



**WELCOME NORTH MINES LTD. (N.P.L.)**  
1027 - 470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658



**REPORT ON THE ELECTROMAGNETIC SURVEY**

ON THE

DOT GRID

WHITEHORSE MINING DISTRICT  
N.T.S. 105K-7



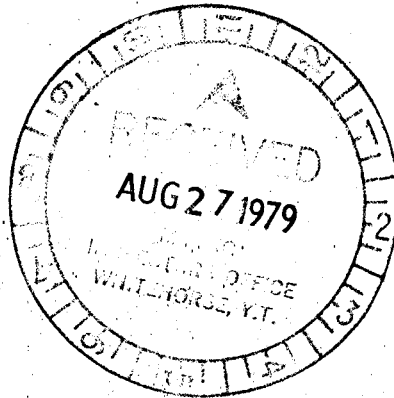
Latitude 62°22'N

Longitude 132°50'W

Work conducted during the period June 11 to July 24, 1979

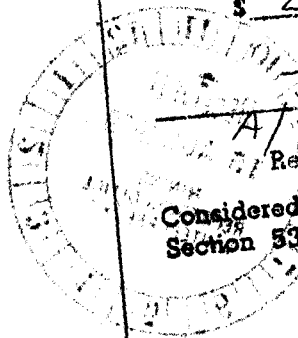
August, 1979

090489



John E. Betz  
H.F. Foster

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 \$ 2,500.00



J. Amair

Resident Geologist or  
Resident Mining Engineer

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

A handwritten signature in black ink, appearing to read 'B. R. Baxter', is written over the printed name and title.

B. R. BAXTER  
Supervising Mining Recorder

Commissioner of Yukon Territory

## TABLE OF CONTENTS

	Page
INTRODUCTION	1
CLAIMS	1
SURVEYS	3
PRESENTATION OF RESULTS AND INTERPRETATION	4
DISCUSSION OF RESULTS	4
CONCLUDING REMARKS	7
WRITERS DECLARATION	7
LIST OF PERSONNEL EMPLOYED IN SURVEY	8
STATEMENT OF COSTS	9
CERTIFICATE	10
<b>FIGURES:</b>	
1A DOT 1-42 GRID LOCATION MAP	2
1 SECTIONAL VIEW OF INTERPRETED CONDUCTOR PICTURE FOR LINE 3W	
<b>PLANS:</b>	
1 MaxMin II Profiles 222H2	In pocket
2 MaxMin II Profiles 1777H2	In pocket
3 Conductor Interpretation	In Pocket

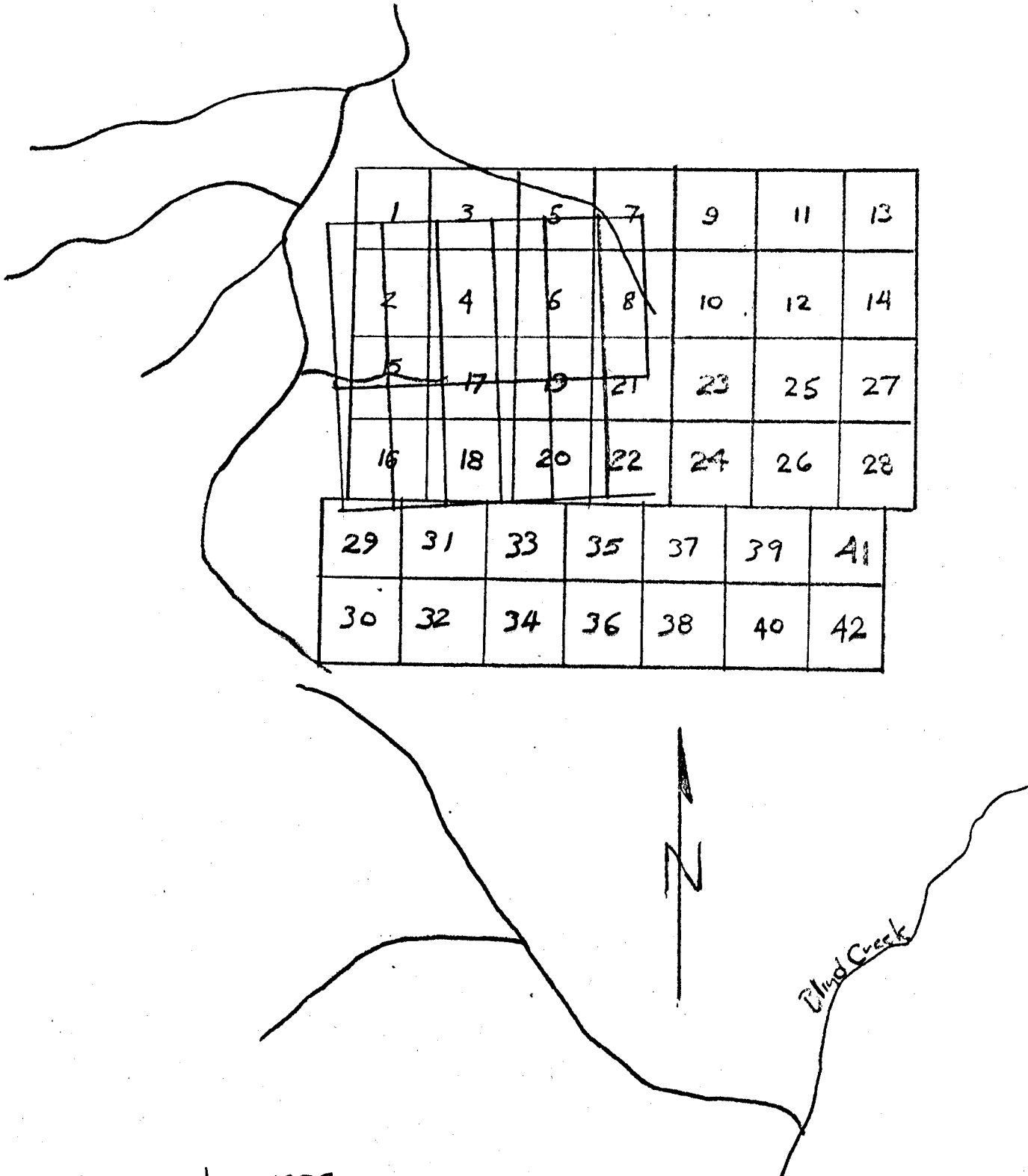
## INTRODUCTION

During the period June 11 to July 24, 1979 MaxMin II electromagnetic surveys were conducted by J.E. Betz Ltd. over the DOT 1 to 8, 15 to 22, 29, and 31 mineral claims (Fig. 1A), which are located in N.T.S. quadrangle 105K-7 at the headwaters of Blind Creek.

## CLAIMS

Following is a list by name, grant number, and due dates of the claims which comprise the DOT claim block:

<u>CLAIMS</u>	<u>GRANT NUMBERS</u>	<u>DUE DATES</u>
DOT 1- 8	YA7852-YA7859	August 23, 1981
DOT 9-16	YA7860-YA7867	August 23, 1981
DOT 17-24	YA7868-YA7875	August 23, 1981
DOT 25-29	YA7876-YA7880	August 23, 1981
DOT 30	YA7881	August 23, 1980
DOT 31	YA7882	August 23, 1981
DOT 32	YA7883	August 23, 1980
DOT 33-38	YA7884-YA7889	August 23, 1980
DOT 39	YA7890	August 23, 1981
DOT 40	YA7891	August 23, 1980
DOT 41	YA7892	August 23, 1981
DOT 42	YA7893	August 23, 1980



Lines cut in 1979 ...

WELCOME NORTH MINES LTD	
DOT 1-42 CLAIMS	
GRID LOCATION MAP	
Scale 1" = 1/2 mile	Fig 1A

## SURVEYS

The main objective of this survey was to detect conductive zones on the property, which are either due to massive sulphides or indirectly related to massive sulphides.

The EM system used on this project was the MaxMin II made by Apex Parametrics Ltd of Markham, Ontario. The specifications for, and methods of operating this system are amply described in the operations manual provided by the manufacturer. They will not be repeated here.

For this project, the MaxMin II was used in a maximum coupled coplanar mode with the turns of the transmitting and receiving coils held parallel to the mean slope of the terrain (along the traverse line) between the coils. On flat ground, this mode of operation is the well known horizontal loop mode.

In order to detect deep bedrock conductors, it is of paramount importance to be able to recognize small anomalous indications-- especially in the in-phase component. To this end, steps were taken to keep the coils accurately coplanar and at a known separation for each reading. The topography was monitored on a station-to-station basis using a inclinometer, contemporaneously with the MaxMin II survey. The mean slope value between the coils was calculated in the field, and the coils were held coplanar for each reading. An exact reading with no attempt to allow for the amount 'consumed' by the topography. However, the station-to-station slope information was used in a programmable calculator, following each day in the field, to compute the straight line distance between the coils, and thence the contingent in-phase correction.

With the above-described procedure, the in-phase system noise envelope related to coil control can be kept as small as  $\pm 1\%P$  (the primary field strength). Of course, the out-of-phase component is independent of coil control.

A reconnaissance coil spacing of 200 meters and frequencies of 222 and 1777 Hz were used throughout the survey. The reasons for this choice of coil spacing and frequency are:

a) A coil spacing of 200 m is a compromise value to get moderately

good search-depth for deep conductors while getting moderately good resolution of near-surface conductors. It is always possible to use another coil spacing for follow-up work.

b) Two widely-spaced frequencies lead to a fairly accurate conductivity thickness estimate for conductive zones, as well as helping to interpret the shape and attitude of non-simplistic conductive zones. A very high frequency will detect very "poor" conductors which are scarcely visible to a very low frequency. A very low frequency will detect deep "good" conductors in the presence of shallow "poor" conductors--something that a very high frequency cannot do.

c) The results at one frequency serve to monitor the inevitable reading and/or recording error at the other frequency.

The MaxMin II receiver was operated by me throughout the survey. The transmitter was operated by personnel provided by Welcome North.

Location and access maps have been and will be, given in other reports composed by Welcome North personnel. They will not be repeated here beyond stating the latitude, longitude, and N.T.S. number in the title and on the plans.

#### PRESENTATION OF RESULTS AND INTERPRETATION

The MaxMin II results are presented in profile form on Plans #1 and #2, and the conductor interpretation is shown on Plan #3, in the pocket at the end of the report. To aid me in the interpretation and to help the reader to appreciate the interpreted picture in three dimensions, all plans contain topographic contours at a 30 meter interval.

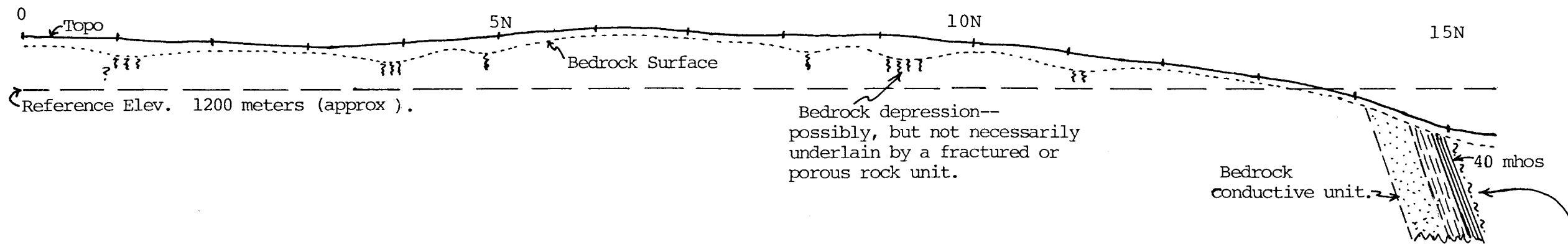
A sectional view of the interpreted conductor picture for L-3W is shown in Figure 1 on the following page.

#### DISCUSSION OF RESULTS

The interpreted bedrock conductors on this grid are restricted to the northeastern corner. There are several other conductors on the grid, but they can be attributed to electrolytic sources, e.g. overburden-filled troughs with or without underlying fracture zones. The full picture is shown on Plan #3.

In an environment of multiple, highly-contorted graphitic zones, it is difficult, if not impossible, to come up with a unique conductor picture. However, it is possible to construct a couple of highly likely pictures from which one can choose, given some geological information from the area. Examples of two possible conductor geometries to explain a given set of anomalous results are as follows:

SECTIONAL VIEW OF INTERPRETED CONDUCTOR PICTURE FOR LINE 3W.



Bedrock depression--  
possibly, but not necessarily  
underlain by a fractured or  
porous rock unit.

Bedrock  
conductive unit. → 40 mhos

Traverse not long enough to  
close off conductive zone to  
the north.

Conductor Legend:

Scales:

- ||||| 0.5 mho
- //// 2 to 34 mhos
- //// 35 to 60 mhos

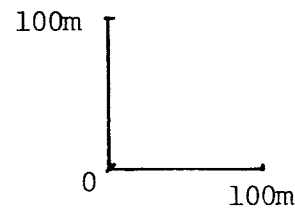
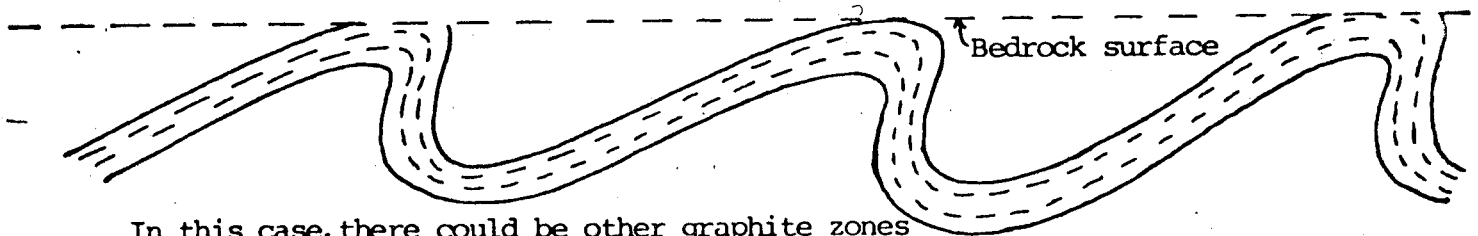


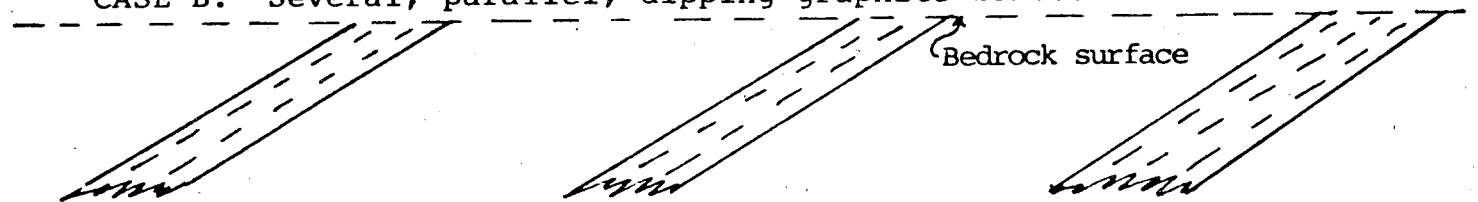
FIGURE 1.

CASE A. Single, highly-folded, flat-lying graphite zone.



In this case, there could be other graphite zones beneath the uppermost, but they would not have a strong effect on the picture.

CASE B. Several, parallel, dipping graphite zones.



In the light of other information from this area, in particular the drilling results of 1977 to the immediate east of this grid, it is thought that the picture in Case B is the more likely. This Case was used in constructing Figure 1 on the facing page, which Figure contains the interpreted conductor picture for L-3W.

It is highly likely that the interpreted bedrock conductive zone marks the southwestern edge of the same extensive conductive region found during the electromagnetic surveys of 1977 on the grid to the immediate east. The lines on the '1979' grid did not continue far enough toward the north to map anything beyond the southwestern edge of the conductive region. However, the fact that the '1979' conductor, has a similar response to the southwestern edge of the '1977' conductor, and the two are essentially on strike with each other, makes them almost certainly one and the same--in spite of the untested 700 meter gap between them. For interest sake, the western extremity of the southwestern edge of the '1977' conductor falls around coordinates 8+50N, 4+75E on the present grid.

Unfortunately, time did not permit the running of L-2+50E of the '1979' grid, the results of which would have established beyond a reasonable doubt the relationship between the '1977' and '1979' conductors.

CONCLUDING REMARKS

In spite of the untested gap between the '1977' and '1979' conductors, it appears that the recently completed survey has expanded the conductive region found during the '1977' survey, by about 0.5Km<sup>2</sup>. It is left to Welcome North personnel to assess the significance of this point.

WRITER'S DECLARATION

Neither I, nor John Betz Limited, have any financial interest in any of the properties of Welcome North Mines Ltd or its joint venture partners.

I hold BA (1952) and MA (1953) degrees in geophysics from the University of Toronto.

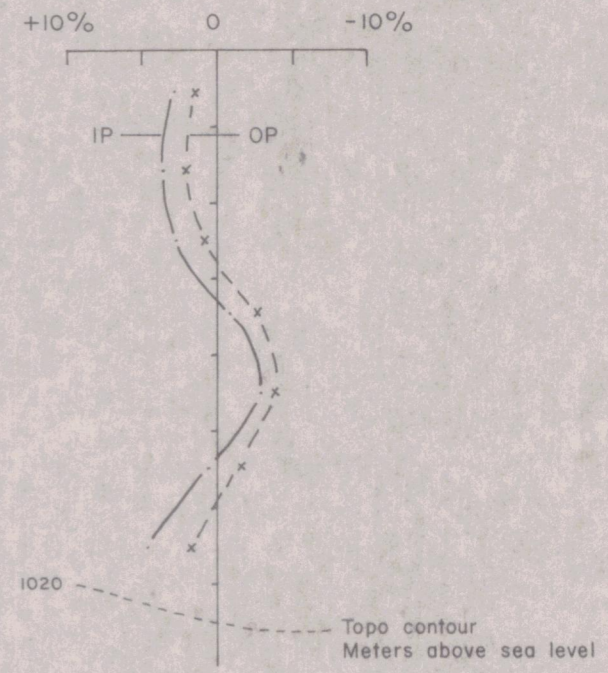
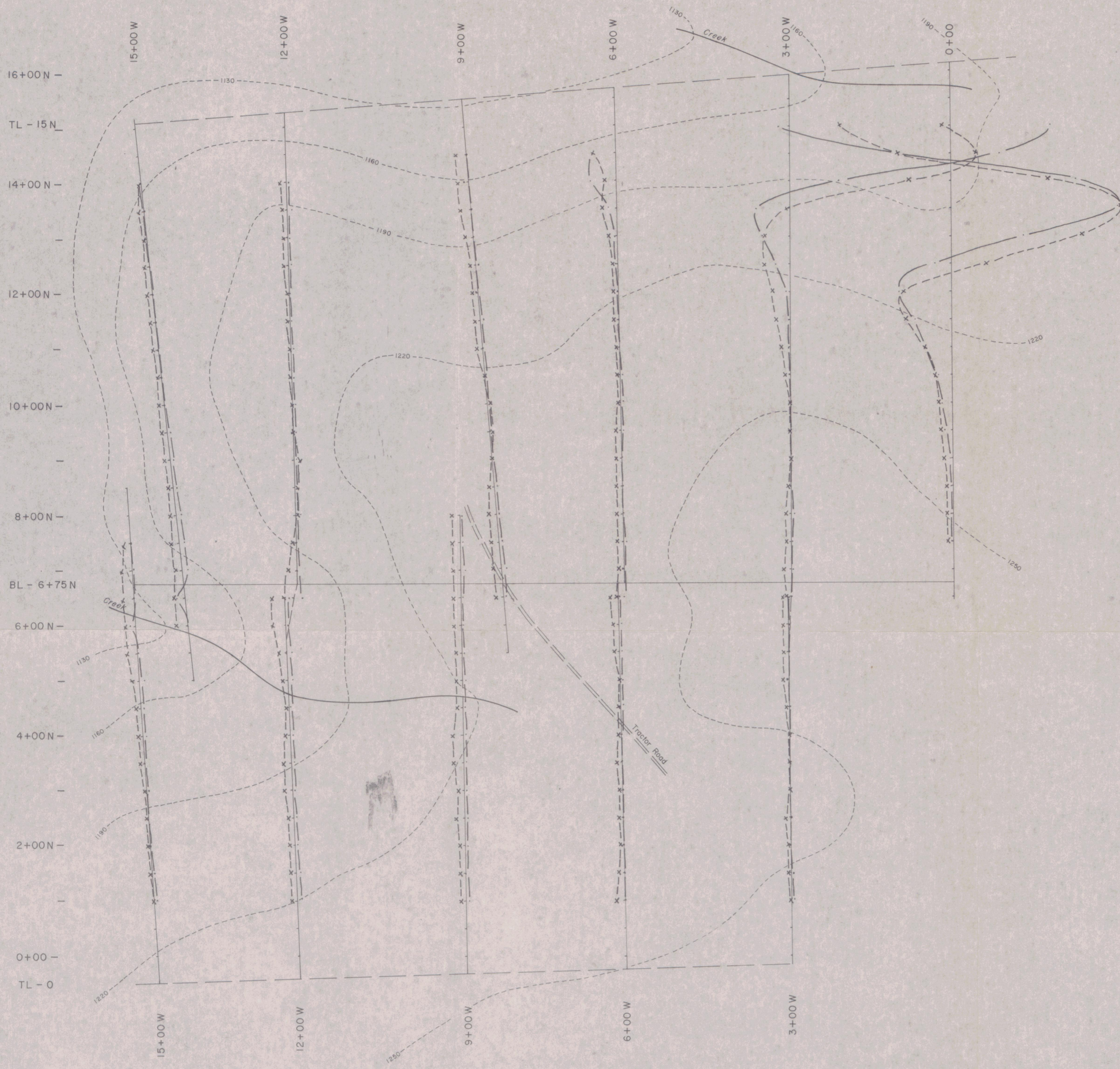
I have worked full time in mining exploration geophysics since 1953, and two summer seasons prior to 1953.

All statements made in this report are correct to the best of my knowledge.

July 1979  
Toronto, Ontario



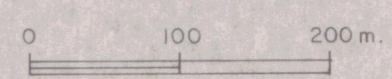
John E Betz  
John Betz Limited



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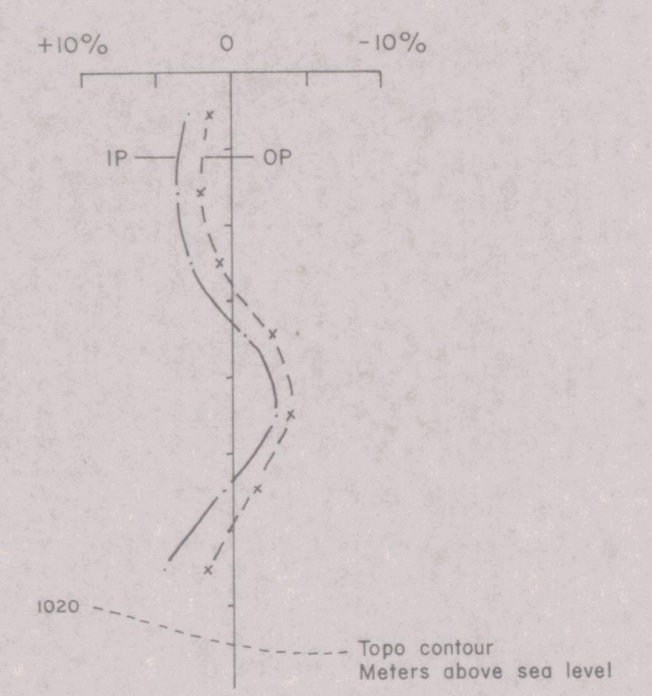
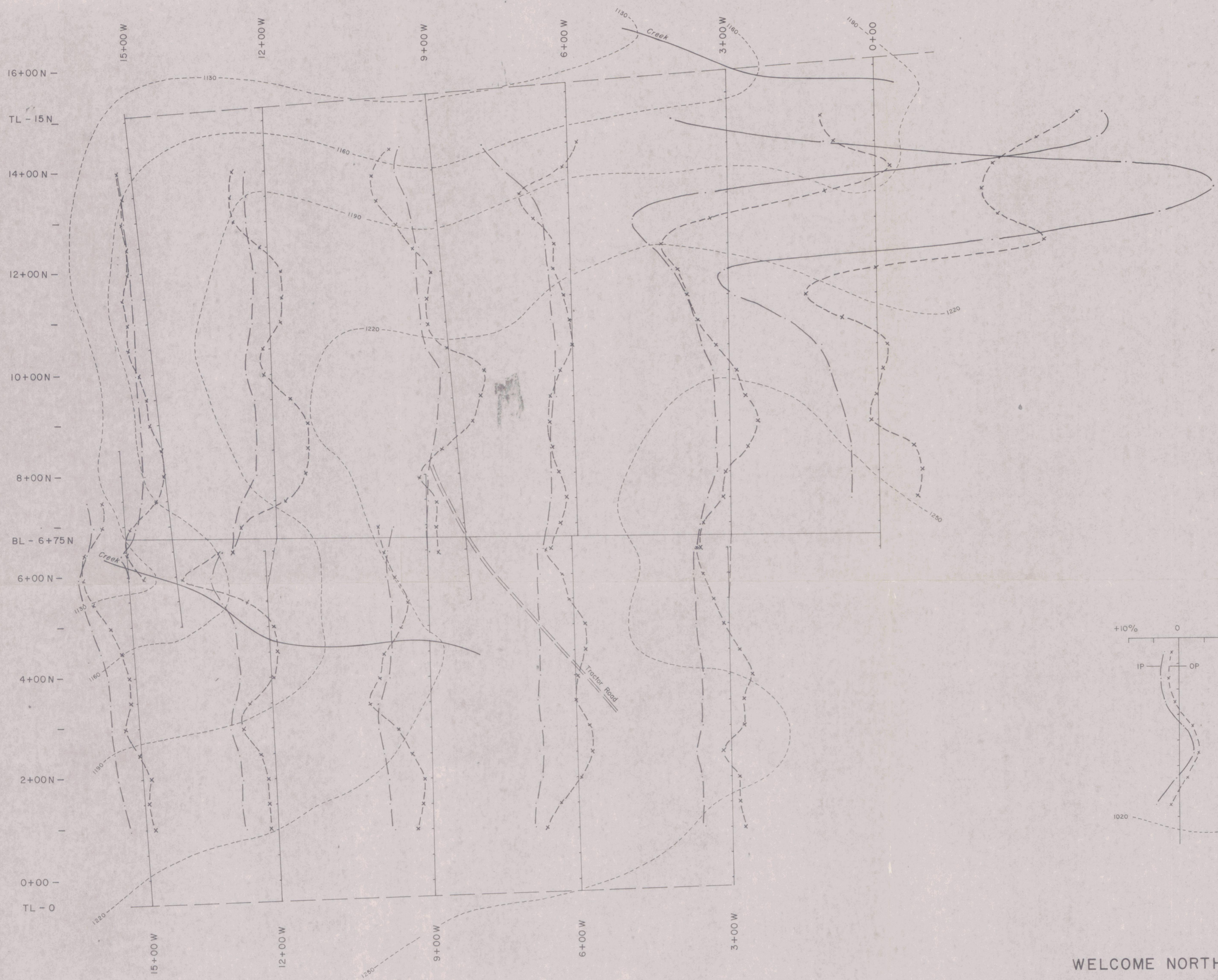
VANGORDA PROJECT  
 DOT (WEST) GRID  
 WHITEHORSE MINING DISTRICT, YUKON TERR.  
 62°22' N, 132°50' W  
 N.T.S. 105-K-7

MAXMIN II PROFILES 222 Hz

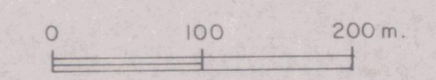


TO ACCOMPANY REPORT

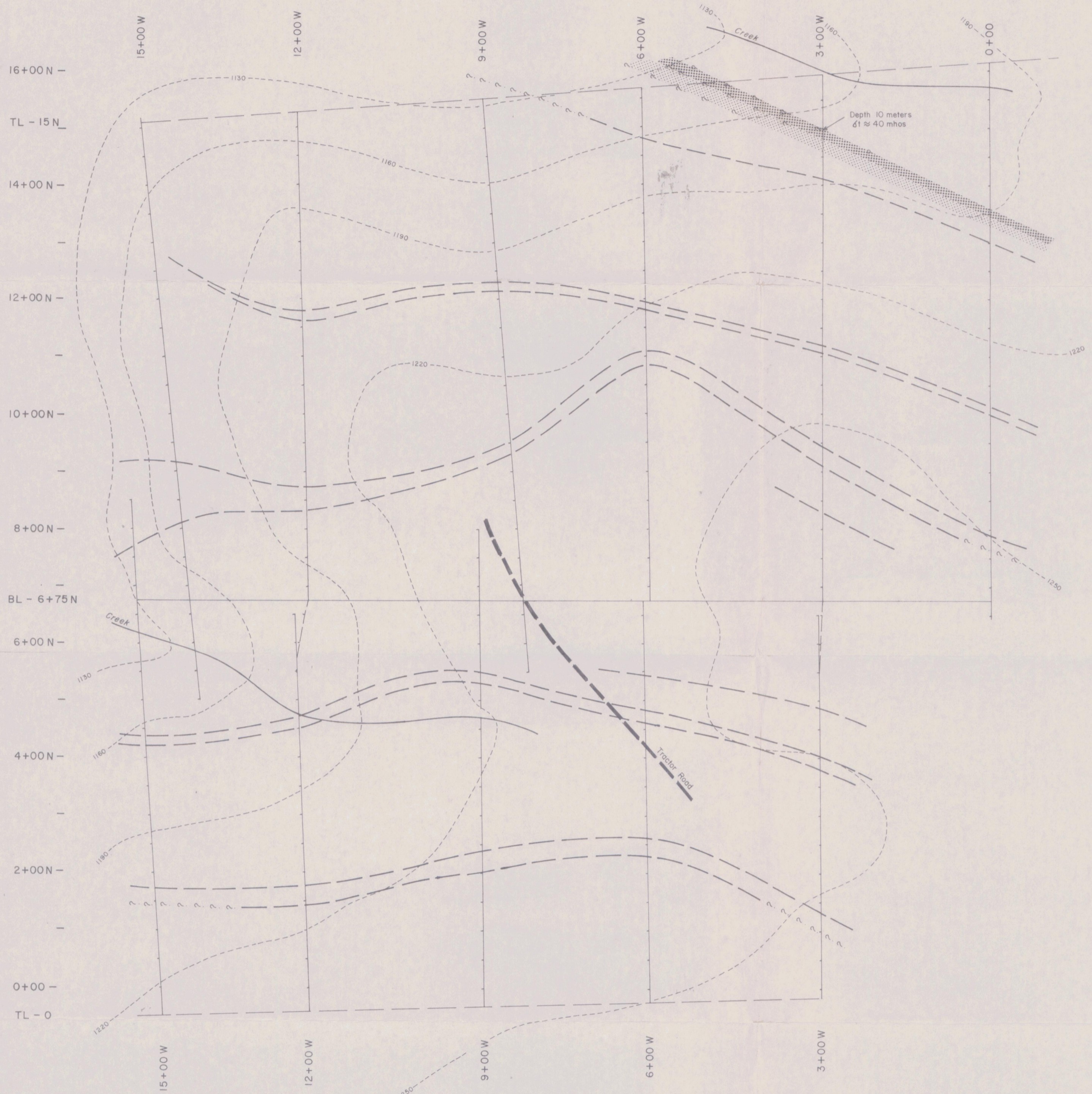
JOHN BETZ LTD.  
 JULY, 1979



WELCOME NORTH MINES LTD.  
 VANGORDA PROJECT  
 DOT (WEST) GRID  
 WHITEHORSE MINING DISTRICT, YUKON TERR.  
 62°22' N, 132°50' W  
 N.T.S. 105-K-7  
 MAXMIN II PROFILES 1777 Hz



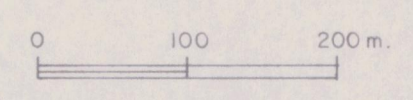
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CONDUCTOR INTERPRETATION



TO ACCOMPANY REPORT

JOHN BETZ LTD.  
 JULY, 1979