

604

GEOPHYSICAL REPORT
ON PROPERTY OF
ROLLING HILLS COPPER MINES LTD.

KAMLOOPS MINING DIVISION
KAMLOOPS, BRITISH COLUMBIA

SULMAC EXPLORATION SERVICES LIMITED

NOVEMBER 24, 1964

421/70

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 604 MAP

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KAMLOOPS MINING DIVISION
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1. Introduction

During the period November 2 - 11, 1964, an Induced Polarization (I.P.) survey was carried out by Sulmac Exploration Services Limited over part of the claims owned by Rolling Hills Copper Mines Ltd.

The group of mineral claims is located a few miles to the west of Kamloops, British Columbia. The survey covered two small areas within this claim group, the picket lines over each area being cut and chained prior to the survey. The relative locations and orientations of the lines are shown on the maps accompanying this report. The basic coverage of the survey consisted of readings at 100 foot intervals along the lines. A total of 9.3 miles of survey was carried out.

2. Survey and Instrument Data

2.1 Electrode Arrays

The data were obtained using the "three-electrode array". This array consists of one current (C_1), two potential

electrodes (P_1 and P_2), and the second current electrode (C_2) being fixed at "infinity".

The data were obtained using basic electrode spacings of 100 feet over area #1, Python shaft area, and 200 feet over area #2, Buda shaft area. Additional information was obtained over area #1 with electrode spacing of 200 feet. The basic station interval was 100 feet.

2.2 I.P. Instrument

The instrument used was of the pulse-type and is similar in design and operation to that described by R.W. Baldwin in "A Decade of Development in Overvoltage Survey", A.I.M.E. Transactions, Vol. 214, 1959. Power for the unit is obtained from a Briggs and Stratton 4 H.P. motor coupled to a 400 c.p.s. generator which provides a maximum of 1500 watts d.c. to the ground. The cycling rate is 1.5 seconds current on and 0.5 seconds current off, the pulses reversing continuously in polarity. The data collected consists of measurement of the current (I) flowing through C_1 and C_2 and of the primary voltage (V_p) between P_1 and P_2 during the 'current on' period. During the 'current off' period the overvoltage appearing between P_1 and P_2 is measured. This gives a measurement of the polarization (V_s) in milliseconds. The "apparent chargeability" in milliseconds is calculated by dividing the polarization (V_s) by the

primary voltage (V_p). The "apparent resistivity" in ohm-meters is obtained by dividing the primary voltage V_p by the current I , and multiplying by a proportionality factor which depends on the geometry of the array used.

2.3 Data

The results of the survey are shown as profiles. These profiles have a horizontal scale of one inch to one hundred feet. The "apparent chargeability" is plotted at a vertical scale of 4.0 milliseconds per inch. The "apparent resistivity" is plotted to a vertical scale of 200 ohm-meters per inch.

In addition to the profiles, contour maps of "apparent chargeability" and "apparent resistivity" for the 100 foot electrode spacing over area #1 are provided. The interpretation of area #1 is shown on these maps, whilst that of area #2 is shown on the profiles.

3. Interpretation

3.1 Analysis of Data

The interpretation of the survey data consists of a careful analysis of each individual profile. The resistivity data obtained over the lines show no significant correlation with the I.P. anomalies. The variations in resistivity obtained may be ascribed to changes in the overburden thickness and in

the overburden and bedrock resistivities. The overburden appears to have resistivity varying between 40 and 300 ohm-meters, whereas the bedrock resistivity may be as high as 1000 ohm-meters.

The I.P. data indicates that the background values for the area are approximately 2 milliseconds. Interpretation of the data, based on all available information, is presented in the following paragraphs.

3.2 Area #1 - Python Shaft Area

A reconnaissance I.P. survey previously carried out over this area indicated the possible presence of mineralized zones, however insufficient work was carried out to be conclusive. The purpose, therefore, of the present survey was to detail, if possible, any mineralized zones that may be located in the immediate vicinity of the Python shaft. A small line grid was, therefore, laid out for the survey.

Initially a 200 foot electrode spacing was used, however this was decreased to 100 feet in order to give better resolution of the data. In addition, line 18E was also covered using an electrode spacing of 50 feet. Lines 0, 4E, and 20E were not run as these were covered by the previous survey.

The results obtained using the 100 foot electrode spacing are depicted both in profile and contour form. As the best resolution was obtained from the 100 foot electrode spacing, the 200 foot spacing was abandoned after line 26E in this survey. From the contoured results obtained from the 100 foot electrode spacing it appears that four zones of possible mineralization were located. The main zone, designated No. 1 on the accompanying map, is still open to the east, whilst the smallest zone, No. 4, is open at its west end. Zones 2 and 3 appear to be intersected by faults as shown on the accompanying map. There is also a possibility of faulting to the east end of zone 1.

The causative body in all cases appears to extend to bedrock surface, however detailed analysis of the anomalies cannot be carried out as insufficient data was obtained. It is possible that the zones are made up by a number of narrow parallel zones of concentrated mineralization. From results obtained in the area where the 200 foot spacing was used, there are indications that the causative bodies extend to depth.

Line 18 was surveyed using 50, 100, and 200 foot electrode spacings. Calculations carried out from these results show that the true chargeability is 17 milliseconds, indicating 2-5% of sulphides by volume, and the depth to the body is

probably less than 20 feet. The zone has a width of approximately 100 feet. Drilling has already confirmed the presence of sulphides near this line. It is expected that the other anomalous areas will be comparable with this.

3.3 Area #2 - Buda Shaft Area

Three reconnaissance lines, 0, 18N, and 38N, together with two short lines, 4N and 8N, in the vicinity of Buda shaft, were surveyed in this area. An electrode spacing of 200 feet was used with no detailing. General areas of interest were indicated and are shown on the profiles. It is thought that these areas of interest are due to mineralization, however more detailed work is necessary both in closer line spacing and electrode spacing in order to outline the zones and indicate possible drill targets. From the readings obtained it is possible that the zones may be similar to those indicated in the Python Shaft Area.

3.4 General

In conclusion, a number of trends and anomalies have been established by the survey of the two areas, however the individual bodies are difficult to assess due to the limited amount of survey work performed. The accompanying maps show possible trend patterns based on available information. Although

the trends appear fairly well established, their lateral extent and position is open to question due to the possibility of side effects. Thus, it must be remembered that the bodies indicated may or may not reach a specific line, and may become more or less significant in between the survey lines.

4. Summary and Recommendations

An Induced Polarization survey was carried out over part of the property owned by Rolling Hills Copper Mines Ltd. near Kamloops, British Columbia. A number of interesting anomalous zones were indicated that may contain sulphides.

Area #1 indicated the presence of four interesting zones which are probably intersected by faults. Although insufficient detail work was carried out to form definite conclusions, it is considered that disseminated sulphides of unknown quantities (probably 1-5% by volume) are the cause of these anomalies. The width of the zones may be much narrower than indicated. The zones probably come to bedrock surface, and may be at a depth of less than 50 feet. More detailed I.P. work would be necessary before the zones can be completely assessed geophysically.

However, further investigation by drilling is suggested to determine the nature of the causative bodies of the anomalous zones located in the survey of the Python shaft

area. In drilling it must be remembered that it is possible that the body may not reach the particular line on which the anomaly is observed. As the anomalies have not been outlined in detail by the present limited survey it is recommended that the zones be cross-sectioned by the drilling. It is further recommended that the programme check the following targets:

- Zone 1 - Line 34E to investigate 8+00S to 11+00S
- Zone 2 - Line 18E " " 13+00S to 15+00S
- Zone 3 - Line 22E at 10+50S
- Line 18E at 9+50S
- Zone 4 - Line 6E at 12+50S

Further drilling should be based on the results obtained from the above mentioned programme.

The survey in the Buda shaft area indicated the possibility of similar mineralized zones, however insufficient survey was carried out from which to draw definite conclusions. It is recommended that a more detailed I.P. survey be conducted in this area in order to fully evaluate the potential of the ground before a drill programme is augmented in this area.

It must be pointed out that the I.P. survey was carried out over a small part of the property. Thus it is

possible that the targets outlined to date are not necessarily the best within the claim group. It is, therefore, recommended that the claim group be surveyed by the I.P. method on a reconnaissance grid and followed up by detailing any interesting targets located prior to drilling.

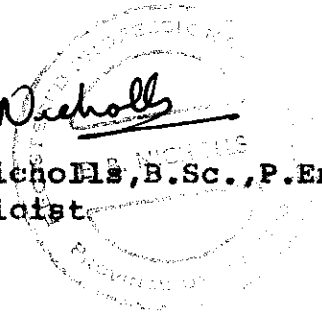
Respectfully submitted,

SULMAC EXPLORATION SERVICES LIMITED



E. B. Nicholls

E. B. Nicholls, B.Sc., P.Eng.,
Geophysicist



November 24, 1964

STATEMENT OF EXPENSES APPLIED AS ASSESSMENT WORK

ROLLING HILLS COPPER MINES LIMITED (N.P.L.) CLAIMS GROUP, 1964.

1. Paquin Geophysical Survey (C.F. Millar report dated January 15, 1965)

Wages	\$ 1,861.54
Truck rental	468.00
Board and room	225.00
Consultant's fee	<u>258.00</u>
Total cost	\$ 2,812.54 for 23.3 miles of line

Cost per mile of line - \$120.71

2. Sulmac Geophysical Survey (E.B. Nicholls report dated November 25/64)

Sulmac invoices	\$ 3,775.27
Surveyor's fees	<u>991.50</u>
Total cost	\$ 4,766.77 for 9.3 miles of line

Cost per mile of line - \$512.55

3. Percussion Drilling - July to November 1964.

Wages	\$ 8,982.72
Machinery rentals	14,685.52
Board & room, parts, misc.	3,700.00
Fuel and supplies	<u>6,211.00</u>
Total cost	\$33,579.24 for 11,865 feet

Cost per foot drilled - \$2.83

I hereby certify that the above figures have been taken from the records of Rolling Hills Copper Mines Limited (N.P.L.)

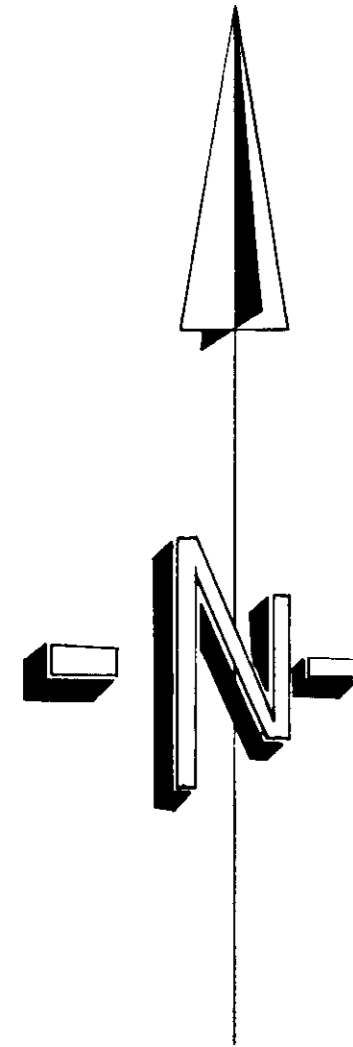


F. W. Maycock,
Accountant,
Rolling Hills Copper Mines Limited
(N.P.L.)

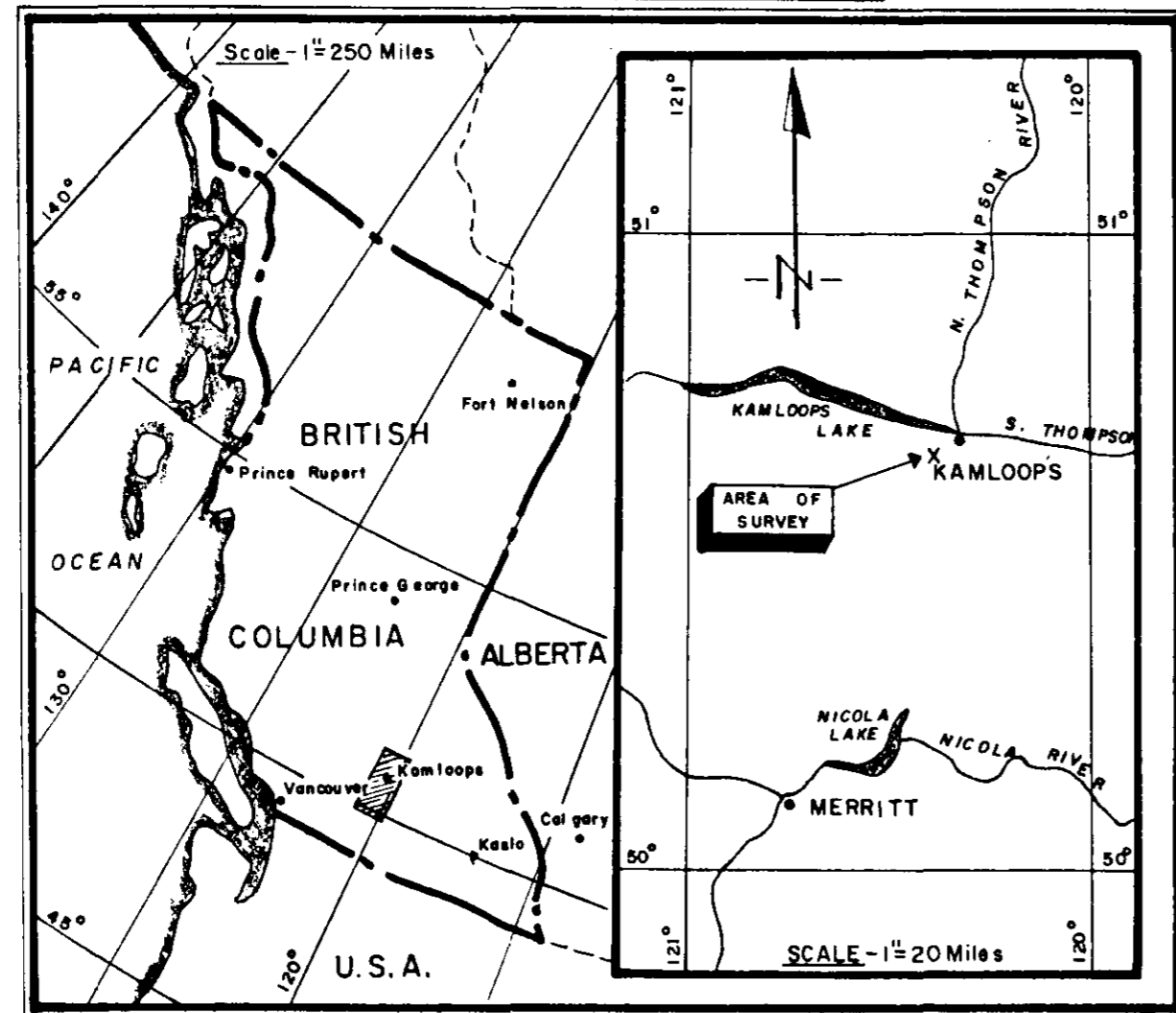
Declared before me as the City
of Vancouver, in the
Province of British Columbia, this 19
day of January 1965, A.D.

} C.F. Millar

W.G. Brown
Sub-Mining Recorder

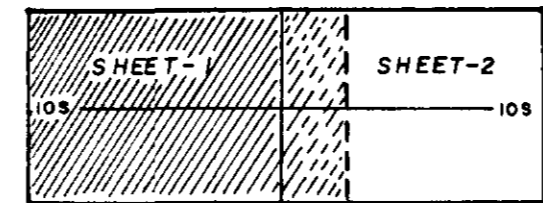


LOCATION MAP



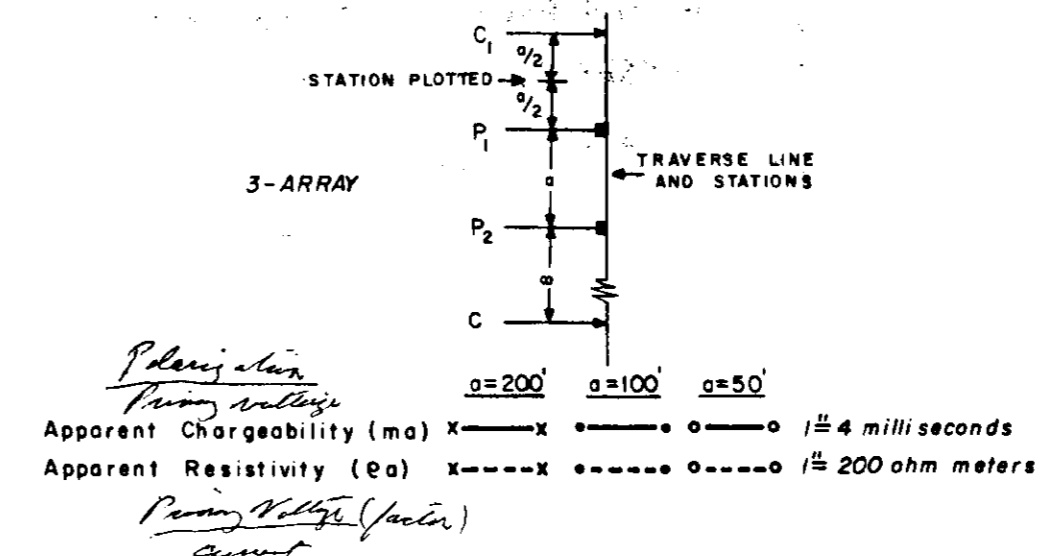
Department of
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MAP INDEX



LEGEND

INDUCED POLARIZATION SURVEY



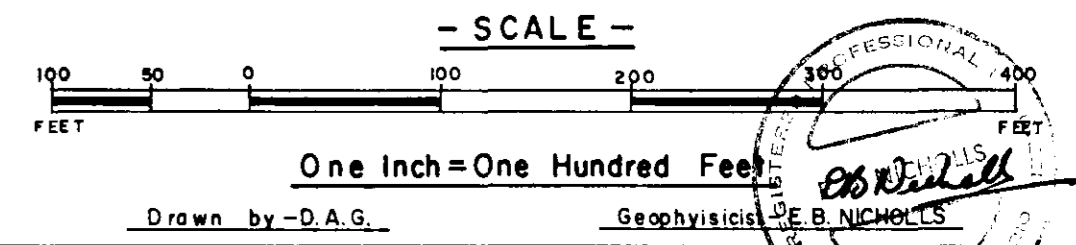
ROLLING HILLS COPPER MINES LTD.

KAMLOOPS-BRITISH COLUMBIA
KAMLOOPS-MINING DIVISION
PYTHON SHAFT AREA

SHEET-1

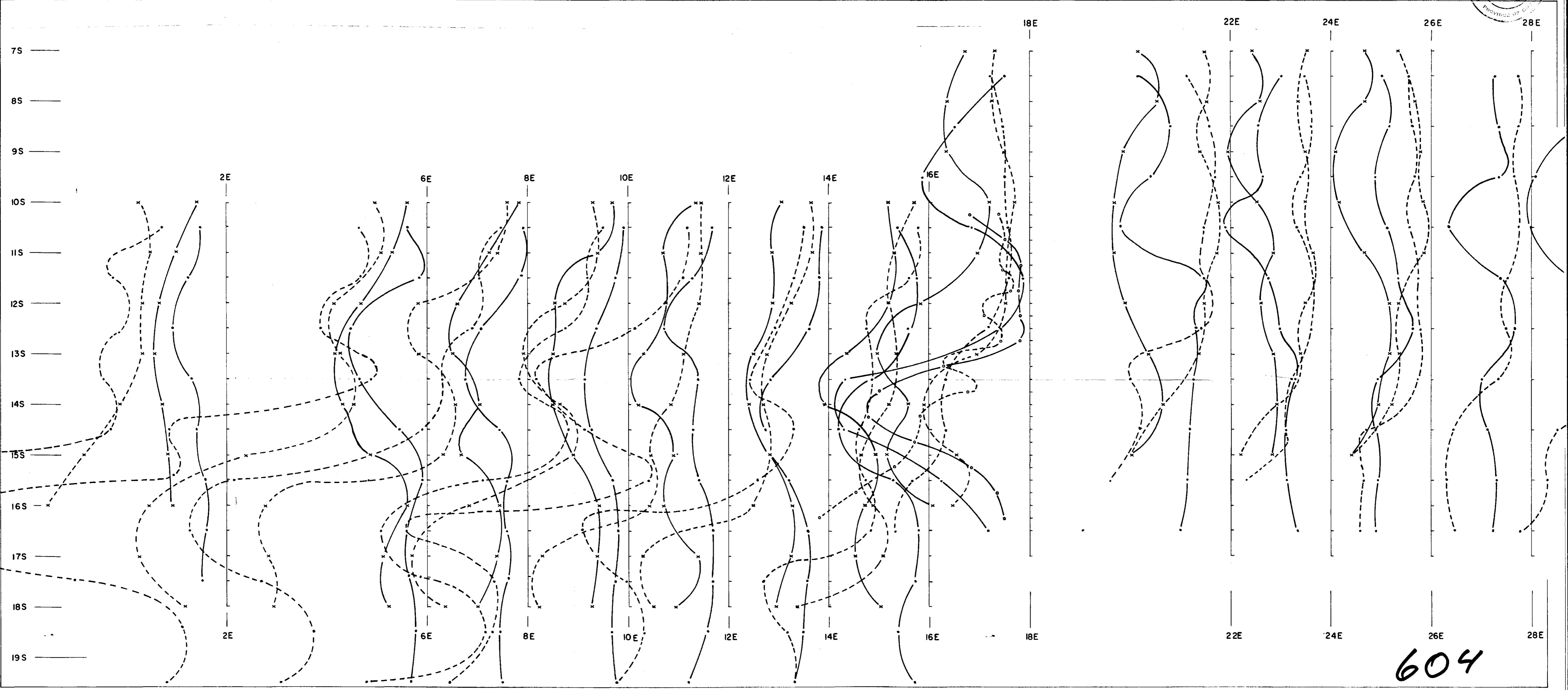
INDUCED POLARIZATION SURVEY

SULMAC EXPLORATION SERVICES LIMITED
NOVEMBER-1964



To Accompany Report by E.B. NICHOLLS, Dated NOV. 24, 1964.

Drawn by -D.A.G. Geophysicist E.B. NICHOLLS



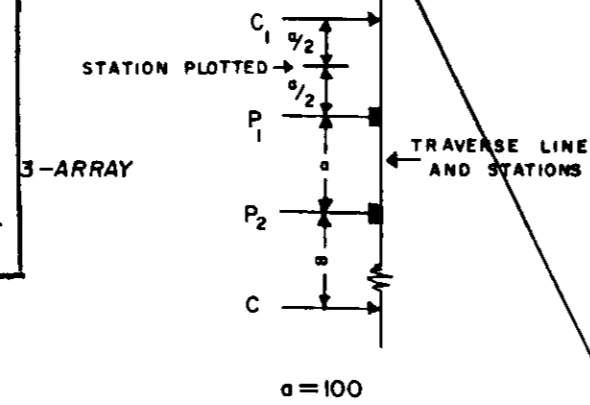
ROLLING HILLS COPPER MINES LTD.

KAMLOOPS-BRITISH COLUMBIA
KAMLOOPS-MINING DIVISION
PYTHON SHAFT AREA

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ASSESSMENT REPORT
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L E G E N D

INDUCED POLARIZATION SURVEY



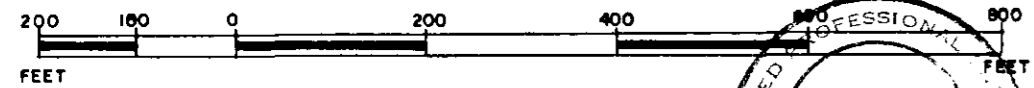
SYMBOLS
~~~~~ FAULT (Indicated)

Chargeability Contour Interval = 2.0 milliseconds  
Zone of Special Interest   
Zone of Interest   
Zone of Possible Interest

SULMAC EXPLORATION SERVICES LIMITED

NOVEMBER-1964

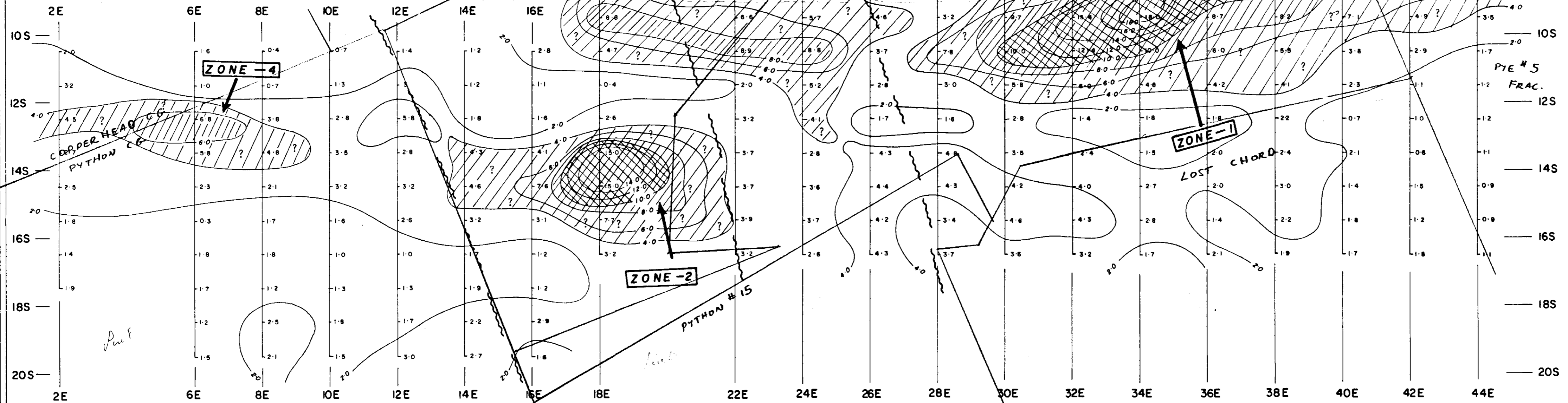
- SCALE -



One Inch=Two Hundred Feet

Drawn by -D.A.G. Geophysicist - E.B. NICHOLLS

To Accompany Report by E.B. NICHOLLS, Dated NOV 24, 1964



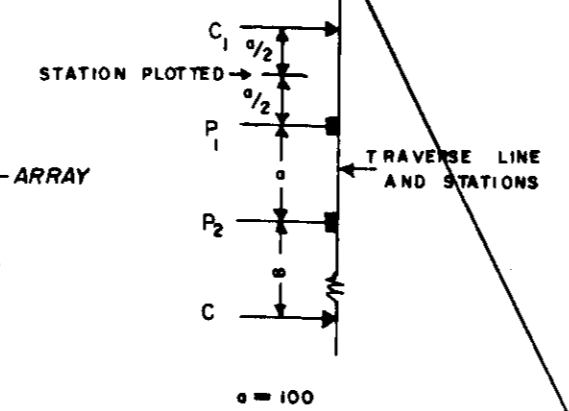
# ROLLING HILLS COPPER MINES LTD.

KAMLOOPS - BRITISH COLUMBIA  
KAMLOOPS - MINING DIVISION  
PYTHON SHAFT AREA

Department of  
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ASSESSMENT REPORT  
NO. **604** MAP **4**

## L E G E N D

INDUCED POLARIZATION SURVEY



## SYMBOLS

FAULT (Indicated)

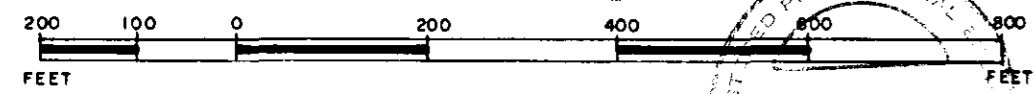
## INDUCED POLARIZATION SURVEY APPARENT RESISTIVITY CONTOURS

Resistivity Contour Interval = 100 ohm meters

SULMAC EXPLORATION SERVICES LIMITED

NOVEMBER - 1964

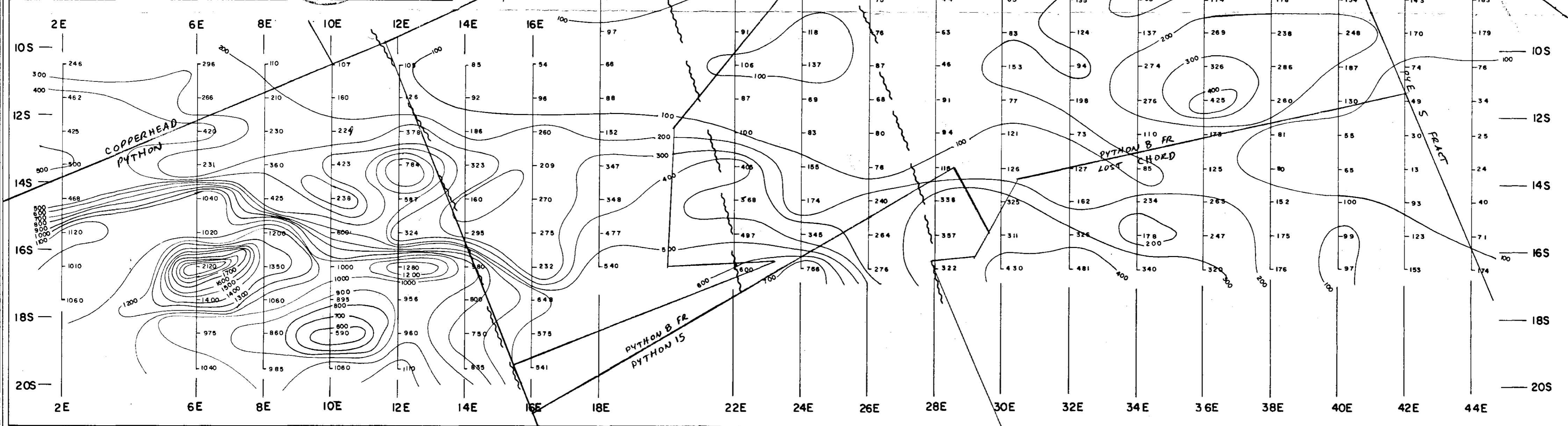
SCALE -



One Inch = Two Hundred Feet

Drawn by - D.A.G. Geophysicist - E.B. NICHOLLS

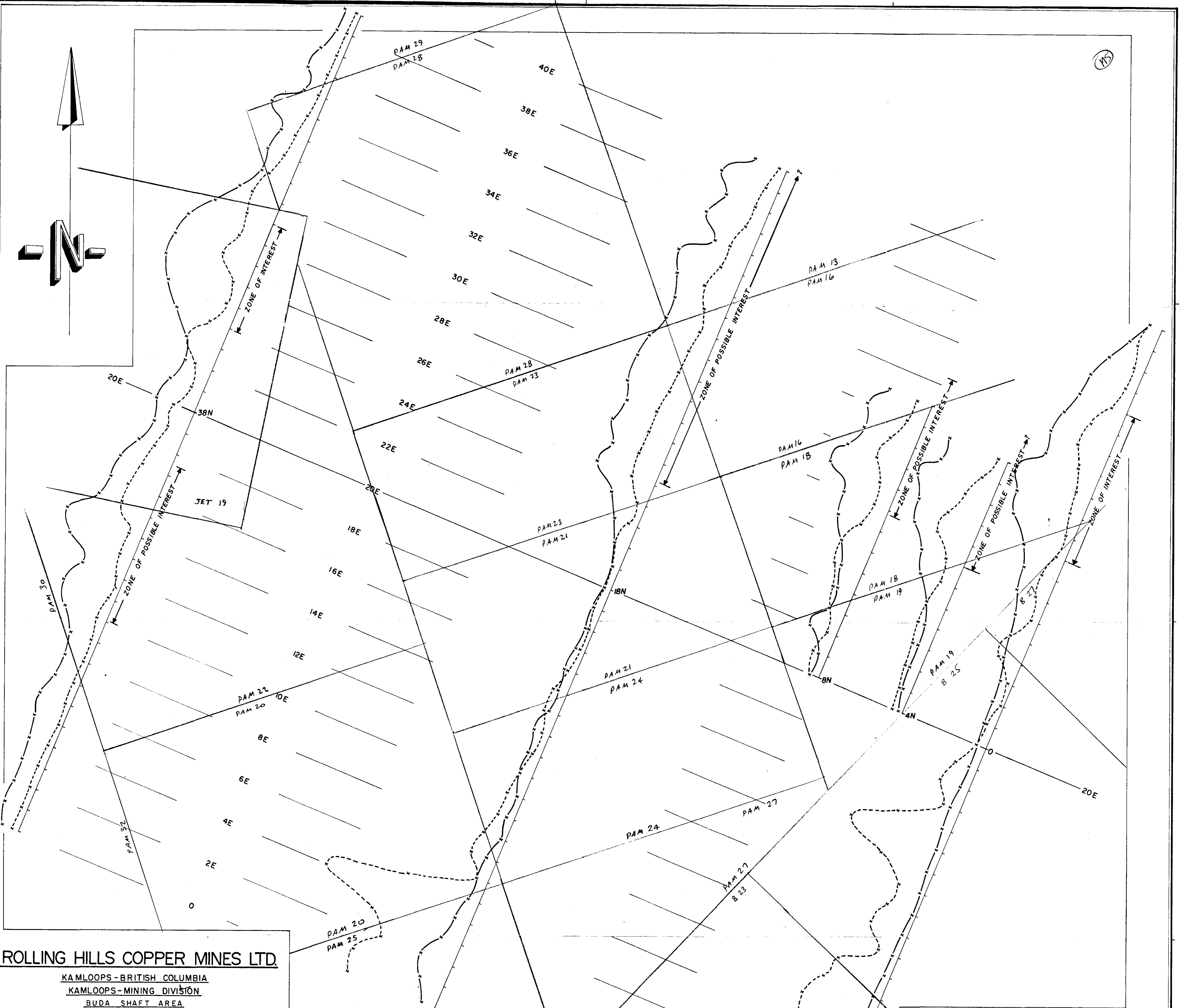
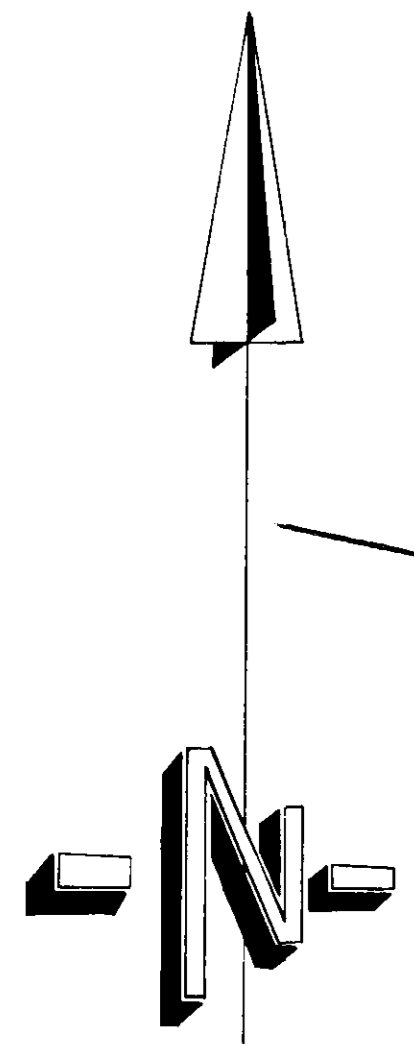
To Accompany Report by E.B. NICHOLLS, Dated NOV 24, 1964



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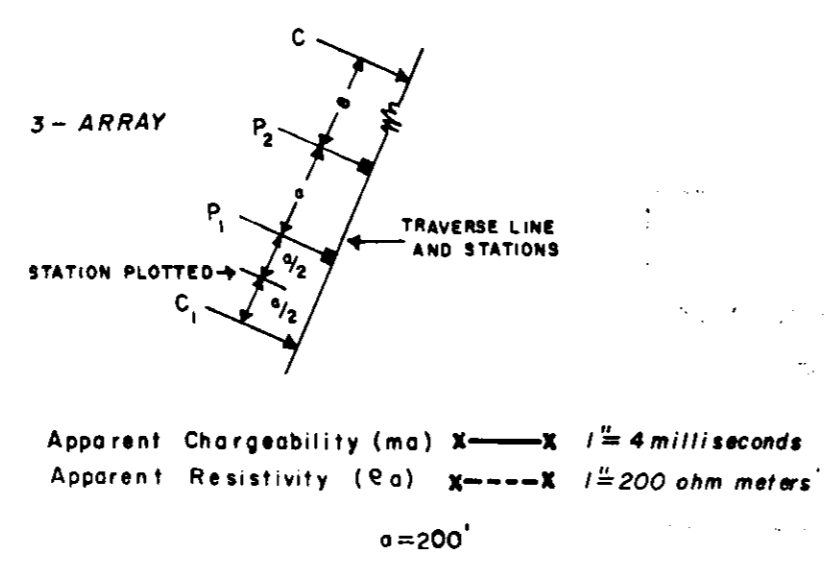
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**ROLLING HILLS COPPER MINES LTD.**  
KAMLOOPS - BRITISH COLUMBIA  
KAMLOOPS - MINING DIVISION  
BUDA SHAFT AREA

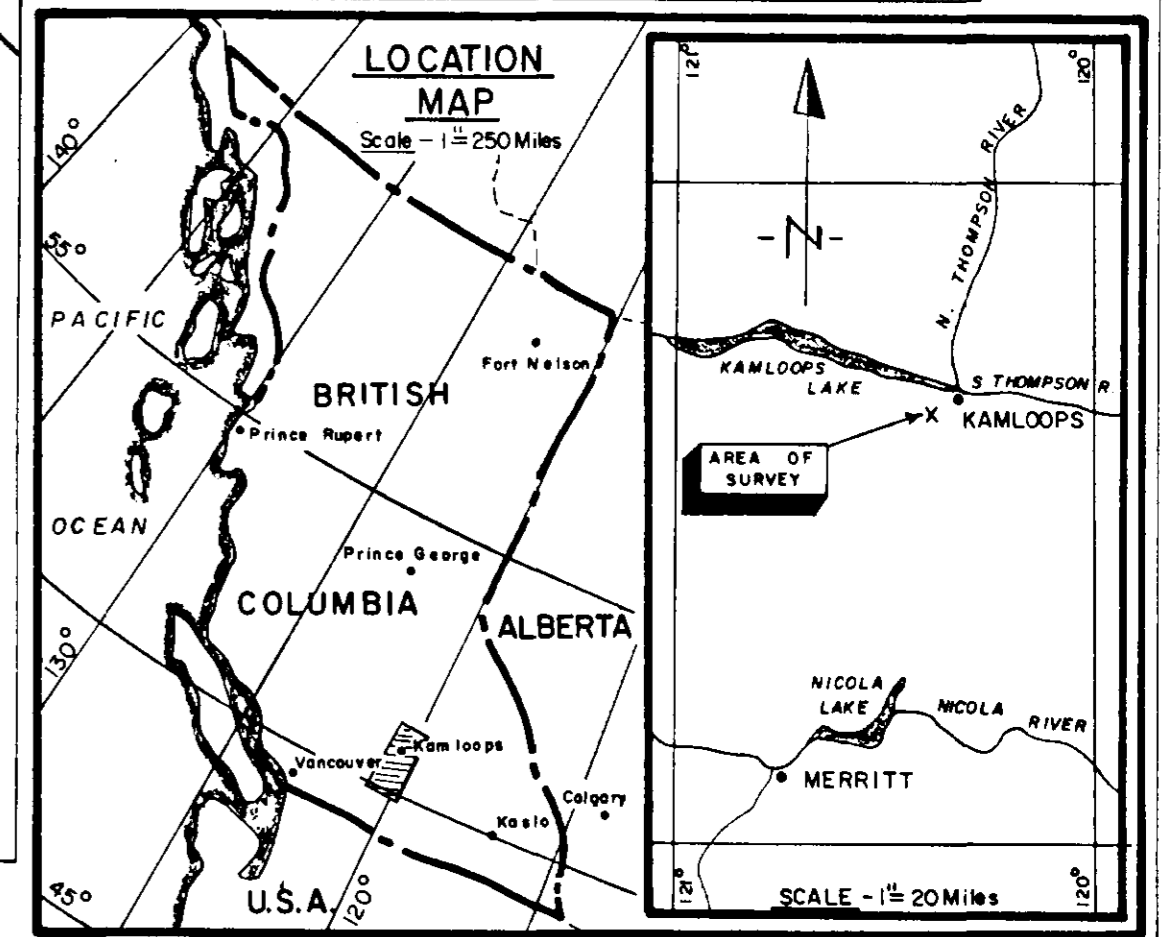
**INDUCED POLARIZATION SURVEY**

**LEGEND**  
INDUCED POLARIZATION SURVEY



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 604 MAP 5

SULMAC EXPLORATION SERVICES LIMITED  
NOVEMBER-1964  
SCALE  
One Inch = Two Hundred Feet  
Drawn by - D.A.G. Geophysicist - E.B. NICHOLLS



To Accompany Report by E.B. NICHOLLS, Dated NOV. 24, 1964