Office of the Supervising Mining Recorder
APR 17 1979
WHITEHORSE
Yukon Territory

RECEIVED
MINING RECORDER
WATSON LAKE, Y.T.
I.A. & N.D.

GEOLOGY AND GEOCHEMISTRY
OHNO 1-24 CLAIMS
WATSON LAKE MINING DISTRICT
CLAIM SHEET 105I/12

Lat.62°36'N Long.129°35'W

R.J. Cathro, P. Eng. December 10, 1978

APR 13 1979

090453

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

$ 7200.00

R. Debicki May 11/79

acting — Resident Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

G. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

BOX 4127, WHITEHORSE, Y.T. Y1A 3S9 667-4415 STANDARD BUILDING, VANCOUVER, B.C. 688-2568

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REPORT ON

GEOPHYSICAL SURVEYS

OHNO 1-24 CLAIMS

ITSI JOINT VENTURE

WATSON LAKE MINING DISTRICT, Y.T.

CLAIM SHEET 105I/12

Latitude 62°36'N Longitude 129°35'W

R.J. Cathro, B.A. Sc., P. Eng. and

Grant Hendrickson, B.A. Sc.

December 10, 1978

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INTRODUCTION

The OHNO claims were staked by Itsi Joint Venture (Union Oil Co. of Canada Ltd., Aquitaine Co. of Canada Ltd., and St. Joseph Exploration Ltd.) in September, 1977 to cover an interpreted small belt of Road River shale in an area of very poor exposure near the Anniv deposit of Placer Development Ltd./U.S. Steel. The 1977 program consisted only of geological and geochemical reconnaissance and a test Maxmin II electromagnetic (EM) survey line over the Anniv deposit. Both the 1977 and 1978 programs were managed by Archer, Cathro & Associates Ltd. The 1978 program was conducted bewteen June 10 and 17, 1978 by a crew that was led by geologist Mike Phillips and included geophysical operator Arjan Gelling, Frank Gish, Cam Chalmers and Steve Todoruk, working under the overall supervision of geophysicist Grant Hendrickson, who was on loan from Aquitaine, and R.J. Cathro. The geophysical equipment was loaned to the project by Aquitaine.

PROPERTY, LOCATION AND ACCESS

The OHNO property consists of 24 contiguous claims that form a west-north-westerly trending block about 6 km long and 1 km wide. It is situated between Cominco and Wishbone (Wye) Lakes at latitude 62°36'N and longitude 129°35'W. The claims are registered in Watson Lake Mining District in the name of Archer, Cathro & Associates Ltd. as follows:

Claims	No.	Tag Numbers	Expiry Date
OHNO 1-11	11	YA 25700 - YA 25710	9 December, 1978
12-14	3	YA 25711 - YA 25713	9 December, 1979
15-24	10	YA 25714 - YA 25723	9 December, 1978

Access is provided by helicopter from a small lake unofficially named Wishbone or Wise Lake, situated 6 km east of the claims which are just east of the Yukon-NWT border. The nearest float plane base is located at Ross River, 160 kn to the southwest. Jeff Lake, located 60 km to the northwest on the Canol Road, can be used as a float plane base to ferry supplies. Gravel airstrips that will accomodate light aircraft on wheels, are located at Macmillan Pass on the Canol Road, 70 km to the north and at the Anniv camp and Howard Pass camp, 3 km and 20 km to the southeast, respectively. The Nahanni Range Road was extended northwestwards from Tungsten to Howard Pass during 1978 but will not be useable on a regular basis until 1979 or 1980.

GEOLOGY AND GEOMORPHOLOGY

The OHNO property is situated along the western margin of the Selwyn Mountains. Within the core of this range, peaks commonly reach elevations of greater than 2000 m and locally greater than 3000 m. With the exception of the higher peaks, local relief is about 600 to 700 m or less and terrain is relatively subdued and gentle. Main valleys within the central part of the range are U-shaped with truncated spurs below elevations of about 1800 m. Valleys in low areas along the edge of the range are generally broad and poorly defined. The OHNO claims are situated below timberline along the southwest side of a wide glaciated valley. Local relief is more than 700 m but is less than 100 m on the property.

The region has been covered by two or more continental ice sheets, one of which reached a minimum elevation of about 2000 m. Younger, less extensive valley and alpine glaciers also covered much of the area. Small glaciers still occur on some of the higher peaks, notable the Itsi Range and Keele Peak.

Glacial deposits in the district tend to be rather thin and discontinuous in the mountains and are most common on the floor of the main valleys. Above timberline, particularly in places where the effects of younger glaciation are weak or absent, fissile rocks such as shale have been severely frost shattered into fine felsenmeer and talus. The OHNO property is covered by a blanket of fluvial and glacial till. Outcrop only occurs intermittently along widely spaced stream cuts and accounts for less than one per cent of the total area. The thickness of the till probably varies sharply from a few metres to several tens of metres depending on bedrock composition and glaciation.

The OHNO property is situated along the eastern margin of Selwyn Basin, which comprises a varied sequence of clastic and carbonate rocks that range in age from Upper Proterozoic through Upper Paleozoic. The Table of Formations on the following page shows the various map units in the vicinity of the property. Carbonate rocks of the Cambro-Ordovician Rabbitkettle Formation are the oldest in the vicinity of the property. These are overlain by shales and chert of the Ordovician, Silurian and Devonian Road River Formation which are in turn overlain by shale, cherty argillite and chert conglomerate of the Canol Formation. Shale and coarse clastic rocks of the Imperial Formation are the youngest in the vicinity. A more detailed description of these units was included in an earlier report on this property by the writer dated January 15, 1978.

TABLE OF FORMATIONS

RECENT

Q	unconsolidated alluvial and fluvial till

CRETACEOUS

Kg	granitic stocks and quartz-feldspar porphyry dikes, mostly quartz monzonite in composition

UPPER DEVONIAN OR MISSISSIPPIAN

IMPERIAL FORMATION

Iss	resistant, brown weathering, shale, siltstone, sandstone, grit, chert pebble conglomerate

LOWER AND/OR UPPER DEVONIAN

CANOL FORMATION

Cs	light bluish-grey weathering, black sooty chert; cherty argillite; light bluish-grey and locally rusty-brown weathering, dark grey and black silty shale; chert grit, chert pebble conglomerate; dark grey bedded barite near top of unit; may locally include younger clastic rocks of the Imperial Formation

ORDOVICIAN TO LOWER DEVONIAN

ROAD RIVER FORMATION

Rcm	resistant, orange to tan weathering, 'chippy' mudstone, variably dolomitic and pyritic silty mudstone, irregular 'flaser bedding characteristic
Ral	dark grey, brown, blue or black weathering, recessive, carbonaceous black shale; mudstone; cherty argillite; coarse grained black limestone

UPPER CAMBRIAN TO ORDOVICIAN

RABBITKETTLE FORMATION

u€Oc	wavy banded silty limestone, resistant, light grey, yellowish or brownish grey weathering, thinly and irregularly bedded

The OHNO property is staked over the interpreted position of an overburden-covered belt of Road River Formation (unit R) bounded by limestone of the Rabbit-kettle Formation (unit u6Oc). The Road River Formation includes both a lower argillite unit (Ral) and an upper mudstone (Rcm) unit. The OHNO claims are apparently underlain only by the lower unit (Ral), which is host to the stratiform zinc-lead mineralization at the Placer Development/U.S. Steel Main (XY) and Anniv deposits, where it is called the Howard Pass Formation.

Unit Ral rarely forms outcrop anywhere in this district except locally along stream cuts or when it consists of chert and, in many places, the distribution of the unit can only be inferred by the presence of the Rabbitkettle Formation which underlies it and unit Rcm which overlies its. Both of these bounding units form good markers because they are distinctive and relatively more resistant.

Structures in the vicinity of the OHNO claims appear to be simple but there is little data and more than one interpretation is possible. The Road River argillite belt that underlies the OHNO claims is interpreted to occur within the core of a syncline and to be separated by an anticline from the subparallel belt of argillite that hosts the Anniv and OP zones. It is also possible to interpret the argillite underlying the OHNO as a part of a tilted fault block rather than the core of a fold. In either case, the OHNO claims were probably orginally separated from the OP occurrence by a horizontal distance of only some 1500 m and from the Anniv deposit by only about 3000 m.

ELECTROMAGNETIC SURVEY

Instrumentation and Field Procedure

The electromagnetic surveying was done with an Apex Parametrics Maxmin II system. A specification sheet for this instrument is attached at the back of this report as Appendix I.

The electromagnetic surveying was done in the horizontal coplanar loop mode. Two frequencies were recorded 888HZ and 222HZ. The coil separation was 100 metres. The low frequencies and short coil separation were used to reduce the response of the conductive host rock.

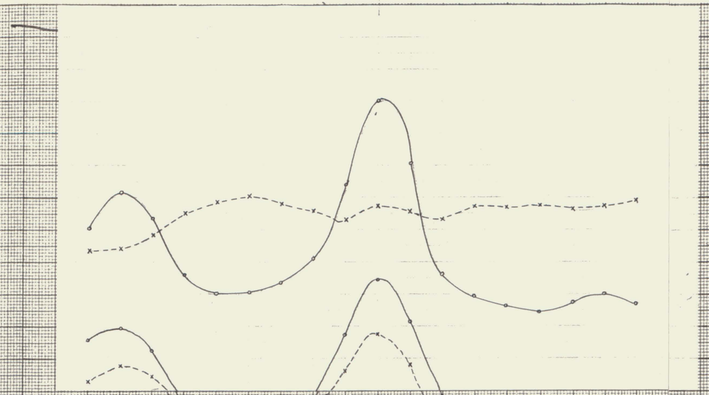
Survey stations were established at 25 metre horizontal intervals. A topographic profile was constructed using a small portable inclinometer. The topographic profile provided the information necessary to keep the coils coplanar. The actual coil separation varied with the slope, however, the horizontal distance between the coils was always 100 metres. The inphase component of the signal was corrected for the coil separation variation with the slope.

The position of the 1978 survey grid is plotted on Figure 1 at a scale of 1 inch to 1/2 mile (in pocket). The survey results are plotted as individual vertical profiles for the three lines (Figures 2,3 and 4 following this page) and as a plan view (Figure 5 in pocket) at a scale of 1:5000.

Discussion of Results

The following comments were prepared by geophysicist Grant Hendrickson:

"The conductors' interpreted depth, width and conductivity thickness product is shown in section form at the bottom of the accompanying profiles. A plan view of the grid is also included to show the spatial distribution of conductors. The resistivity of most of these conductors is in the one to five ohm-m range. From



+20%
0
-20%
FREQ. 1777 HZ
COIL SEPARATION 100 M.

+20%
0
-20%
FREQ. 444 HZ.
COIL SEPARATION 100M.

+20%
0
-20%
FREQ. 222 HZ
COIL SEPARATION 100M.

DDH A9
9/5 10M. EAST
D.D.H A-7
DDH A6
9/4 3M. EAST
DDH A5
DDH A8
9/4 13M. EAST
DDH A10
9/5 5M. EAST

0 50N 100N 150N 200N 250N 300N 350N 400N 450N 500N 550N

METRIC SYSTEM

THICKNESS OF OVERBURDEN 10 METRES
OVERBURDEN RESISTIVITY 35 Ω/M
CONDUCTOR RESISTIVITY .4 Ω/M

INSTRUMENT USED

MAXMIN II

o——o IN PHASE RESPONSE

x——x QUADRATURE RESPONSE

AQUITAINE COMPANY OF CANADA LTD.

HORIZONTAL COPLANAR LOOP E.M.

SCALES:
1cm = 25 meters Horizontal & Vertical
1cm = 20%
INSTRUMENT – MAXMIN II

HOWARD PASS TEST LINE
ANNIV ZONE

SURVEY BY M.C., G.H.	PLOTTED BY G.H.
DATE AUGUST, 1977	A.F.E. AX-28

the geophysical data one cannot distinguish between conductors within the Road River Shales and conductors within the Canol Shales; however, the Rabbitkettle limestone can easily be recognized. Fortunately this limestone unit is very resistive. From the geologic history of the area we know the Canol Shales overlie the Road River Shales which in turn overlie the Rabbitkettle Formation. The conductors closest to the Rabbitkettle Formation should lie within the favourable Road River series.

In the interpretation of the EM data there is some ambiguity as to the geometry of the conductors particularly on the north side of the grid. In some cases the dipping dike model seem correct. A combination of the two models often produced the best fit. The electromagnetic work done on the Anniv deposit combined with the known geologic section of the Anniv gives a good guide for the interpretation of the OHNO data. The interpreted geometry of the conductors will serve only as a rough guide of what to expect in any future drill holes.

On line 0 there are two conductors that may warrant drilling. The improvement in conductivity at 4 + 65 S is an interesting feature. The top of this conductor appears to be 35 metres below the surface.

The improvement in conductivity plus the proximity to the contact with the Rabbitkettle Formation make the conductor at 7 + 65 S a good target. The top of the conductor appears to be approximately 7 metres from the surface."

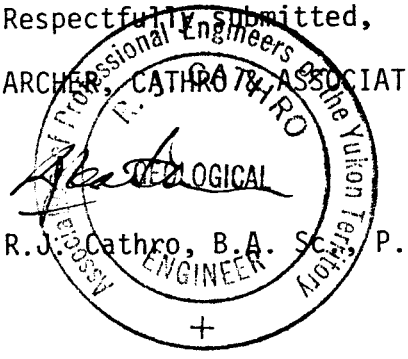
CONCLUSIONS AND RECOMMENDATIONS

The ability of the EM survey to define the contact between the Road River and Rabbitkettle Formations and define conductive trends within the Road River shale

indicates that a Maxmin survey is a useful preliminary exploration technique in this area. The remainder of this property should be covered with additional lines in order to map formational boundaries, structural trends and conductors and determine if high priority drill targets are present.

Respectfully Submitted,

ARCHER, CATHRO & ASSOCIATES LTD.,



RJC:jm

R.J. Cathro, B.A. Sc., P. Eng.

APEX MAXMIN II
PORTABLE EM

- Five frequencies: 222, 444, 888, 1777 and 3555 Hz.
- Maximum coupled (horizontal-loop) operation with reference cable.
- Minimum coupled operation with reference cable.
- Vertical-loop operation without reference cable.
- Coil separations: 25, 50, 100, 150, 200 and 250 m (with cable) or 100, 200, 300, 400, 600 and 800 ft.
- Reliable data from depths of up to 180m (600 ft).
- Built-in voice communication circuitry with cable.
- Tilt meters to control coil orientation.

SPECIFICATIONS:

Frequencies: 222, 444, 888, 1777 and 3555 Hz.

Modes of Operation:
- MAX: Transmitter coil plane and receiver coil plane horizontal (Max-coupled; Horizontal-loop mode). Used with refer cable.
- MIN: Transmitter coil plane horizontal and receiver coil plane vertical (Min-coupled mode). Used with reference cable.
- V.L. : Transmitter coil plane vertical and receiver coil plane horizontal (Vertical-loop mode). Used without reference cable, in parallel lines.

Coil Separations: 25, 50, 100, 150, 200 & 250 m (MMII) or 100, 200, 300, 400, 600 and 800 ft. (MMIIF). Coil separations in V.L. mode not restricted to fixed values.

Parameters Read:
- In-Phase and Quadrature components of the secondary field in MAX and MIN modes.
- Tilt-angle of the total field in V.L. mode.

Readouts:
- Automatic, direct readout on 90 mm (3.5") edgewise meters in MAX and MIN modes. No nulling or compensation necessary.
- Tilt angle and null in 90 mm edgewise meters in V.L. mode.

Scale Ranges:
- In-Phase: ±20%, ±100% by push-button switch.
- Quadrature: ±20%, ±100% by push-button switch.
- Tilt: ±75% slope.
- Null (V.L.): Sensitivity adjustable by separation switch.

Repeatability: In-Phase and Quadrature: 0.25 % to 0.5 % ; Tilt: 1 %.

Repeatability: ±0.25% to ±1% normally, depending on conditions, frequencies and coil separation used.

Transmitter Output:
- 222Hz : 220 Atm²
- 444Hz : 200 Atm²
- 888Hz : 120 Atm²
- 1777Hz : 60 Atm²
- 3555Hz : 30 Atm²

Receiver Batteries: 9V trans. radio type batteries (4). Life: approx. 35 hrs. continuous duty (alkaline, 0.5 Ah), less in cold weather.

Transmitter Batteries: 12V 6Ah Gel-type rechargeable battery. (Charger supplied).

Reference Cable: Light weight 2-conductor teflon cable for minimum friction. Unshielded. All reference cables optional at extra cost. Please specify.

Voice Link: Built-in intercom system for voice communication between receiver and transmitter operators in MAX and MIN modes, via reference cable.

Indicator Lights: Built-in signal and reference warning lights to indicate erroneous readings.

Temperature Range: -40°C to +60°C (-40°F to +140°F).

Receiver Weight: 6kg (13 lbs.)

Transmitter Weight: 13kg (29 lbs.)

Shipping Weight: Typically 60kg (135 lbs.), depending on quantities of reference cable and batteries included. Shipped in two field/shipping cases.

Specifications subject to change without notification

REPORT ON HORIZONTAL COPLANAR LOOP ELECTROMAGNETIC SURVEYING ON THE ANNIV ZONE OF CANEX PLACER LTD.

FOR

ITSI JOINT VENTURE

G. HENDRICKSON
AQUITAINE CO. OF CANADA LTD.
OCTOBER, 1977

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INTRODUCTION

During the latter part of August, 1977, a test EM Line was run over the Anniv Deposit of Canplex Placer. The purpose of this test was to see what role horizontal coplanar loop EM surveying could play in the detection of lead-zinc mineralization. From the outset, it was realized that graphitic zones would cause many anomalies and that some of these graphitic zones may be associated with possible ore zones.

INSTRUMENT

The new five frequency Maxmin II was used on this survey. This instrument was set up in the metric mode. Inphase and Quadrature compensator were both set at 5.0, the electrical 0 position, thus all values shown on the accompanying profile are absolute.

SURVEY PROCEDURE

A topographic profile of the line was first obtained using a small portable inclinometer. From the topographic profile, the information necessary to keep the coils coplanar is obtained. Survey stations were put in at a 25 m horizontal interval. Corrections were made to the inphase response. These corrections were due to the fact that the coil separation was varying with the topography.

DISCUSSION OF RESULTS

Two conductors are shown on the accompanying profile.

The response centered around station 1+70N is typical of the response for a steeply dipping dike shaped body.

The response starting at 3+65N and extending to the north is more typical of the response for a flat laying conductor close to the surface. The northern limit of this conductor is hard to pin down without additional surveying to the north. It is also difficult to say anything about the thickness of this conductor.

The question still remains: is the conductivity due to lead mineralization and/or Graphite zones?

CONCLUSION

Horizontal coplanar loop electromagnetic surveying is a useful mapping tool in this type of geological environment. It is not possible to differentiate between the responses of Sulphides and Graphitic Shales since they both cover a broad range of conductivity. Additional information, such as Geochemistry and Gravity, will be required to screen the numerous conductors that will be picked up when surveying in this area.

If more geological information had been available before the test work, the geophysical program could have been designed better for each particular case. Additional lines and, in some cases, longer lines would have helped.

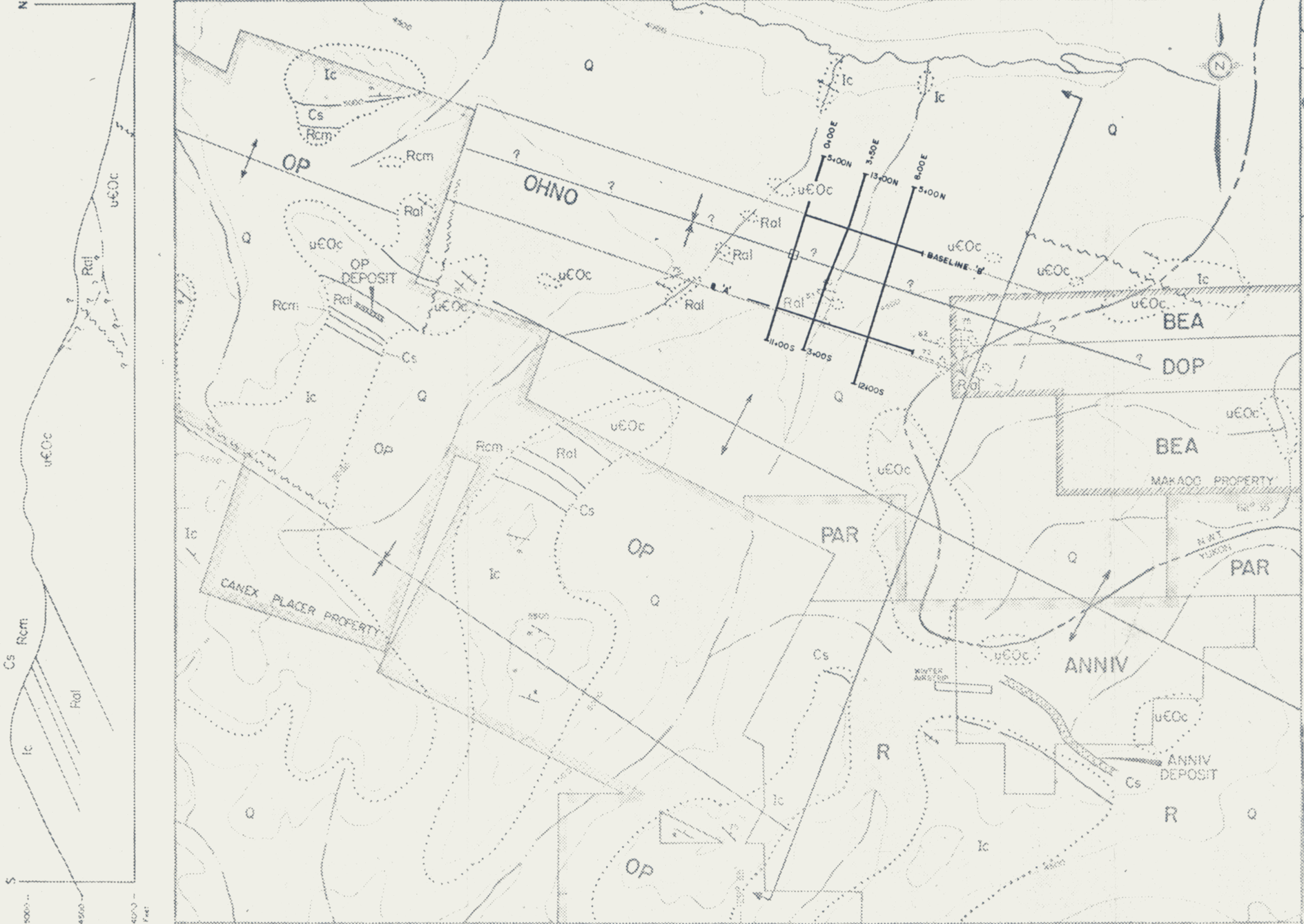
RECOMMENDATION

In reconnaissance electromagnetic surveys in this area, the Maxmin II should be used with coil separations of 50 m or 100 m. The choice of coil separation will depend on overburden depth. Two frequencies should generally be read, 888 Hz and 222 Hz. The shorter coil separations and low frequencies should reduce the response of the conductive background.

In areas of special interest, all five frequencies of the Maxmin should be read and one should try a couple of different coil separations. More interpretable information will be obtained by doing this.

Grant Hendrickson.

Grant Hendrickson.



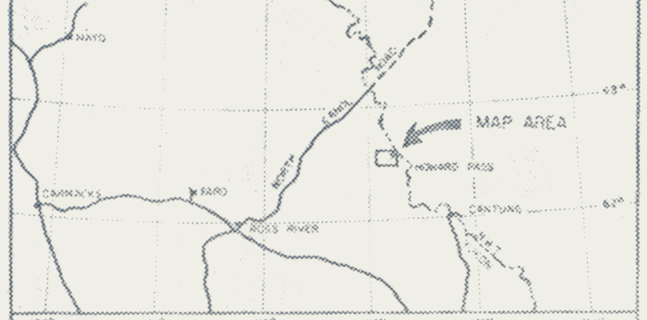


TABLE OF FORMATIONS

RECENT

Q	unconsolidated alluvial and fluvial fill

UPPER DEVONIAN OR MISSISSIPPIAN
IMPERIAL FORMATION

Ic	resistant, brown weathering chert grit, sandstone, shale

MIDDLE AND/OR UPPER DEVONIAN
CANOL FORMATION

Cs	chert, cherty argillite, siliceous shale; chert grit; chert pebble conglomerate; minor barite

ORDOVICIAN TO MIDDLE DEVONIAN
ROAD RIVER FORMATION

Rcm	orange to tan weathering, chippy mudstone
Ral	black shale, mudstone, cherty argillite

UPPER CAMBRIAN TO ORDOVICIAN
RABBITKETTLE FORMATION

u€Oc	wavy bedded silty limestone

Association of Professional Engineers of the Yukon Territory
R. J. CATHRO
GEOLOGICAL
ENGINEER

FIG. 1
ARCHER CATHRO & ASSOCIATES LTD.

GEOLOGY & LOCATION PLAN

1978 EM SURVEY
OHNO CLAIMS
ITSI JOINT VENTURE

1 inch = 1/2 Mile
1500 0 1500 3000

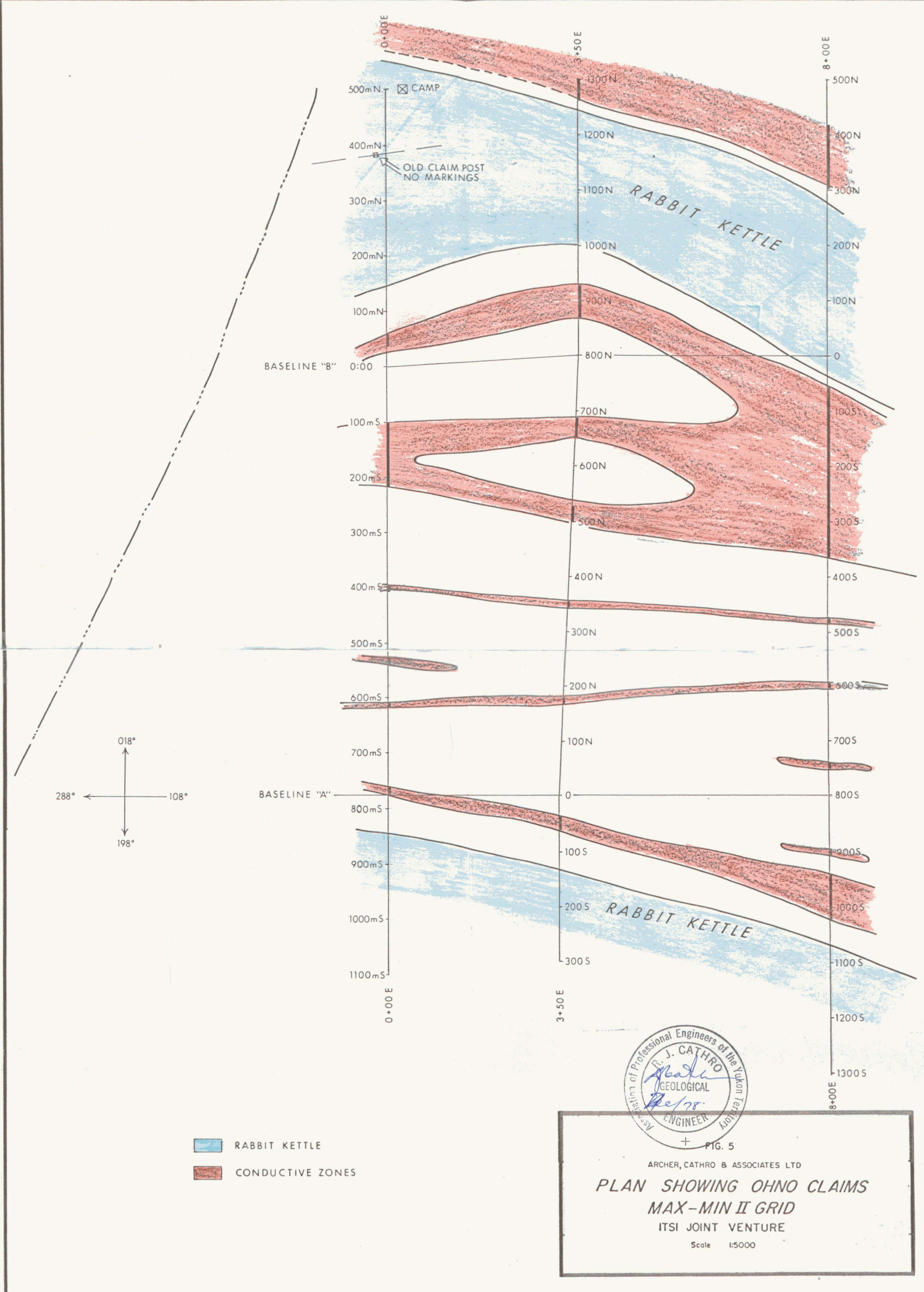


FIG. 5

ARCHER, CATHRO & ASSOCIATES LTD

PLAN SHOWING OHNO CLAIMS
MAX-MIN II GRID

ITSI JOINT VENTURE

Scale 1:5000

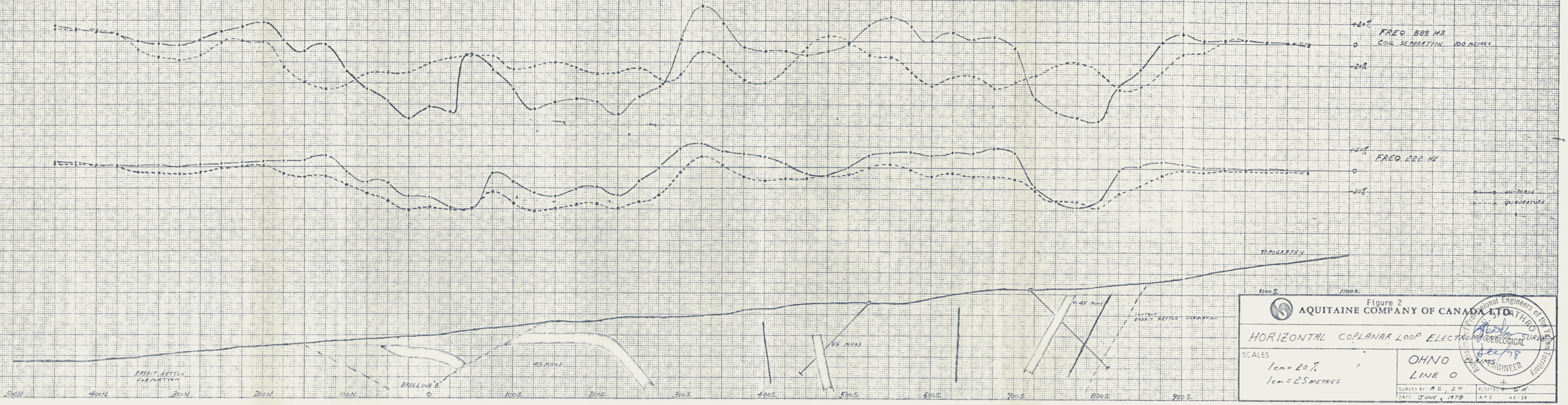


Figure 2

AQUITAINE COMPANY OF CANADA LTD.

HORIZONTAL COPLANAR LOOP ELECTROMAGNETIC SURVEY

SCALES
1cm = 20%
1cm = 25 METRES

OHNO
LINE 0

SURVEY BY A.G., S.T.
DATE JUNE, 1978

PLOTTED BY G.H.
A.R.E. AS-28

ASSOCIATION OF Professional Engineers of the Province of Ontario
REGISTERED
Dec 7/78
PROFESSIONAL ENGINEER

To accompany a report by R.J. Cathro dated Dec. 10/78

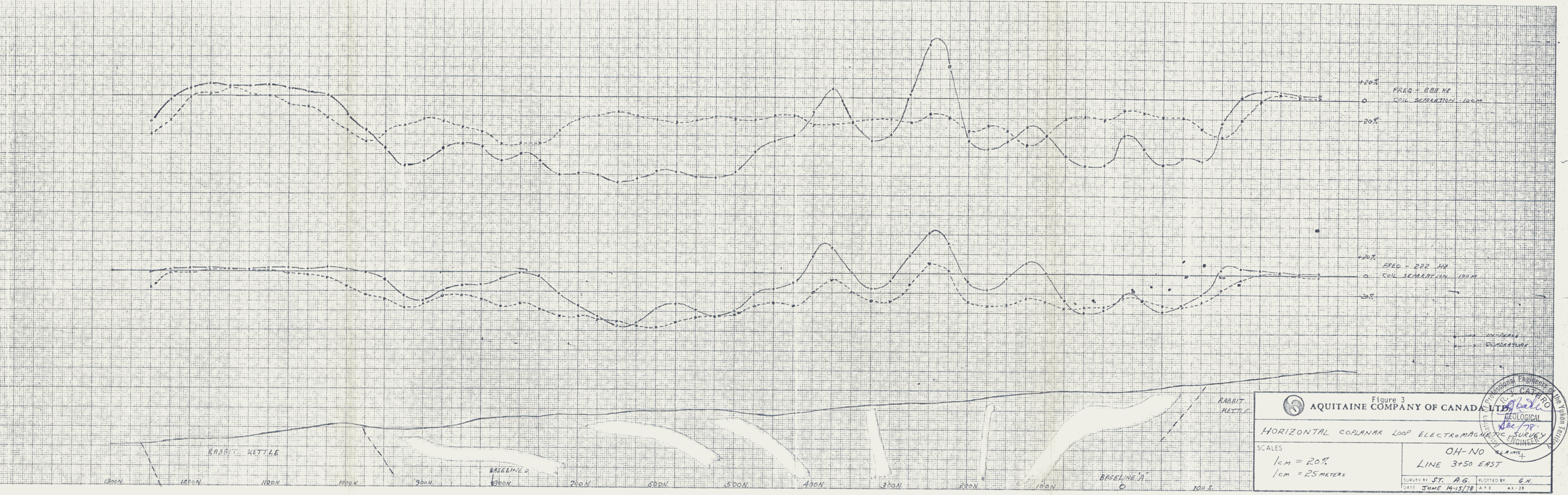


Figure 3

AQUITAINE COMPANY OF CANADA LTD.

HORIZONTAL COPLANAR LOOP ELECTROMAGNETIC SURVEY

SCALES
1 cm = 20%
1 cm = 25 METERS

OH-NO CLAIMS
LINE 3+50 EAST

SURVEY BY ST. A.G. | PLOTTED BY G.H.
DATE JUNE 14-15/78 | A.K.E. AX-28

Professional Engineers of the Yukon Territory
R. J. CATHRO
GEOLOGICAL ENGINEER

To accompany a report by R.J. Cathro dated Dec. 10/78

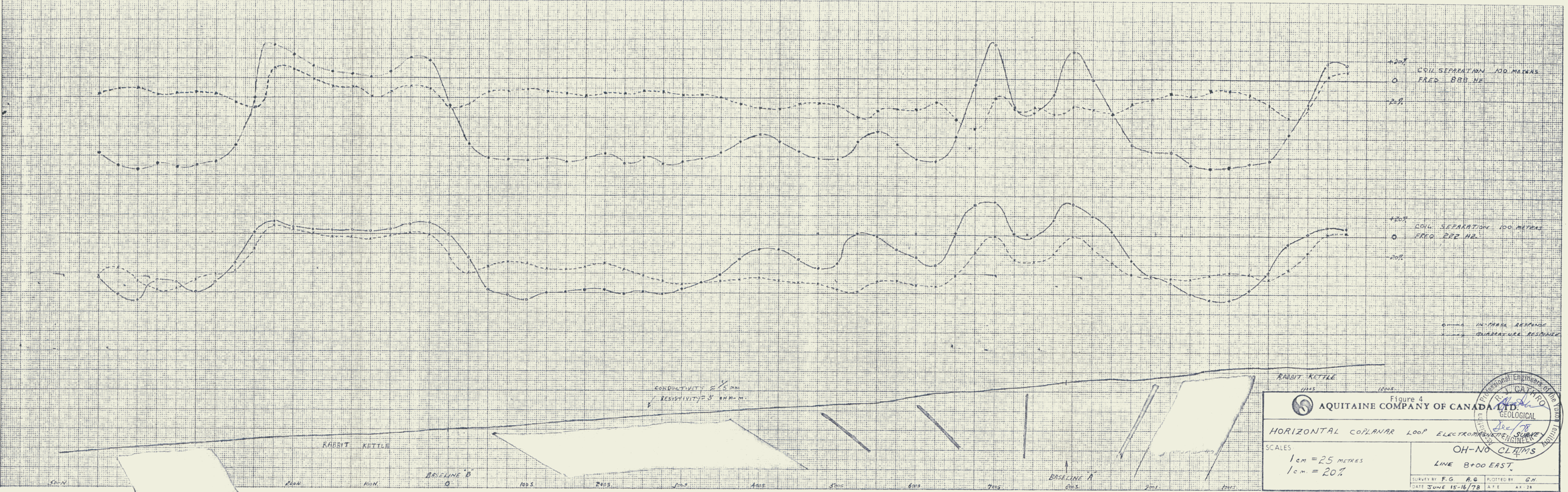


Figure 4

AQUITAINE COMPANY OF CANADA LTD.

GEOLOGICAL

HORIZONTAL COPLANAR LOOP ELECTROMAGNETIC SURVEY

SCALES
1 cm = 25 metres
1 cm. = 20%

OH-NO CLAIMS
LINE B+00 EAST

SURVEY BY F.G. A.G. | PLOTTED BY G.H.
DATE JUNE 15-16/78 | A.F.E. AX-28

Professional Engineers Province of Ontario
R. J. CATHRO
GEOLOGICAL
Dec 78

To accompany a report by R.J. Cathro dated Dec. 10/78