

A REPORT

ON

TURAM ELECTROMAGNETIC SURVEYS

Ross River Area, Whitehorse M.D.

Yukon Territory

FOR

BOLIDEN - PREUSSAG EXPLORATION

Toronto, Ontario

BY

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, British Columbia

JULY 1975



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ACCOMPANYING MAPS Scale 1" = 500'

MAP POCKET

PROFILES OF FIELD STRENGTH & PHASE DIFFERENCE

W-197-1 to 3

INTRODUCTION

Between June 16th and July 7th, 1975 Peter E. Walcott & Associates Limited carried out Turam electromagnetic surveys over three claim groups located in the Ross River area of the Yukon Territory, the Tenas, Bar & Mal claims, optioned by Boliden-Preussag Exploration.

The survey was carried out on N 30° E handcut lines 1000 feet apart that were turned off from N 60° W baselines, and chained and picketed at 100 foot intervals.

Measurements of field strength and phase difference were made every 100 feet along the lines with a S.E. 71 electromagnetic unit operating at a frequency of 400 Hz and using a coil separation of 100 feet.

The data are presented in profile form on Maps W-197-1 to 3 that accompany this report.

PROPERTY, LOCATION AND ACCESS

The properties are located in the Whitehorse Mining Division of the Yukon Territory and consist of the following claims:

<u>Claim Name</u>	<u>Record Number</u>	<u>Expiry Date</u>
TENAS 1-33	Y 80346 - 80378 incl.	Aug. 22nd 1975
BAR 1-18	Y 80328 - 80345 incl.	Aug. 24th, 1975
MAL 1-44	Y 80379 - 80422 incl.	Aug. 22nd, 1975

The claims are situated to the north and within a 8 to 10 mile radius of the settlement of Ross River, Yukon Territory, the Tenas claims being 4 miles east of the Tenas Creek bridge on the North Canol road, and the Mal claims being south of Olgie Lake.

Access to the Tenas and Bar groups was obtained via the North Canol road, while that to the Mal was obtained from Jackfish Lake (the Ross River float base) to Olgie Lake by float plane.

PREVIOUS WORK

The writer does not know the nature and extent of previous work done on the properties but believes that they have been covered in part by helicopter borne magnetic surveys and by ground induced polarization and general geologic surveys.

PURPOSE

As the Vangorda, Champ, Firth, etc. sulphide deposits are associated with graphitic horizons within underlying biotite muscovite phyllites, and as on the basis of present geological knowledge the same and/or similar belt of rocks was thought to underlie the respective claim groups the purpose of the survey was to locate the presence of electromagnetic conductors, the causative sources of most of which could be attributable to the above mentioned graphitic horizons, and which could be screened on the basis of gravity, magnetic and geological investigations as to their association with economic sulphide mineralization.

GEOLOGY

The reader is referred to a report by J.B.P. Sawyer P.Eng.,
Consulting Geologist.

SURVEY SPECIFICATIONS

The basic principle of any electromagnetic survey is that when conductors are subjected to primary alternating fields secondary magnetic fields are induced in them. Measurements of these secondary fields give indications as to the size, shape and conductivity of conductors. In the absence of conductors no secondary fields are obtained.

The electromagnetic survey was carried out using a S.E. 71 electromagnetic unit. The primary field was set up by closed inductive loops laid on the ground. Two receiver coils connected by a light-weight shielded cable to a compensator amplifier are used to measure the distortions in the electromagnetic field. The quantities measured are:

1. the ratio of the field strengths at each coil and
2. the phase difference in the fields at the two coils.

Large rectangular loops of varying size (3200 to 4800' 2500 to 3000' deep) were used on the survey with the loops always on the assumed footwall side of the formations.

Readings were taken every 100 feet along the picket lines perpendicular to the long side of the loops with a 100 foot coil separation and using a frequency of 400 Hz.

In some places, particularly on the Mal group, additional loops had to be laid as the signal strength diminished rapidly in areas of multiple strong conductors.

DISCUSSION OF RESULTS

Based on past experience in the general area the responses of the two most prominent rock types in the area surveyed, namely biotite muscovite phyllites and amphibolites, seem to appear characteristically different on Turam surveys.

The amphibolites seem to be characterized by constant low field strength ratios and very small if any phase differences, whereas the phyllites seem to be characterized by irregular field strength ratios and phase differences with stronger readings indicating the more graphitic horizons. The granites appear to show similar results to the amphibolites.

Accordingly on this basis the writer has attempted to map the grids surveyed into areas of predominantly underlying phyllites or amphibolites and/or granites, units 1 and 2 respectively on Maps W-197-1 to 3. These should be modified and/or revised to correlate with known geology and the results of subsequent investigations.

Tenas grid Map W-197-1

The Turam survey indicated the presence of a number of conductors of poor to moderate conductivity that in general appear to strike across the property (strikes could be at fault here as the line spacing is 1000 feet), and all of which are probably due to graphitic horizons in the underlying phyllites.

Conductor "A", the best of these conductors, appears to be a complex conductive band that strikes almost across the entire grid.

Same geochemical response is obtained in the area of its western half and shallower source with the highest geochemical response found in the area of the two short strike length conductors to the north of the main zone on Line 570 E.

Bar grid Map W-197-2

The Turam survey indicated the presence of a number of conductors of poor to good conductivity that in general appear to trend across the property.

The strongest of these conductors, Conductor "A", exhibits good conductivity on its western extremity.

DISCUSSION OF RESULTS cont'd

Mal Grid Map W-197-3

The majority of the grid is underlain by numerous conductive bands of poor to good conductivity, most of which are attributable to graphitic horizons, evidence of which can be seen in outcroppings in the area.

An attempt has been made to correlate the various conductors from line to line on the basis of their shape and apparent conductivity but this should be treated with some reservations due to the complexity of the conductors and the wide line spacings.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Between June 16th and July 7th, 1975, Peter E. Walcott & Associates Limited carried out Turam surveys over three grids for Boliden-Preussag Exploration.

These grids are located in the Ross River area of the Yukon Territory.

The surveys as expected, indicated a number of conductors of poor to good conductivity most of which could be grouped into various conductive bands.

These complex conductors were thought to be attributable to graphitic horizons in the underlying phyllites.


Based on previous work in the area the writer has attempted to map the survey areas into areas underlain by predominantly phyllites and amphibolites or intrusives.

The writer sees no reason to believe that one can differentiate between graphitic horizons and sulphide mineralization with the amplitudes and relative ratios of the field strength and phase difference being dependent on the amount and complexity of the graphitic horizons as well as the depth of burial, etc., and unless one can eliminate some of these conductors on the basis of geology, one has no alternative but to conduct magnetic and gravity surveys over and around them to investigate for possible sulphide mineralization.

- He therefore recommends that
- 1.)
 - (a) gravity and magnetic surveying be run over Lines 540, 560 and 570 E from 130 N to 170 N on the Texas grid over and around conductor "A", and on Line 630 E from 110 N to 140 N over and around conductor "B" and
 - (b) gravity and magnetic surveying be run over Lines 270 & 280 E from 60 N to 100 N on the Bar grid over and around conductors "A" and "B" to test for associated sulphide mineralization.
 - 2.) No further work be done on the Mal grid at this time.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED


Peter E. Walcott P.Eng.
Geophysicist

Vancouver, B.C.

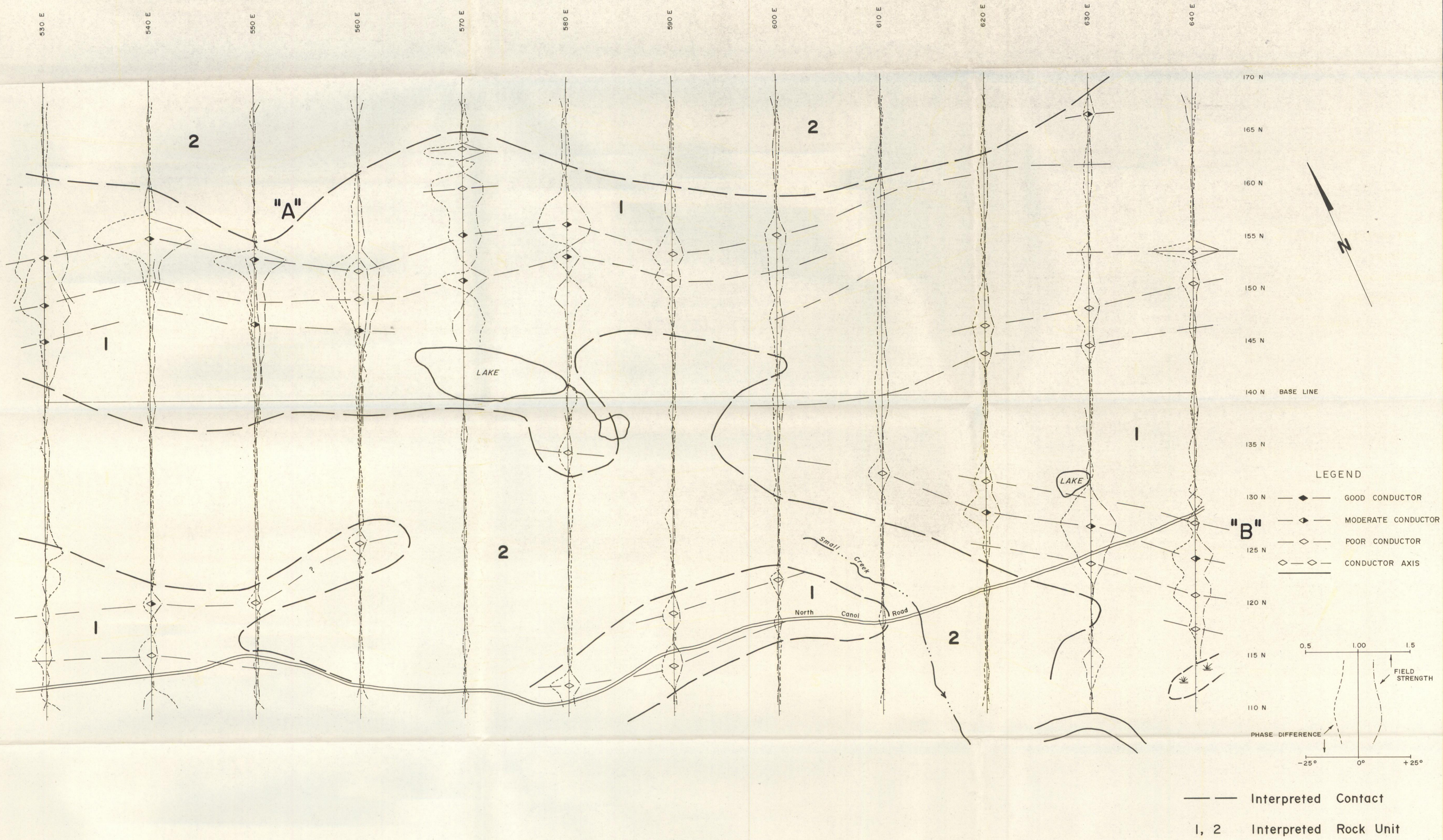
July 1975

A P P E N D I X

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COST OF SURVEY

Peter E. Walcott & Associates Limited undertook the survey on a line mileage basis. Mobilization charges were extra so that the total cost of services provided was \$10,366.77.



BOLIDEN - PREUSSAG EXPLORATION
 WELCOME NORTH MINES LIMITED OPTION
 Ross River Area, Yukon

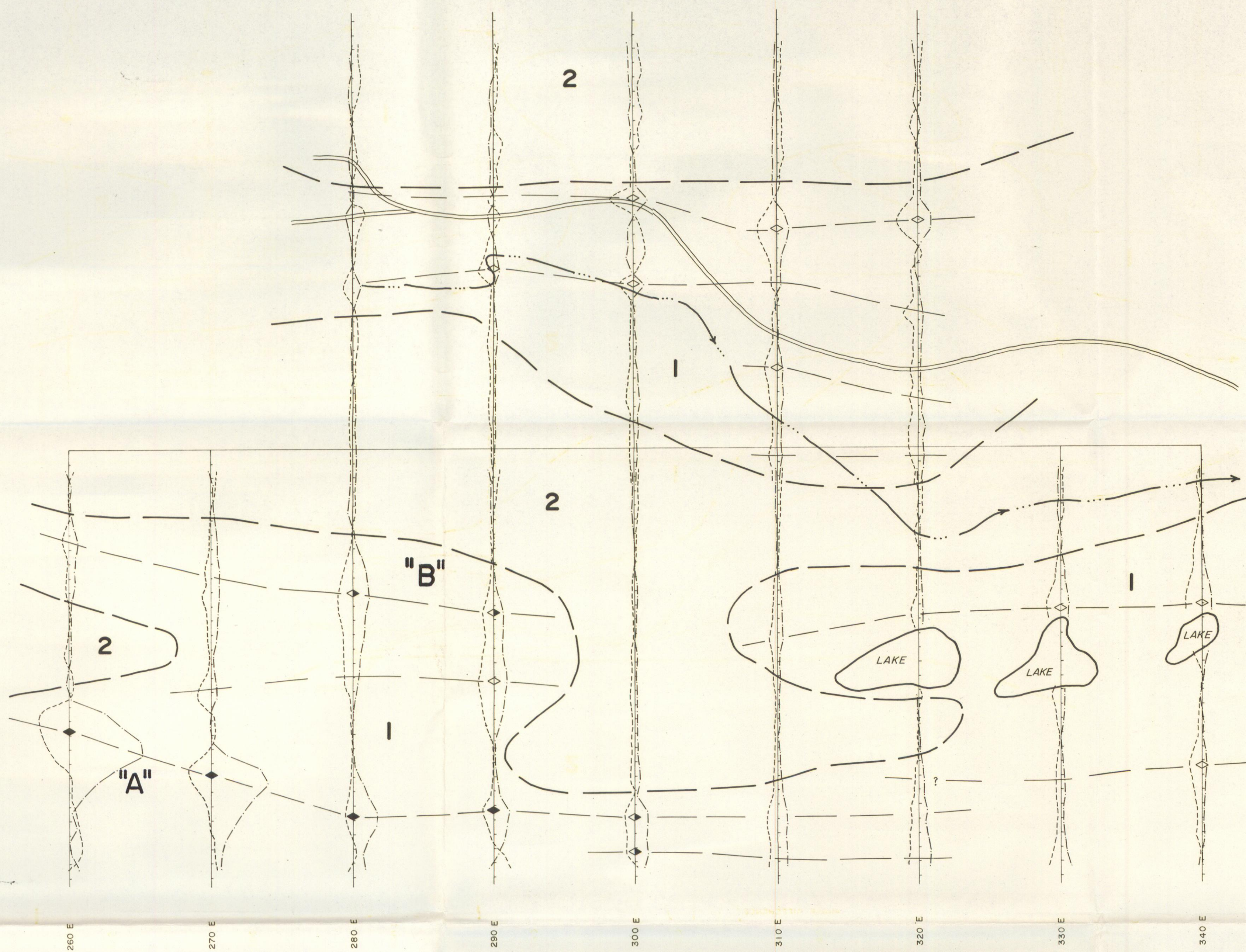
TURAM ELECTROMAGNETIC SURVEY
 PROFILES OF FIELD STRENGTH & PHASE DIFFERENCE
TENAS GRID

MAP No. W-197-1
 TO ACCOMPANY A REPORT BY
 PETER E. WALCOTT P. Eng.
 DATED JULY 1975

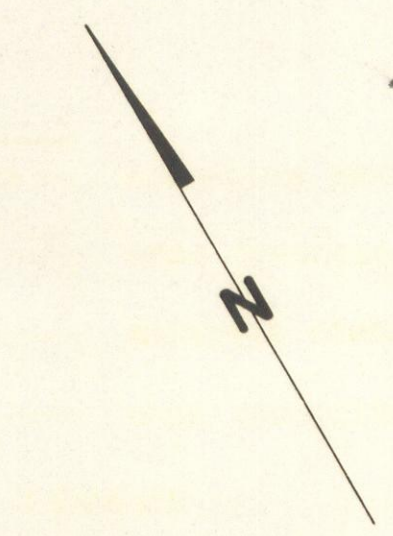
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PETER E. WALCOTT & ASSOC.
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 JUNE - JULY 1975

Peter Walcott

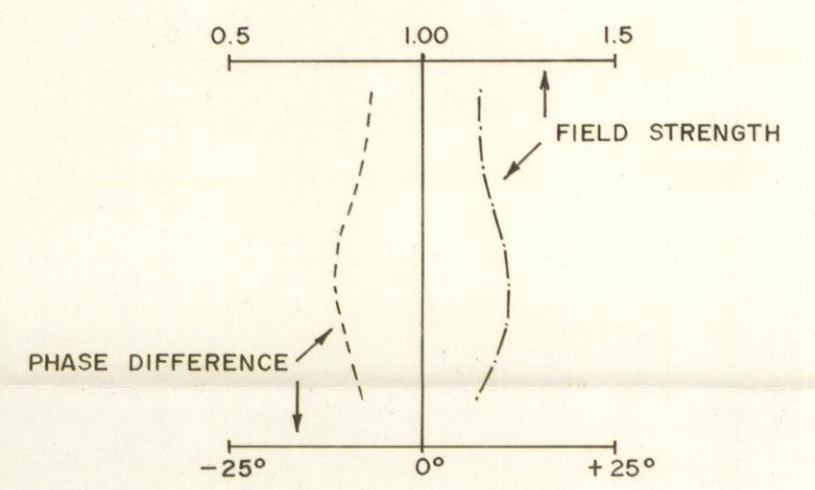


130 N
125 N
120 N
115 N
110 N
105 N
100 N BASE LINE
95 N
90 N
85 N
80 N
75 N
70 N



LEGEND

- ◆— GOOD CONDUCTOR
- ◇— MODERATE CONDUCTOR
- ◇— POOR CONDUCTOR
- ◇—◇— CONDUCTOR AXIS



- Interpreted Contact
- 1, 2 Interpreted Rock Unit

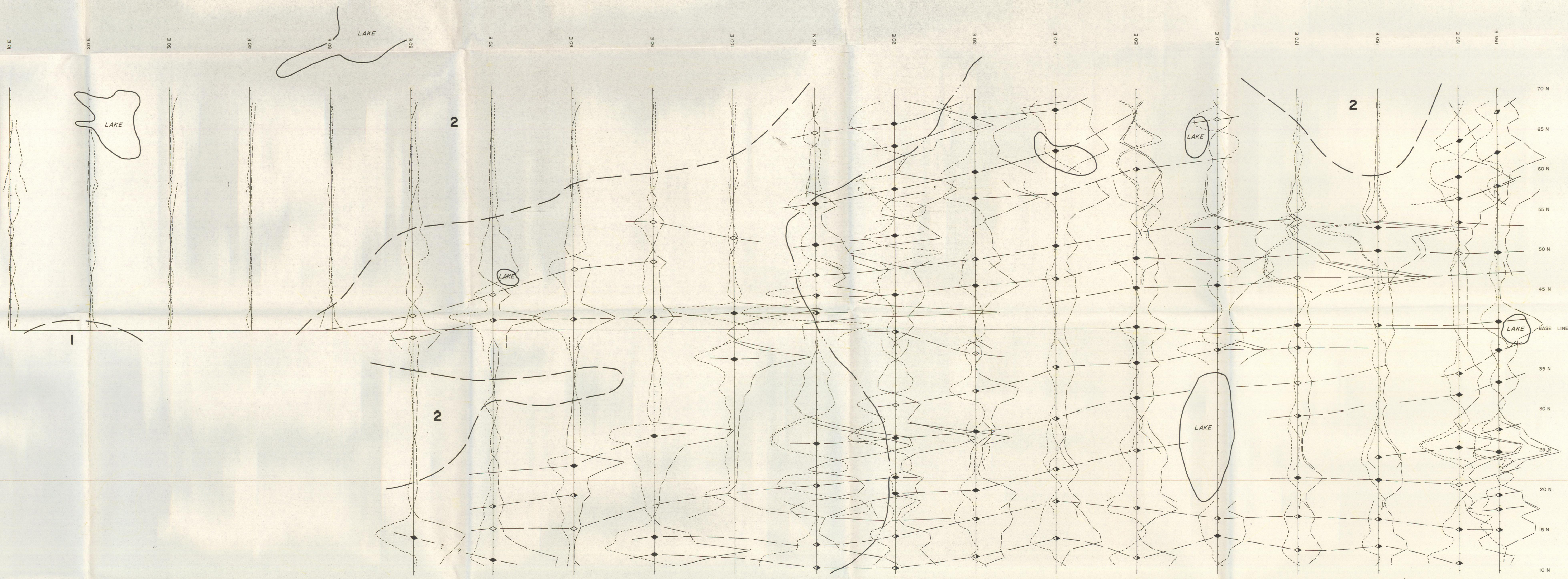
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WELCOME NORTH MINES LIMITED OPTION
Ross River Area, Yukon

**TURAM ELECTROMAGNETIC SURVEY
PROFILES OF FIELD STRENGTH & PHASE DIFFERENCE
BAR GRID**

MAP No. W-197-2
TO ACCOMPANY A REPORT BY
PETER E. WALCOTT P. Eng.
DATED JULY 1975

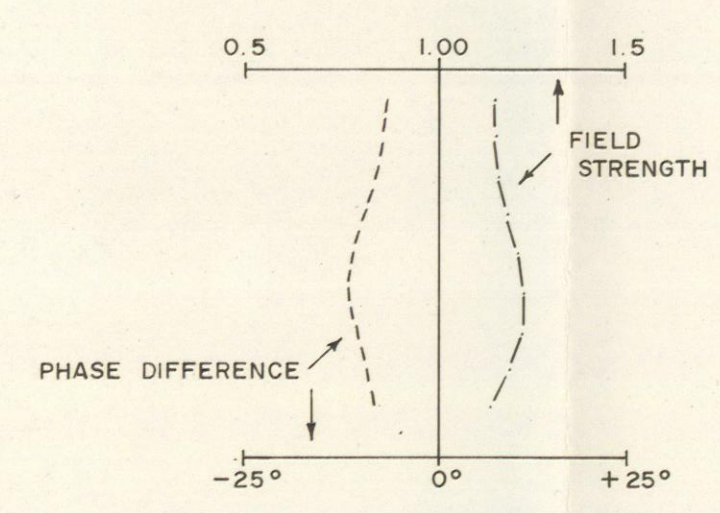
Scale: 1 Inch = 500 Feet

PETER E. WALCOTT & ASSOC.
LTD.
DRAWN BY: C. L. C.
JUNE - JULY 1975



- LEGEND**
- ◆— GOOD CONDUCTOR
 - ◆— MODERATE CONDUCTOR
 - ◇— POOR CONDUCTOR
 - ◇— CONDUCTOR AXIS

— Interpreted Contact
 1, 2 Interpreted Rock Unit



BOLIDEN - PREUSSAG EXPLORATION
WELCOME NORTH MINES LIMITED OPTION
 Ross River Area, Yukon

TURAM ELECTROMAGNETIC SURVEY
PROFILES OF FIELD STRENGTH & PHASE DIFFERENCE
MAL GRID

MAP No. W-197-3 Scale: 1 Inch = 500 Feet
 TO ACCOMPANY A REPORT BY PETER E. WALCOTT P. Eng. DRAWN BY: C. L. C. LTD.
 DATED JULY 1975 *Peter Walcott* JUNE - JULY 1975