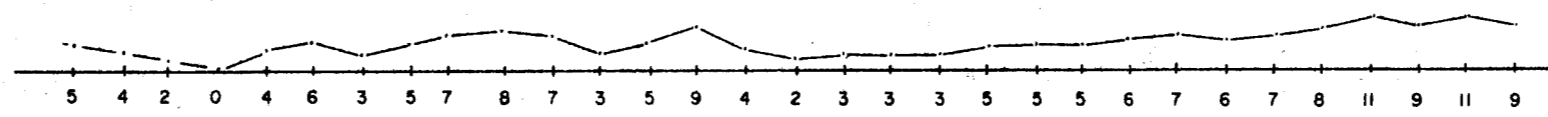
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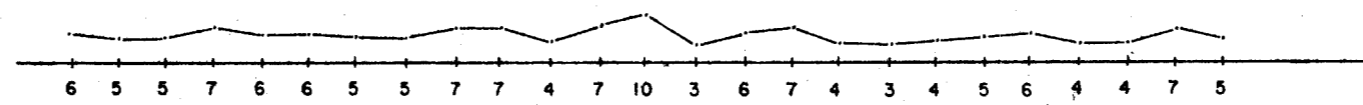
LINE
422 N



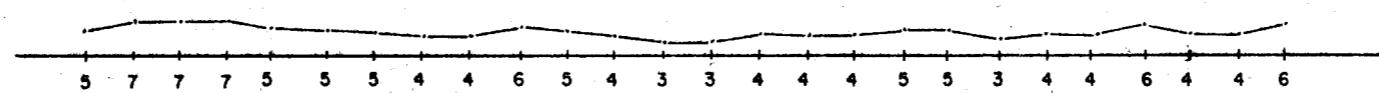
LINE
414 N



LINE
406 N



LINE
398 W



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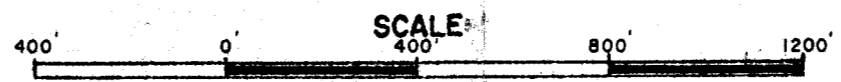
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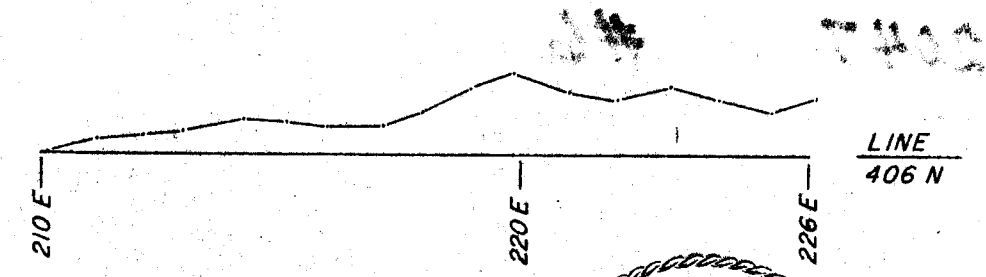
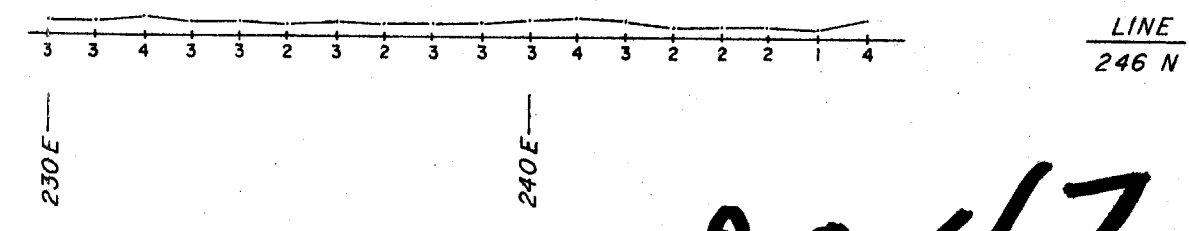
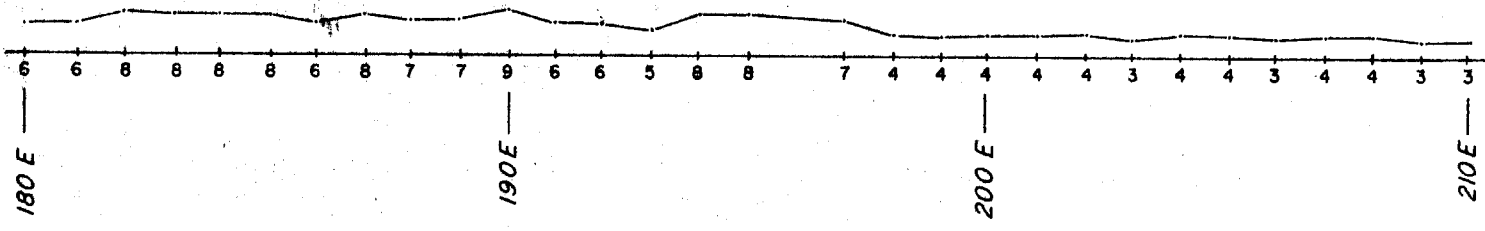
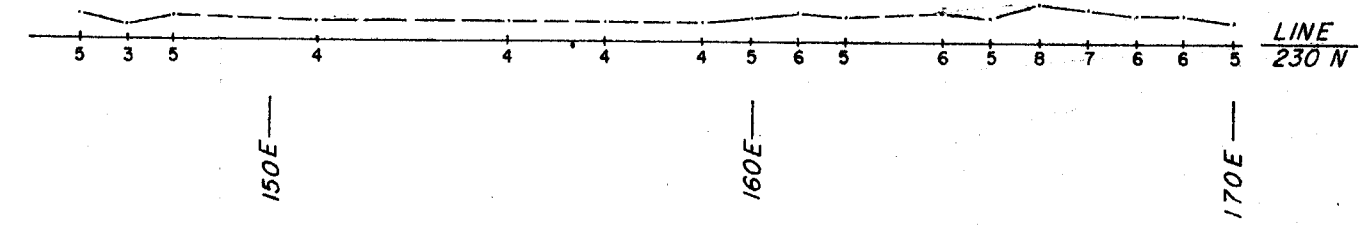
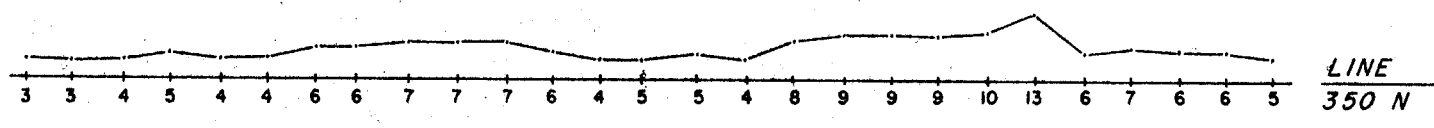
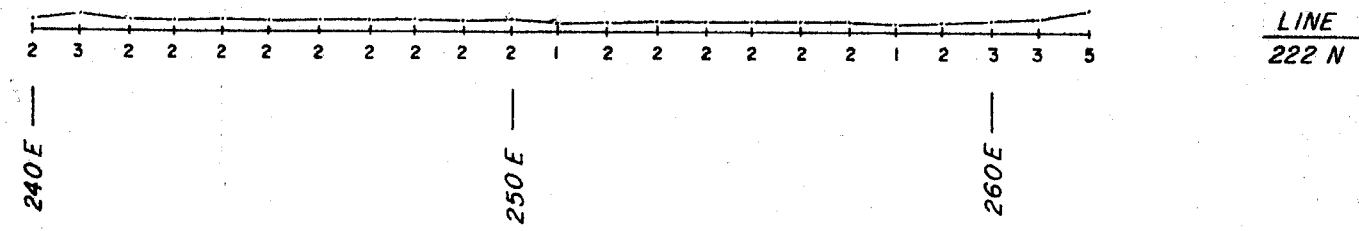
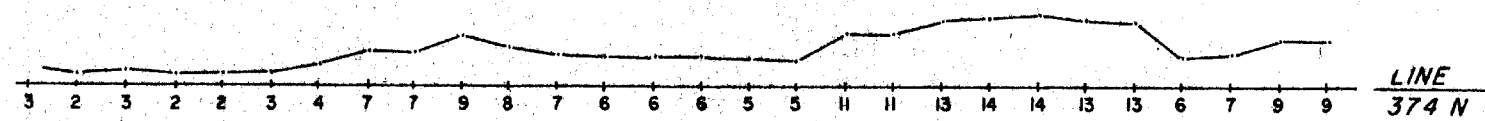
To accompany "Report on Geophysical and Geochemical Surveys on the Kofit Claims, Tro-Buttle Ltd Property, Omineca M.D." By W. Rainboth P. Eng. October 9, 1969

N.T.S.

VERT. SCALE - 1" = 40 MILLISECONDS



CANADIAN SUPERIOR EXPLORATION LIMITED
TRO - BUTTLE OPTION
INDUCED POLARIZATION
CHARGEABILITY PROFILES
(CHECKING AREA OF MAGNETIC HIGH)
Sept. 24, 1969 W.R. DWG. 7.



2047

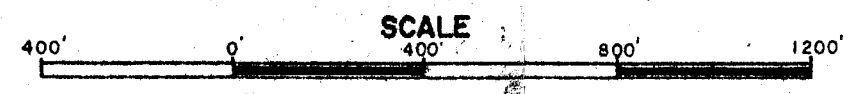


To accompany "Report on Geophysical and Geochemical Surveys on the Kofit Claims, Tro-Buttle Ltd., Property, Omineca M.D."
By W. Rainboth P.Eng. October 9, 1969

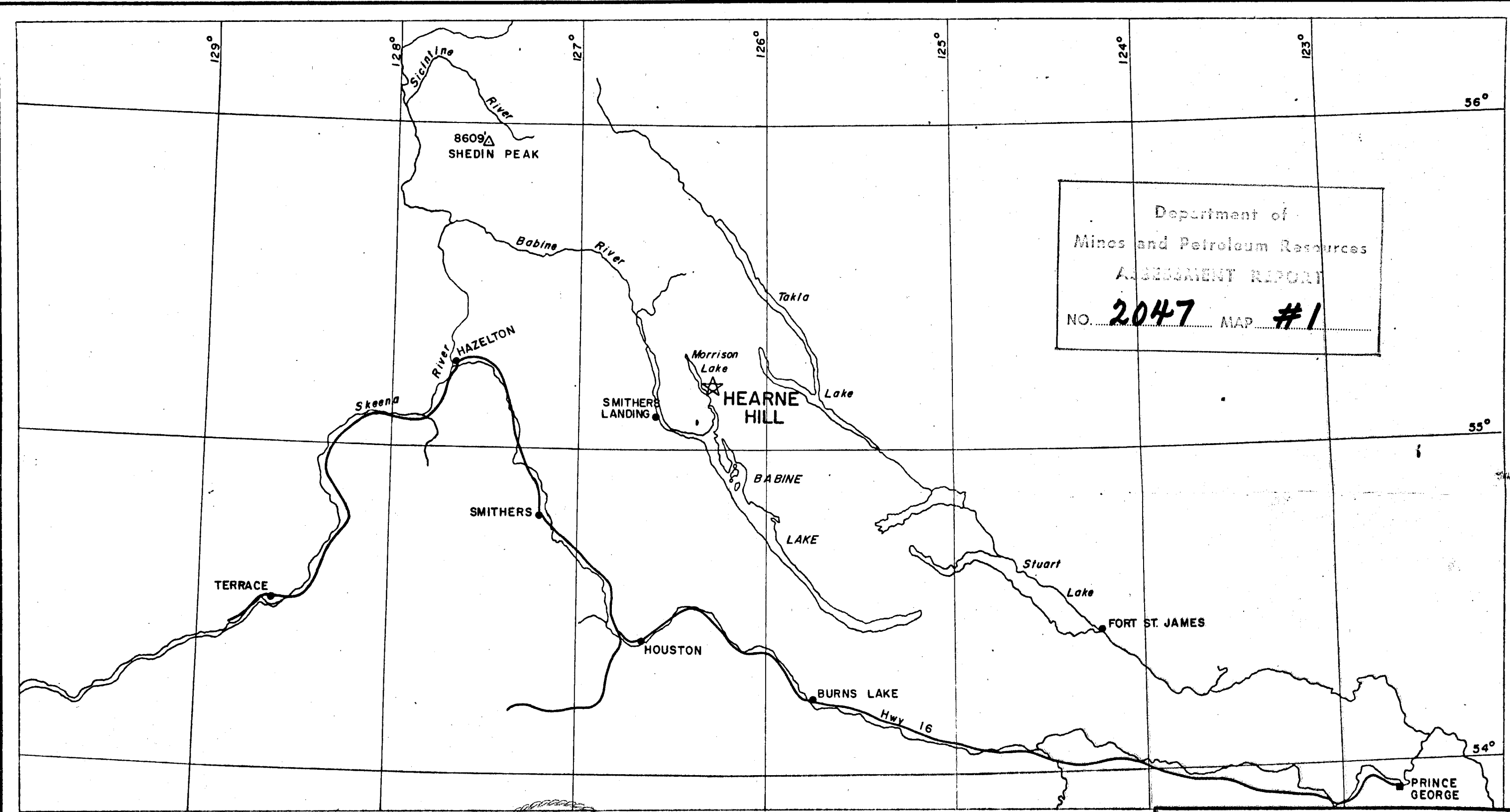
W. Rainboth

N.T.S.

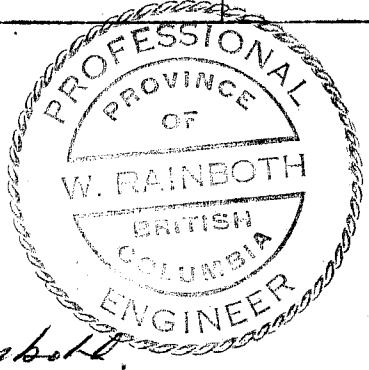
VERT. SCALE - 1" = 40 MILLISECONDS



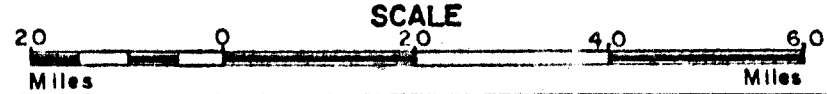
CANADIAN SUPERIOR EXPLORATION LIMITED		
TRO - BUTTLE OPTION		
INDUCED POLARIZATION CHARGEABILITY PROFILES (CHECKING E.M. CONDUCTORS)		
Sept. 23, 1969	W.R.	DWG. 6.



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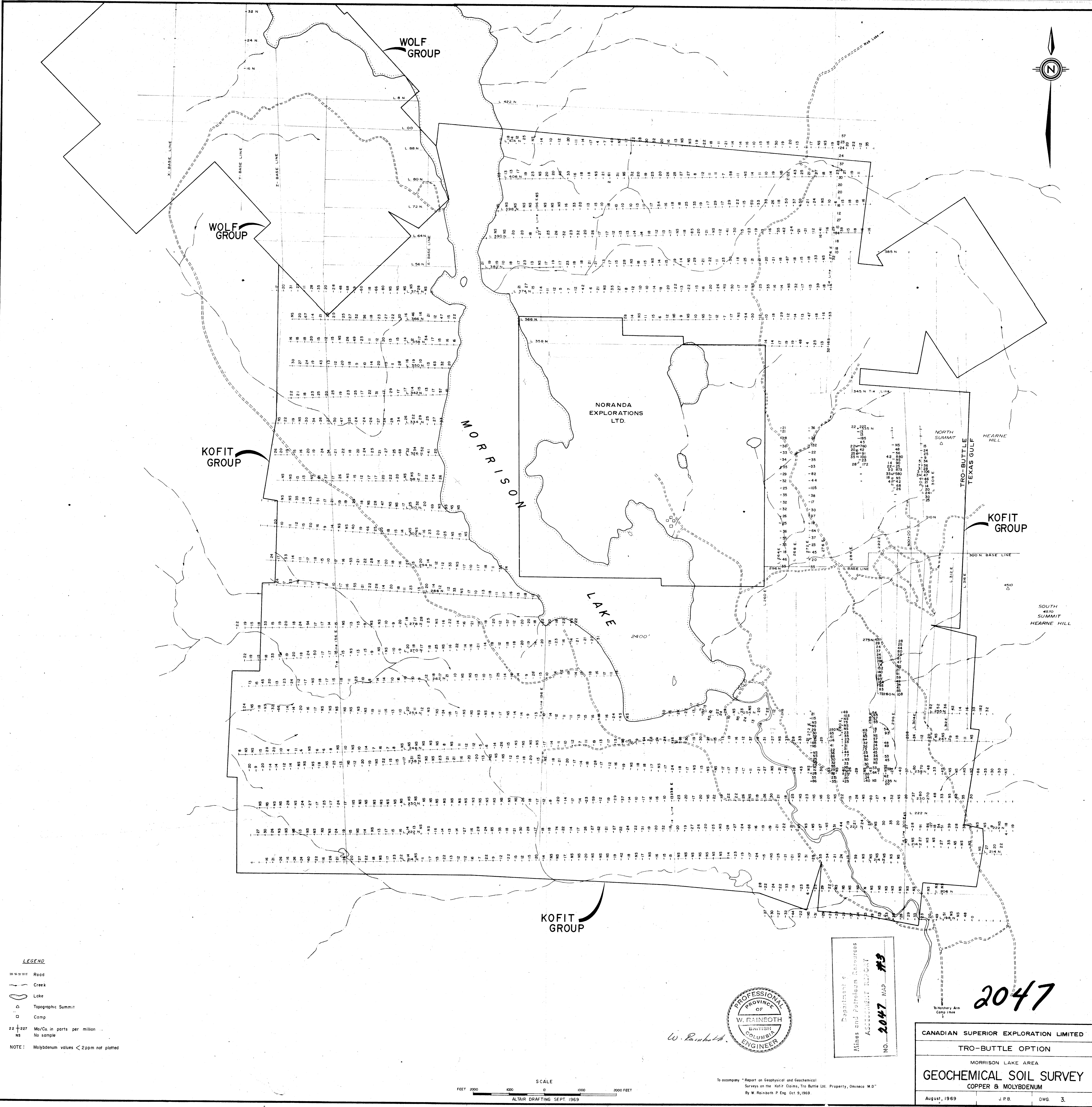
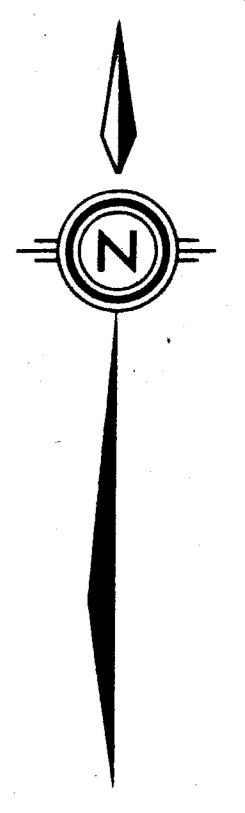
To accompany "Report on Geophysical and Geochemical Surveys
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 Omineca M.D."
 By W. Rainboth P. Eng. Oct. 9, 1969



N.T.S.

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CANADIAN SUPERIOR EXPLORATION LIMITED		
TRO-BUTTLE OPTION		
LOCATION MAP		
OCT.-1969	B.H.K.	DWG. I



LEGEND

==== Road

~ Creek

○ Lake

△ Topographic Summit

□ Camp

22 + 27 Mo/Cu. in parts per million

NS No sample

NOTE: Molybdenum values < 2ppm not plotted

SCALE

FEET 2000 1000 0 1000 2000 FEET

ALTAIR DRAFTING SEPT. 1969



W. Rainboth

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CANADIAN SUPERIOR EXPLORATION LIMITED

TRO-BUTTLE OPTION

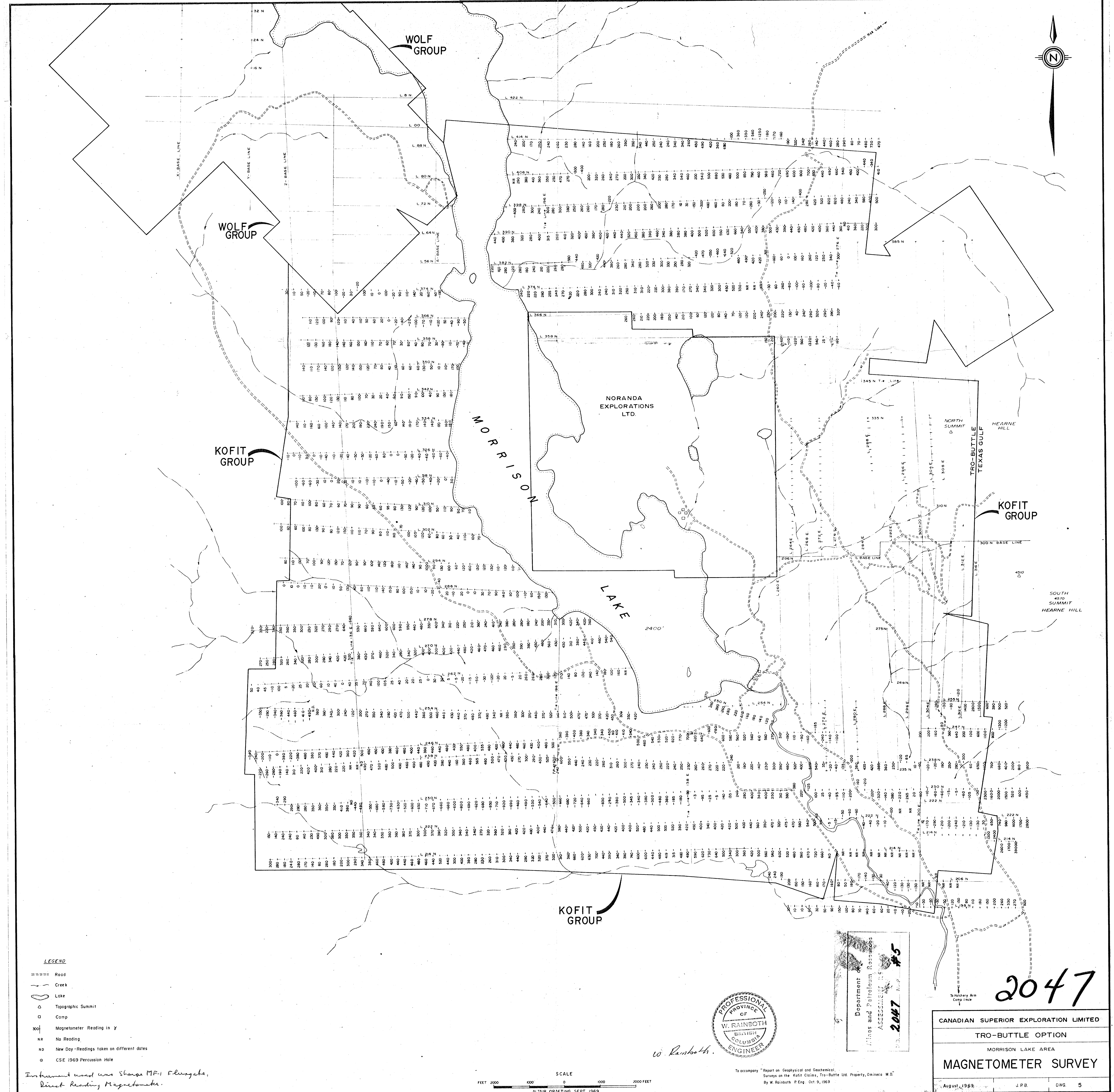
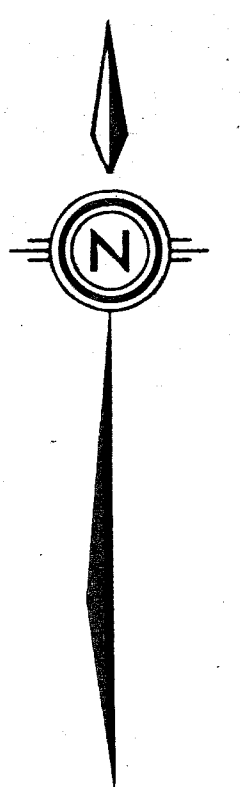
MORRISON LAKE AREA

GEOCHEMICAL SOIL SURVEY

COPPER & MOLYBDENUM

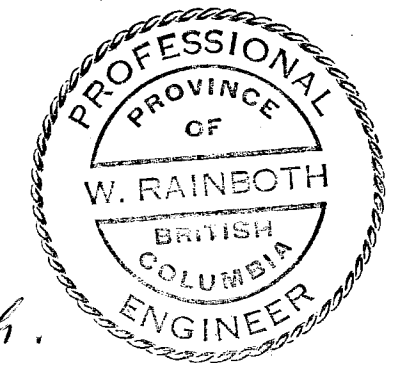
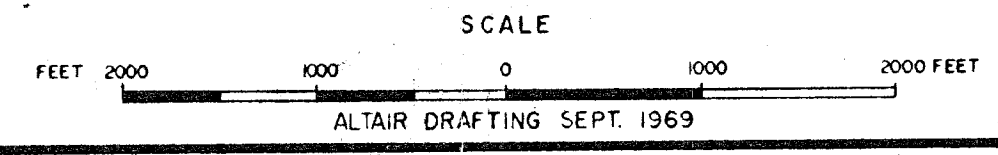
August, 1969 J.P.B. DWG. 3.

To accompany "Report on Geophysical and Geochemical Surveys on the Kofit Claims, Tro-Butte Ltd. Property, Ontario M.D." By W. Rainboth P. Eng. Oct. 9, 1969



- LEGEND**
- ==== Road
 - ~ Creek
 - Lake
 - △ Topographic Summit
 - Camp
 - 300 Magnetometer Reading in γ
 - NR No Reading
 - ND New Day - Readings taken on different dates
 - CSE 1969 Percussion Hole

Instrument used was Shorpa MF-1 Fluoride,
Direct Reading Magnetometer.



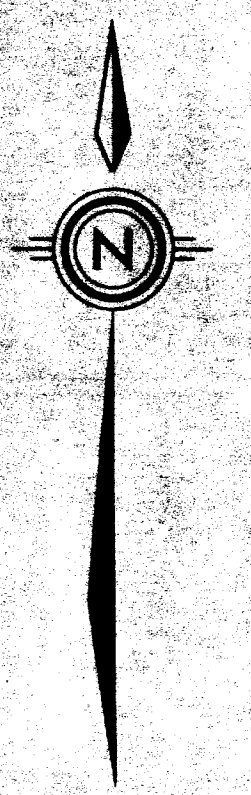
W. Rainboth.

To accompany "Report on Geophysical and Geochemical
Surveys on the Kofit Claims, Tro-Buttle Ltd. Property, Ontario M.D."
By W. Rainboth P. Eng. Oct. 9, 1969

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CANADIAN SUPERIOR EXPLORATION LIMITED	
TRO-BUTTLE OPTION	
MORRISON LAKE AREA	
MAGNETOMETER SURVEY	
August, 1969	J.P.B. DWG. 5



WOLF GROUP

WOLF GROUP

KOFIT GROUP

MORRISON

NORANDA EXPLORATIONS LTD.

LAKE

KOFIT GROUP

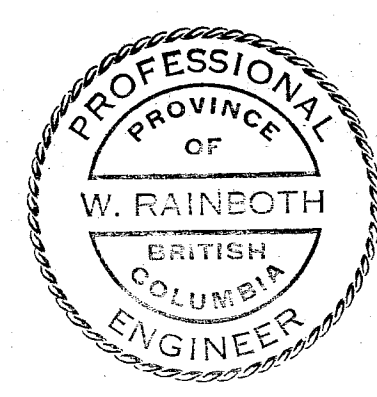
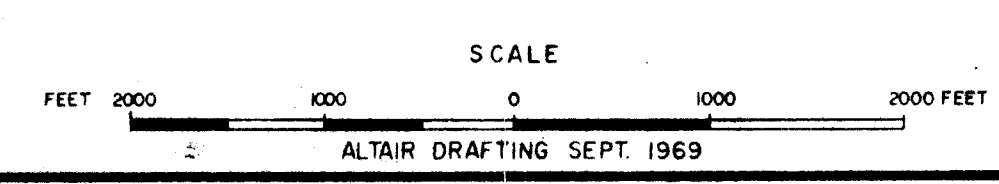
KOFIT GROUP

2047

- LEGEND**
- ==== Road
 - - - - Creek
 - Lake
 - △ Topographic Summit
 - Camp
 - N.R. No Reading
 - ∠ Dip Angle in degrees

NOTE: All values represent negative dip angles unless noted positive (+)

Instrument Used Was Crane Standard, Dual Frequency JEM unit at 1800 cps

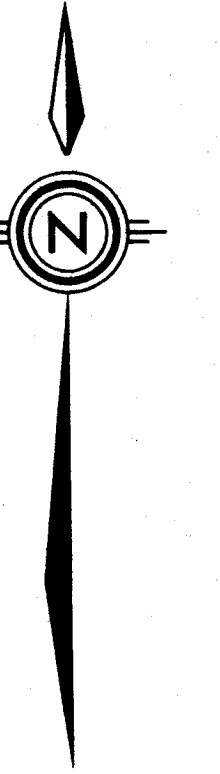


W. Rainboth.

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CANADIAN SUPERIOR EXPLORATION LIMITED	
TRO-BUTTLE OPTION	
MORRISON LAKE AREA	
ELECTROMAGNETIC SURVEY	
August, 1969	J.P.B. DWG. 4.

To accompany "Report on Geophysical and Geochemical Surveys on the Kofit Claims, Tro-Buttle Ltd Property, Ontario, M.D." By W. Rainboth P. Eng. October 5, 1969



WOLF GROUP

WOLF GROUP

KOFIT GROUP

KOFIT GROUP

KOFIT GROUP

NORANDA EXPLORATIONS LTD.

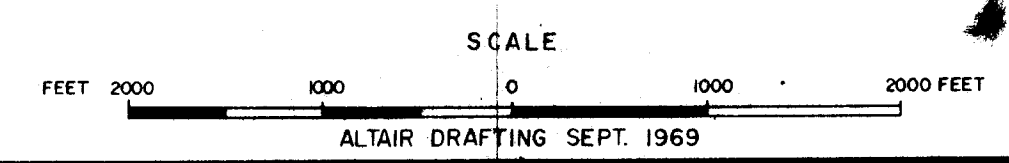
MORRISON

LAKE

TRO-BUTTLE TEXAS GULF

SOUTH SUMMIT HEARNE HILL

- LEGEND**
- ==== Road
 - - - - - Creek
 - Lake
 - △ Topographic Summit
 - Camp



To accompany Report on Geophysical and Geotechnical Surveys on the Kofit Claims, Tro-Buttle Rd. Property, Simonsa HD, By W. Rainboth, P. Eng., Oct 9, 1969

Department of Mines and Petroleum Resources
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Plate II 93/1

CANADIAN SUPERIOR EXPLORATION LIMITED		
TRO-BUTTLE OPTION		
MORRISON LAKE AREA GRID AND CLAIM MAP KOFIT GROUP		
August, 1969	J.P.B.	DWG. WE