REPORT ON
A TURAM ELECTROMAGNETIC SURVEY
HAINES JUNCTION AREA, YUKON
ON BEHALF OF
KATHEX MINES LTD.

by

Jon G. Baird, B.Sc., P.Eng.

October 30, 1969

CLAIMS:

MAG 33, 35, 37
MAG 39, 41, 43
MAG 45, 47
MAG 50, 52, 54
MAG 56, 58, 60, 62
JOY 1, 2, 4
JEAN 1, 2
STOCK 15, 16
STAR 2, 3, 4, 5, 6
TRSS 24, 29

LOCATION:

Near Sockeye Lake, ~~18 miles~~ SSW of
Haines Junction, Yukon
137° 60° NW

DATES: August 20 to October 5, 1969

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 $ 6390.00

R. S. Rankin
~~Regional Geologist~~ or
Resident Mining Engineer

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

Commissioner of Yukon Territory

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SUMMARY

A Turam electromagnetic survey has revealed the presence of one electromagnetic conductor approximately 400' in length and four other isolated conducting axes which are deemed to be of lesser potential importance. Surface geological examinations should be carried out in the anomalous areas in order to determine whether the present responses may possibly be due to subsurface concentrations of sulphide mineralization. Diamond drilling may be predicated on these investigations.

It is possible that some sulphide bodies may underlie the survey area which are either too small in size or contain too little sulphide to provide the electrical interconnectability required for electromagnetic response. Further geophysical exploration employing the induced polarization method may therefore be warranted.

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INTRODUCTION

During the period from August 20 to October 5, 1969 a field party under the direction of Reg Lebrun cut grid lines and executed a Turam electromagnetic survey in the Haines Junction area, Yukon, on behalf of Kathex Mines Ltd.

As shown on Plate 1, the survey area is located near Sockeye Lake, about 18 miles south-south-west of Haines Junction. The topography of the survey area is in places quite rugged and the terrain is covered with underbrush and tree growth.

The Turam fixed source compensation method was chosen for the electromagentic survey since, in comparison with other electromagnetic techniques, it is relatively unaffected by orientation errors caused by rough topography, provides deep penetration and allows accurate interpretation of anomalous characteristics. The attached copy of a paper by R. A. Bosschart and H. O. Seigel entitled "Some Aspects of the Turam Electromagnetic Method" describes the equipment, the field procedures, the nature of results and the interpretative procedures involved in this type of survey.

Electromagnetic methods detect massive sulphide bodies by means of measurement of the secondary electromagnetic field

produced by eddy currents induced by a transmitted or primary electromagnetic field. The Turam method employs a large closed loop or wire as transmitter, while the field strength ratio and phase difference at two nearby observation points are measured by means of two receiver coils.

The claims covered by the present survey are listed on the cover page of this report and are shown on the accompanying plates on a scale of 1" = 200'. These claims are held by Kathex Mines Ltd.

The presence of a subsurface conductor will be indicated by abnormal field strength ratios and phase differences. A typical anomaly will show a correspondence between high values of the field strength ratio and negative phase differences. The depth of burial of the current axis is reflected in the shape of the anomaly, and the ratio of the maximum amplitues of field strength and phase is a measure of the conductivity/thickness (r/d) ratio of the body.

A base line approximately 3.6 miles in length was laid out oriented N 45° W and grid lines were established perpendicular thereto at 200' separations. The grid lines were approximately 2000' in length and the entire grid totaled approximately 35 line miles.

A Sharpe SE 700 instrument was employed with a receiving coil separation of 100'. Transmitting loops approximately 2000' x 2000' were used and the operating frequency was 400Hz.

GEOLOGY

The geology of the area including and surrounding the survey area is shown on GSC map 1019A "Dezadeash" on a scale of 1" = 4 miles. The survey area is shown to be largely overlain by overburden and lies within Triassic and Jurassic rocks of the Mush Lake Group. These rocks consist primarily of volcanics and sediments which in the disused Johobo workings carry copper mineralization such as chalcocite, bornite and native copper.

DISCUSSION OF RESULTS

Plates 2, 3 and 4 show the results of the electromagnetic survey on the scale of 1" = 200'. The parameters plotted in profile form are the field strength ratios on a scale of 1" = 20% and the phase differences on a scale of 1" = 10°.

Both the field strength ratio and the phase shift profiles can be seen to be rather flat and there are very few distortions which are not within the normal response range allowing a certain latitude for the effects of errors caused by rough topography.

Slight field strength ratio increases, some with and some without corresponding phase shifts are noted at L 52 N, 3+00 W; L 36 N, 4+00 E; L 28 N, 0+50 E; and L 24 N, 4+50E. These indications are of quite low amplitude and each occurs on only one grid line. They may be due to survey inaccuracies caused by rough topography, overburden conduction or possibly small near surface mineralized lenses.

The only zone which can be considered as possibly due to a subsurface conductor is approximately 400' in length and is located near the west ends of lines 40 N through 44 N. The axis of this conductor is interpreted to be within a few tens of feet of the ground surface and the apparent r/d ratio of 1.5 indicates that it is in a relatively high conductivity range.

Since all the anomalous responses are of low amplitude and consist of very few anomalous observations on each line, all the conductor axes must be classed as "poorly defined" which implies that quantitative interpretations may be somewhat tenuous.

Distortions of the field strength ratio profiles near the ends of the lines are most likely due to errors in the relative locations of the transmitting loop and receiver, possibly because of rough topography. These errors only arise when the receiver is close to the edge of the transmitting loop.

CONCLUSIONS AND RECOMMENDATIONS

The present Turam survey has located one conductor which may possibly indicate the presence of sulphide-native copper mineralization. The area of this conductor and the other lesser indications should be checked on surface to determine whether there are favorable geological and/or geochemical indications. Trenching or diamond drilling may be predicated upon these further investigations.

In order to respond to electromagnetic survey techniques sulphide bodies must exhibit conductivities many times

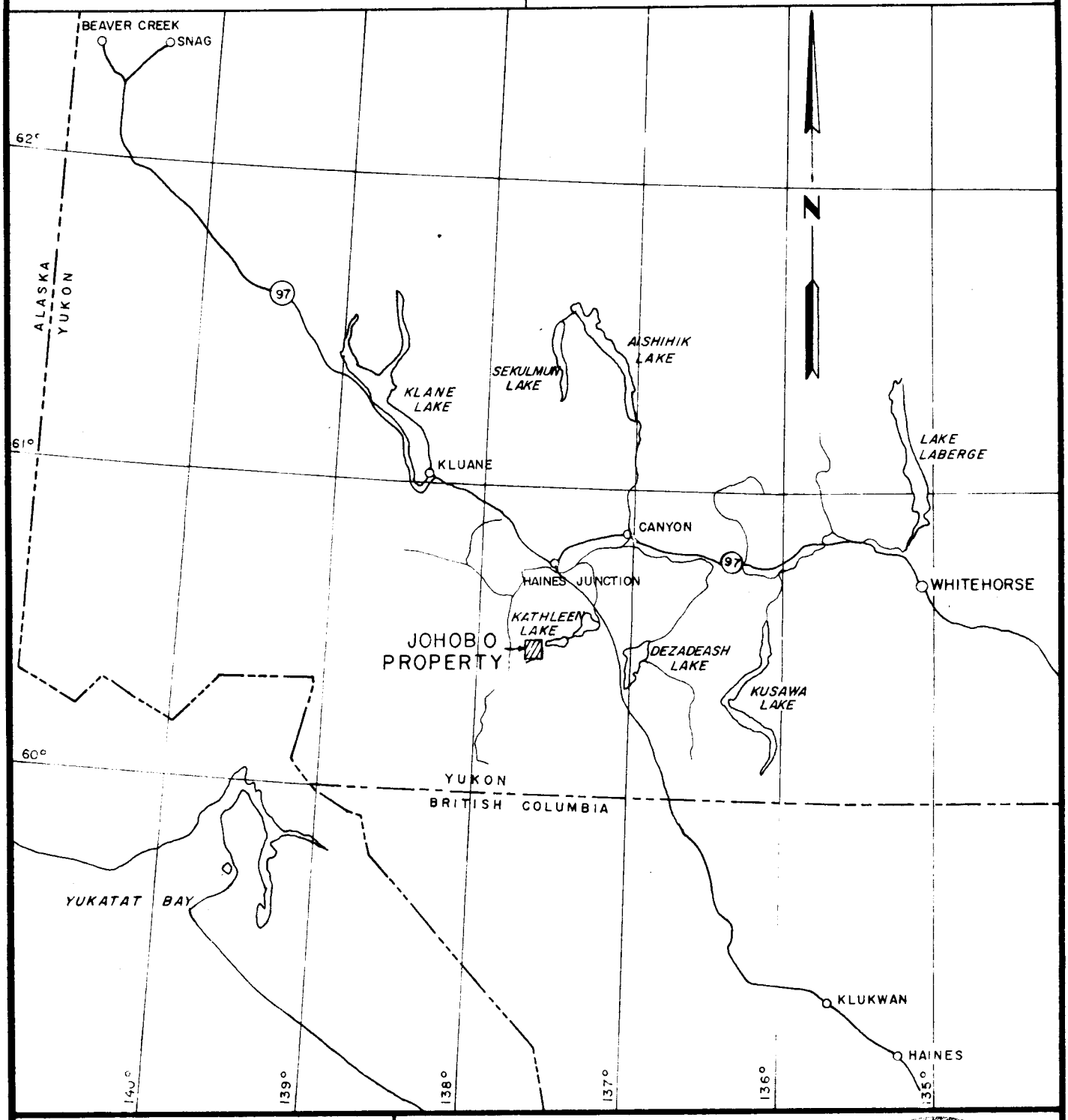
higher than normal rocks which usually requires at least 25% by volume of metallically conducting mineralization. Such bodies are termed "massive sulphides". It is possible therefore that mineralized bodies which do not fall into the "massive sulphide" classification may lie undetected within the present survey grid. Further geophysical investigations of this area would be best executed using the induced polarization method which can detect small percentages by volume of metallically conducting mineralization under suitable conditions of body size and depth of burial. Some induced polarization surveying in the area of the presently located conductor may be warranted to determine whether it is due to an ionic (overburden or sheer zone) source or to metallically conducting material.

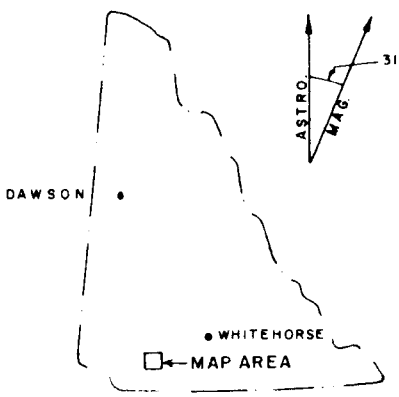
Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

Jon G. Baird, B.Sc., P.Eng.
Geophysicist (Yukon)

Vancouver, B.C.
October 5, 1969





YUKON TERRITORY

KATHEX MINES LIMITED

LOCATION MAP

JOHOBO PROJECT

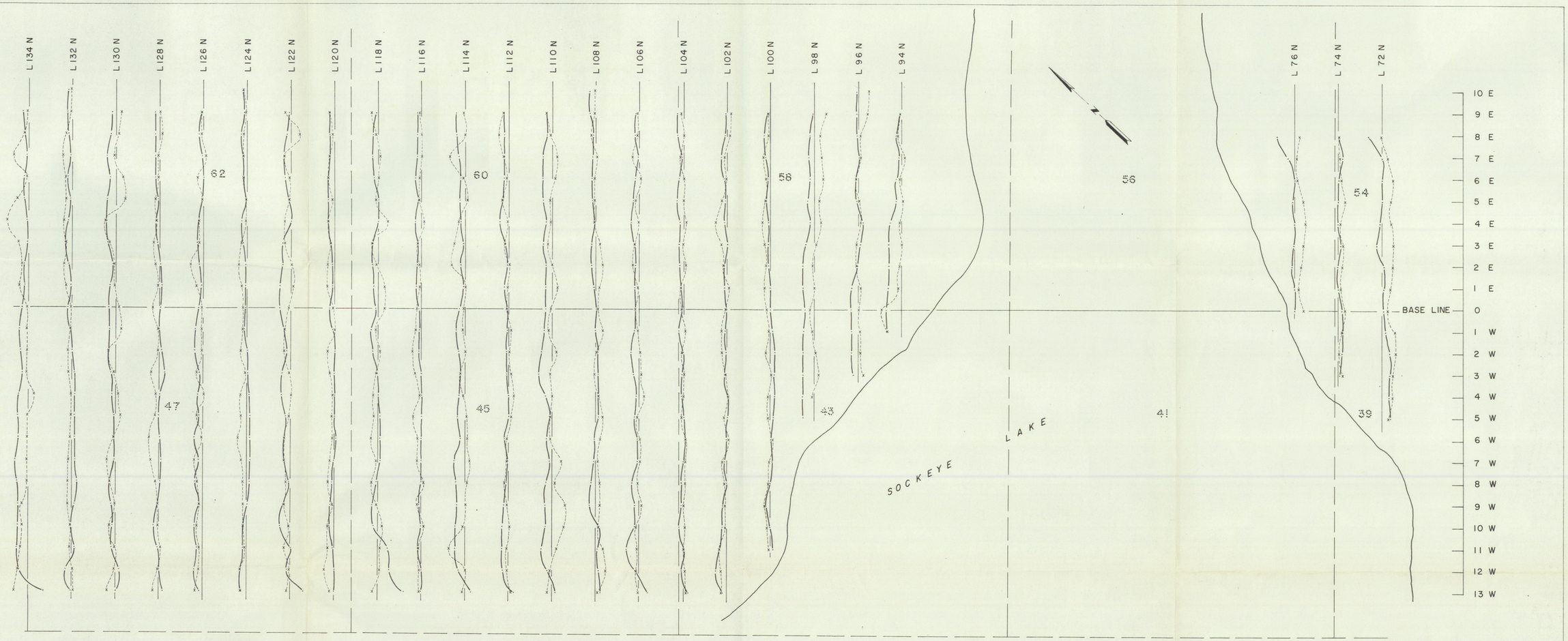
HAINES JUNCTION AREA, YUKON TERRITORY

32 0 32 34

SCALE IN MILES

SURVEY BY
SEIGEL ASSOCIATES LIMITED
OCTOBER, 1969

PLATE I



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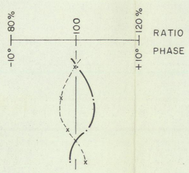


x-----x PHASE SHIFT

——— FIELD STRENGTH RATIO

SHEET INDEX

2	3	4

PLATE 2

KATHEX MINES LIMITED

HAINES JCT. AREA, YUKON TERRITORY

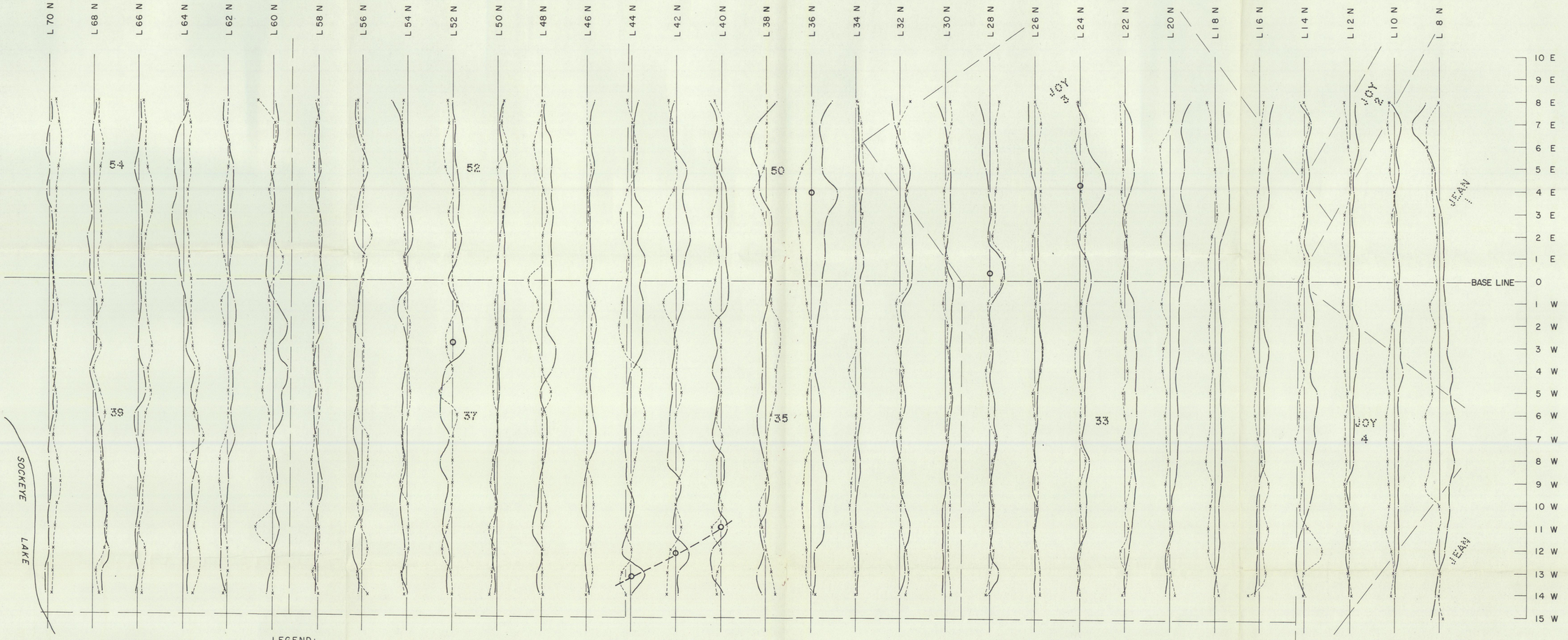
JOHOBO PROJECT

TURAM ELECTROMAGNETIC SURVEY

SCALE : 1" = 200'

SURVEY BY SEIGEL ASSOCIATES LIMITED

OCTOBER, 1969.



LEGEND:

-10% 00 +10% RATIO

+10° 00 -10° PHASE

x----x PHASE SHIFT

——— FIELD STRENGTH RATIO

○ CONDUCTOR AXIS, POORLY DEFINED.

● CONDUCTOR AXIS, WELL DEFINED.

———— POSSIBLE STRIKE OF CONDUCTING ZONE

SHEET INDEX

2	3	4

PLATE 3

KATHEX MINES LIMITED

HAINES JCT. AREA, YUKON TERRITORY

JOHOBO PROJECT

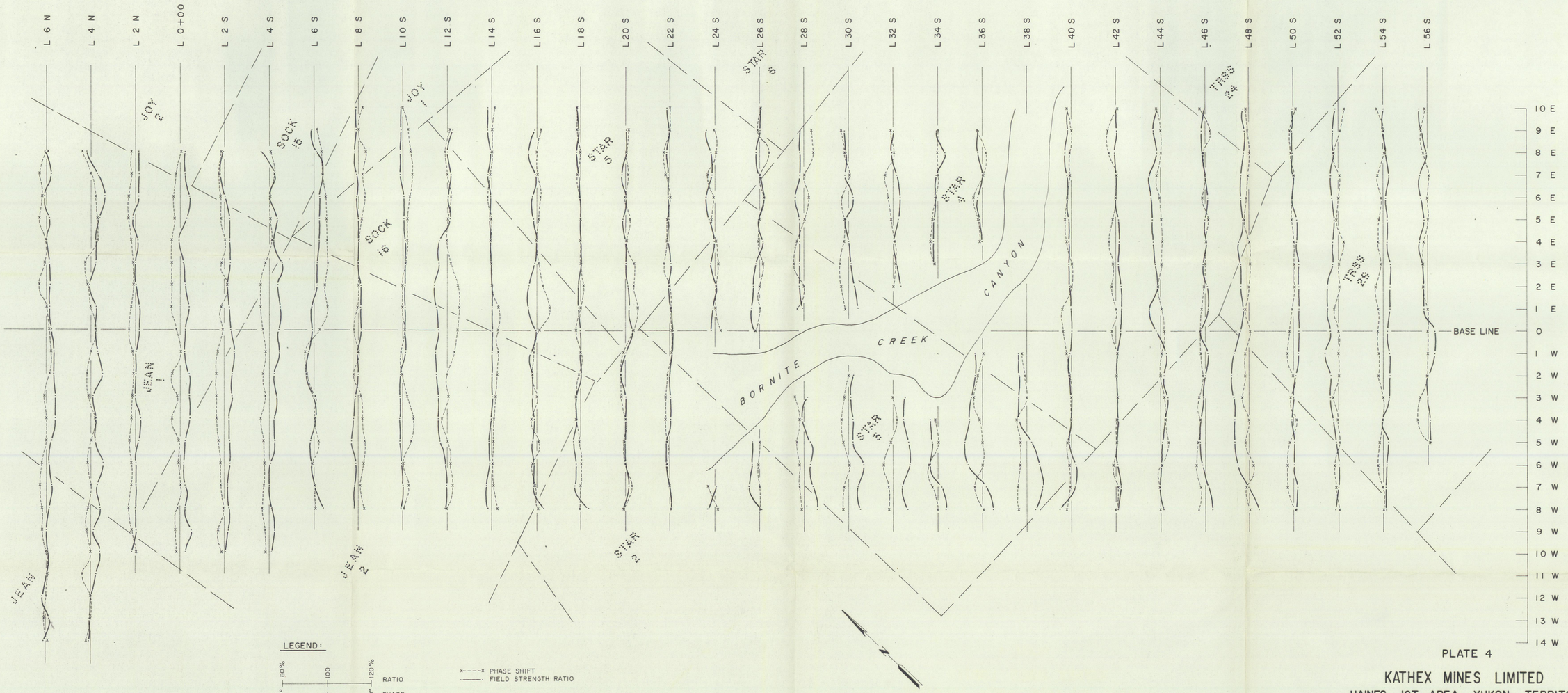
TURAM ELECTROMAGNETIC SURVEY

SCALE: 1" = 200'

SURVEY BY SEIGEL ASSOCIATES LIMITED

OCTOBER, 1969

REGISTERED PROFESSIONAL ENGINEER J. C. BAIRD PROVINCE OF ONTARIO



LEGEND:

80% 100 120% RATIO

-10° +10° PHASE

×----× PHASE SHIFT

——— FIELD STRENGTH RATIO

SHEET INDEX

2	3	4

PLATE 4

KATHEX MINES LIMITED

HAINES JCT. AREA, YUKON TERRITORY

JOHOBO PROJECT

TURAM ELECTROMAGNETIC SURVEY

SCALE: 1" = 200'

SURVEY BY SEIGEL ASSOCIATES LIMITED
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