

BOVLEE RESOURCES LTD.  
GEOPHYSICAL REPORT  
ON  
ELECTROMAGNETOMETER SURVEYS

Clay claims North and South groups, Carim Lake  
area, Clinton Mining Division, B. C.

Lat. 51°52'N Long. 120°55'W N.T.S. 92 P/15

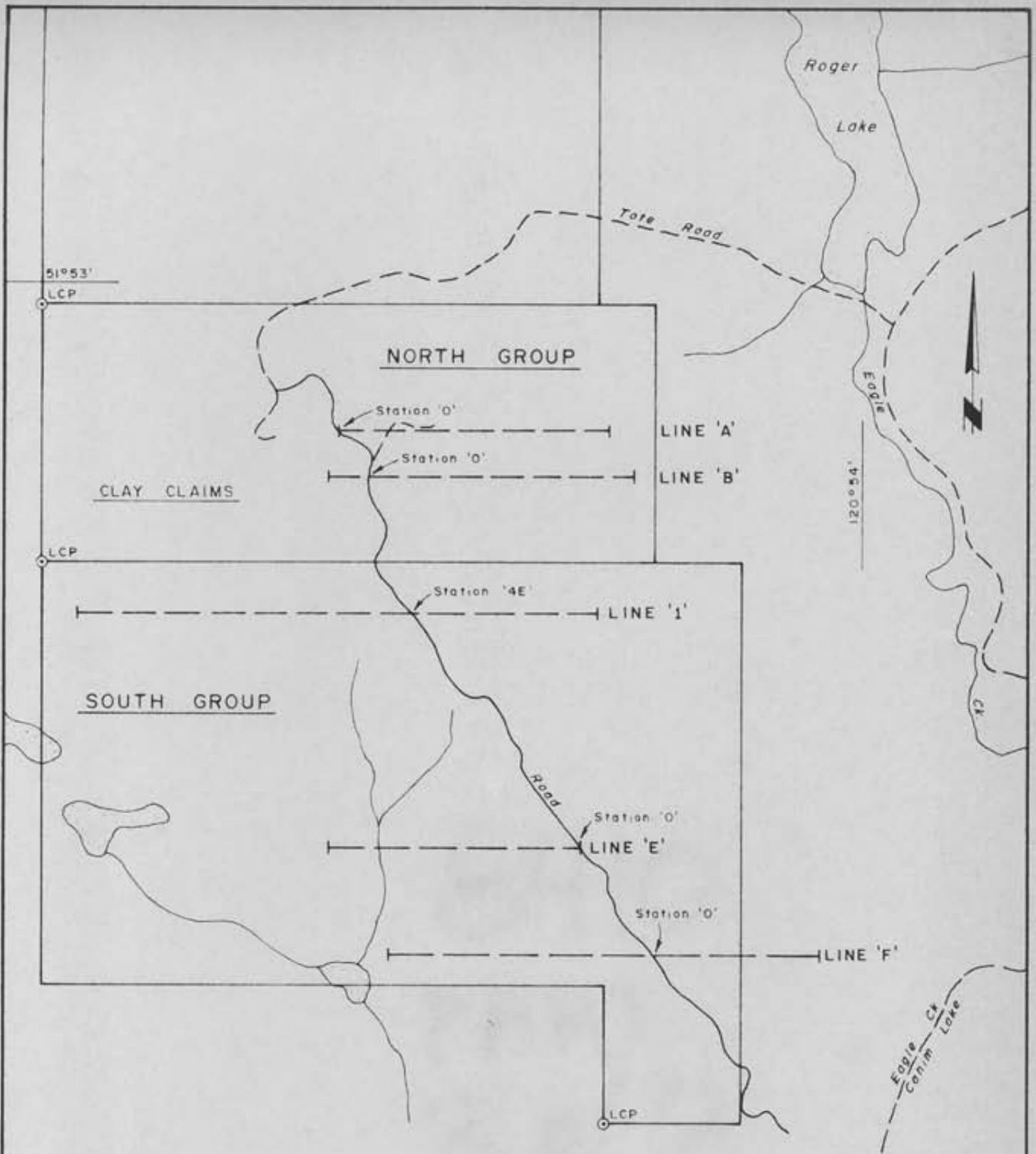
AUTHOR: Glen E. White, B.Sc., P. Eng.

DATE OF WORK: December 18 - 22, 1979

DATE OF REPORT: February 7, 1980

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PART  
2 of 2



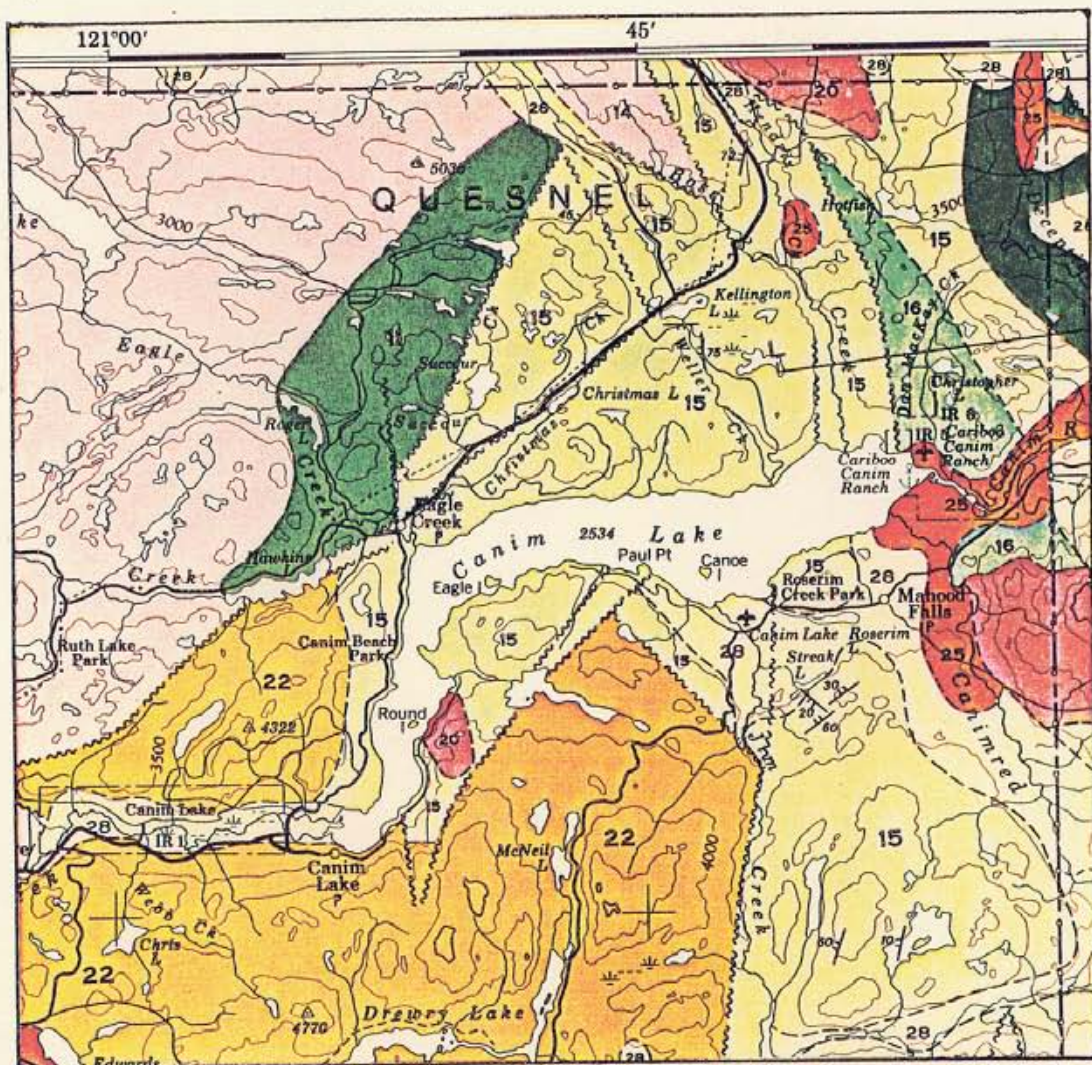
BOVILLE RESOURCES LTD.  
 ROBINSON PROPERTY  
 — LINE LOCATIONS —  
 LOCATION & CLAIM MAP

*Alan P. White*  
 geographical consulting  
 &  
 services ltd

1cm = 200 Meters



Feb 1980  
 FIG 1

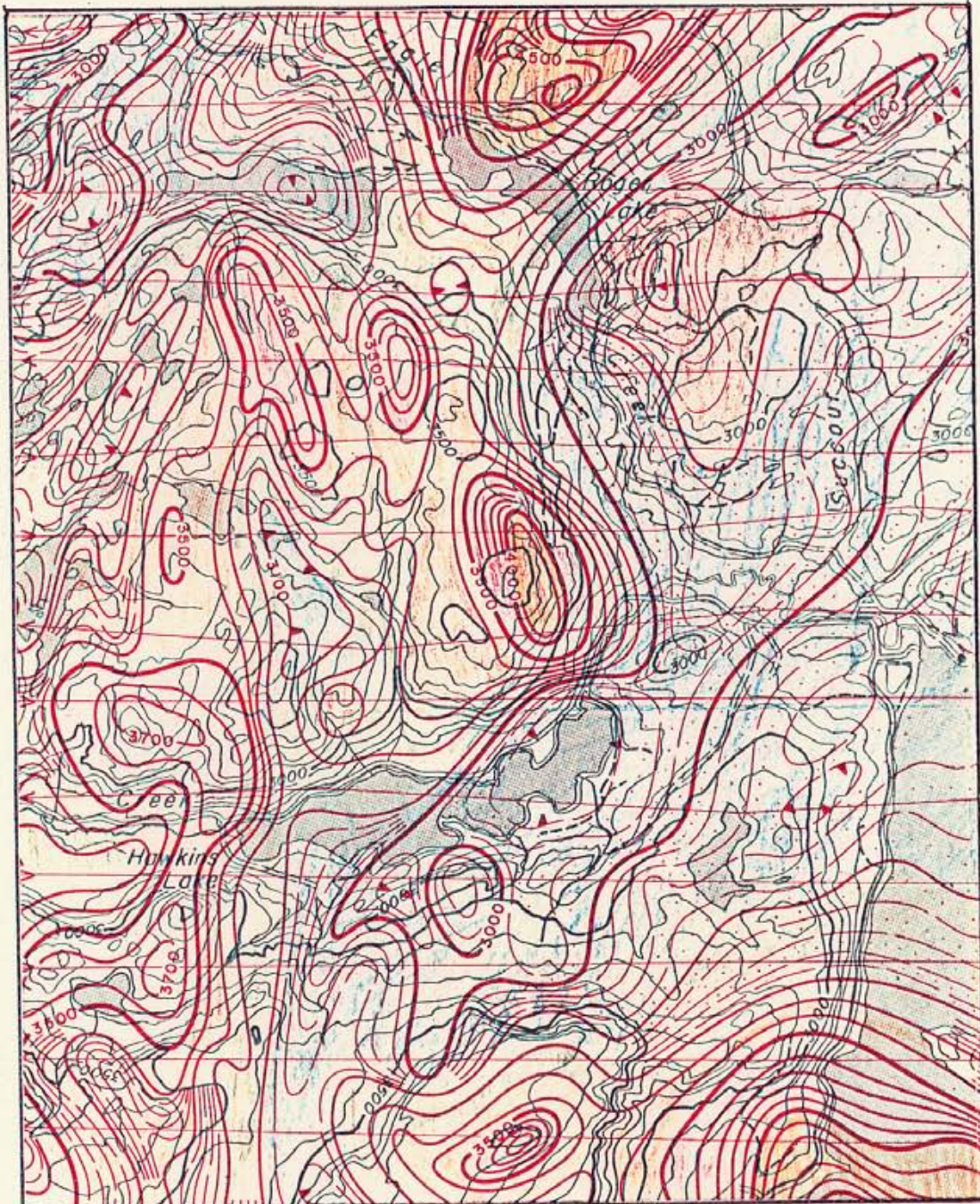


MAP 1278A  
 GEOLOGY  
**BONAPARTE LAKE**  
 BRITISH COLUMBIA

Scale 1:250,000



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GEOPHYSICS PAPER 5231

CANIM LAKE

BRITISH COLUMBIA

SHEET 92  $\frac{P}{15}$

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Plate 2

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### Illustrations

Figure 1 - Claims and Line Location Map

Figure 2 - VLF-EM, Line A

Figure 3 - VLF-EM, Line B

Figure 4 - VLF-EM, Line 1

Figure 5 - Max-Min Profiles Lines 1, E and F

Plate 1 - General Geology

Plate 2 - Regional Airborne Magnetic Survey

## INTRODUCTION

Glen E. White Geophysical Consulting & Services Ltd. was contracted by Boville Resources Ltd. to conduct a number of test lines utilizing a Max-Min 2 and VLF-EM-16 on their North and South claim groups near Canim Lake. The survey lines were prepared by the client and the geophysical surveys completed during the period December 18 - 22, 1979.

## PROPERTY

The property consists of the North group and the South group comprising 26 contiguous units as illustrated on Figure 1.

## LOCATION AND ACCESS

The property is located between Roger and Hawkins Lakes near Canim Lake, B. C. Latitude  $51^{\circ}52'N$ , Longitude  $120^{\circ}55'W$ , N.T.S. 92 P/15, Clinton Mining Division, B. C.

The property is accessible by 30 miles of good road to Eagle Creek from 100 Mile House, B. C. Immediate access onto the claim group is by 4x4 vehicle for a distance of 3 miles.

## GENERAL GEOLOGY

The regional geology of the area is shown on Map 1278A, Bonaparte Lake (Plate 1) and the regional airborne magnetic data on Map 5231G (Plate 2).

The geology map indicates the property to be within a belt of Nicola group rocks intruded to the west by a batholith of granitic composition. The airborne magnetometer data shows a strong local magnetic high in the southeast corner of the South group.

## GEOPHYSICAL SURVEYS

The test lines were conducted utilizing a Ronka EM-16 and a Max-Min 2 electromagnetometer system. The specifications for each are given in the enclosed Appendix.

## DISCUSSION OF RESULTS

Figures 2, 3 and 4, illustrating the VLF-Em 16 data, show several weak conductor responses. These are at station 4E, 13E and 21E on line A. The conductor at station 21E may possibly be caused by two parallel conductive features. Line B shows a similar moderate response at 25E. Line 1 shows a very sharp, near surface variation at 9E and a classic vertical source crossover at 16E. The EM-16 is sensitive to small conductive variations; thus, these features can be due to structure and/or lithology. The low amplitude of the data, if it were due to sulphide mineralization, would indicate a narrow poorly conductive zone.

The Max-Min 2 data shows a number of variations in the inphase only which is likely due to topography and chainage errors. The EM-16 crossover on line 1 at 16E has no conventional EM counterpart. Weak Quadrature anomalies are shown at 3W, 11W and 19W. These could be due to overburden, and/or fault zones as well as very poorly conductive mineralization. Line E is the only line which shows weak inphase and Quadrature responses. This occurs at 22W. Line F has a slight quadrature anomaly at 5W.

CONCLUSION AND RECOMMENDATIONS

During the month of December, 1979, two types of electromagnetometer systems were tested over the Boville Resources property in an orientation survey. The EM-16 which is the most sensitive instrument to conductivity changes, showed several moderate crossovers, possibly indicating structure and/or lithology. It is recommended that magnetometer and VLF-EM surveys be conducted to map lithology in conjunction with an induced polarization survey to detect any chargeable zones, possibly indicative of sulphide mineralization.

Respectfully submitted,  
 GLEN E. WHITE GEOPHYSICAL  
 CONSULTING & SERVICES LTD.



Glen E. White, P. Eng.  
 Consulting Geophysicist



A P P E N D I X

Instrument Specifications

ELECTROMAGNETOMETER

A. Instrument

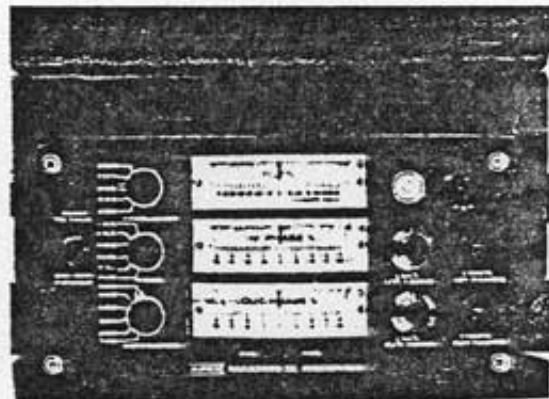
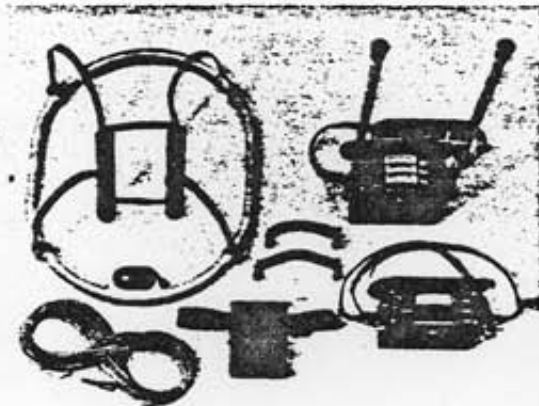
- (a) Type - Geonics VLF - EM
- (b) Make - Ronka EM 16

B. Specifications

- Measurement -
- (i) Utilizes primary fields generated by VLF marine communication stations measures the vertical field components in terms of horizontal field present.
  - (ii) Frequency range 15-25 KHZ
  - (iii) Range of measurement - in phase  $\pm 150\%$   
or  $\pm 90^\circ$   
- quadrature  
 $\pm 40\%$
  - (iv) Method of reading - null detection by earphone, real and quadrature from mechanical dials.
  - (v) Accuracy -  $\pm 1\%$  resolution

C. Survey Procedures

- Method
- (a) Select closest VLF station perpendicular to traverse lines.
  - (b) In-phase dial measures degree of tilt from vertical position.
  - (c) Quadrature dial calibrated in percent - null.
  - (d) Station plot - plot values read at station surveyed.
  - (e) Manually filter dip-angle data.



### SPECIFICATIONS :

<b>Frequencies:</b>	222, 444, 888, 1777 and 3555 Hz.	<b>Repeatability:</b>	$\pm 0.25\%$ to $\pm 1\%$ normally, depending on conditions, frequencies and coil separation used.
<b>Modes of Operation:</b>	<p><b>MAX:</b> Transmitter coil plane and receiver coil plane horizontal (Max-coupled; Horizontal-loop mode). Used with refer. cable.</p> <p><b>MIN:</b> Transmitter coil plane horizontal and receiver coil plane vertical (Min-coupled mode). Used with reference cable.</p> <p><b>V.L.:</b> Transmitter coil plane vertical and receiver coil plane horizontal (Vertical-loop mode). Used without reference cable, in parallel lines.</p>	<b>Transmitter Output:</b>	<ul style="list-style-type: none"> <li>- 222 Hz : 220 Acm<sup>2</sup></li> <li>- 444 Hz : 200 Acm<sup>2</sup></li> <li>- 888 Hz : 120 Acm<sup>2</sup></li> <li>- 1777 Hz : 80 Acm<sup>2</sup></li> <li>- 3555 Hz : 30 Acm<sup>2</sup></li> </ul>
<b>Coil Separations:</b>	25, 50, 100, 150, 200 & 250m (MMI) or 100, 200, 300, 400, 600 and 800 ft. (MMIF). Coil separations in VL mode not restricted to fixed values.	<b>Receiver Batteries:</b>	3V trans. radio type batteries (4). Life: approx. 35 hrs. continuous duty (alkaline, 0.5 Ah), less in cold weather.
<b>Parameters Read:</b>	<ul style="list-style-type: none"> <li>- In-Phase and Quadrature components of the secondary field in MAX and MIN modes.</li> <li>- Tilt-angle of the total field in VL mode.</li> </ul>	<b>Transmitter Batteries:</b>	12V 8Ah Gel-type rechargeable battery. (Charger supplied).
<b>Readouts:</b>	<ul style="list-style-type: none"> <li>- Automatic, direct readout on 90mm (3.5") edgewise meters in MAX and MIN modes. No nulling or compensation necessary.</li> <li>- Tilt angle and null in 90mm edgewise meters in VL mode.</li> </ul>	<b>Reference Cable:</b>	Light weight 2-conductor teflon cable for minimum friction. Unshielded. All reference cables optional at extra cost. Please specify.
<b>Scale Ranges:</b>	<p>In-Phase: <math>\pm 20\%</math>, <math>\pm 100\%</math> by push-button switch.</p> <p>Quadrature: <math>\pm 20\%</math>, <math>\pm 100\%</math> by push-button switch.</p> <p>Tilt: <math>\pm 75\%</math> slope.</p> <p>Null (VL): Sensitivity adjustable by separation switch.</p>	<b>Voice Link:</b>	Built-in intercom system for voice communication between receiver and transmitter operators in MAX and MIN modes, via reference cable.
<b>Readability:</b>	In-Phase and Quadrature: 0.25% to 0.5% ; Tilt: 1%.	<b>Indicator Lights:</b>	Built-in signal and reference warning lights to indicate erroneous readings.
		<b>Temperature Range:</b>	-40°C to +60°C (-40°F to +140°F).
		<b>Receiver Weight:</b>	8kg (13 lbs.)
		<b>Transmitter Weight:</b>	13kg (29 lbs.)
		<b>Shipping Weight:</b>	Typically 60kg (135 lbs.), depending on quantities of reference cable and batteries included. Shipped in two field/storing cases.

Specifications subject to change without notification.

## APEX PARAMETRICS LIMITED

200 STEELCASE RD. E., MARKHAM, ONT., CANADA, L3R 1G2

Phone: (416) 485-1612

Cables: APEXPARA TORONTO

Telex: 06-966775 APEXPARA MKHM

STATEMENT OF QUALIFICATIONS

NAME: WHITE, Glen E., P. Eng.

PROFESSION: Geophysicist

EDUCATION: B.Sc. Geophysics - Geology  
University of British Columbia

PROFESSIONAL ASSOCIATIONS: Registered Professional Engineer,  
Province of British Columbia

Associate member of Society of Exploration Geophysicists.

Past President of B. C. Society of Mining Geophysicists.

EXPERIENCE: Pre-graduate experience in Geology - Geochemistry - Geophysics with Anaconda American Brass.

Two years Mining Geophysicist with Sulmac Exploration Ltd. and Airborne Geophysics with Spartan Air Services Ltd.

One year Mining Geophysicist and Technical Sales Manager in the Pacific north-west for W. P. McGill and Associates.

Two years Mining Geophysicist and supervisor Airborne and Ground Geophysical Divisions with Geo-X Surveys Ltd.

Two years Chief Geophysicist Tri-Con Exploration Surveys Ltd.

Nine years Consulting Geophysicist.

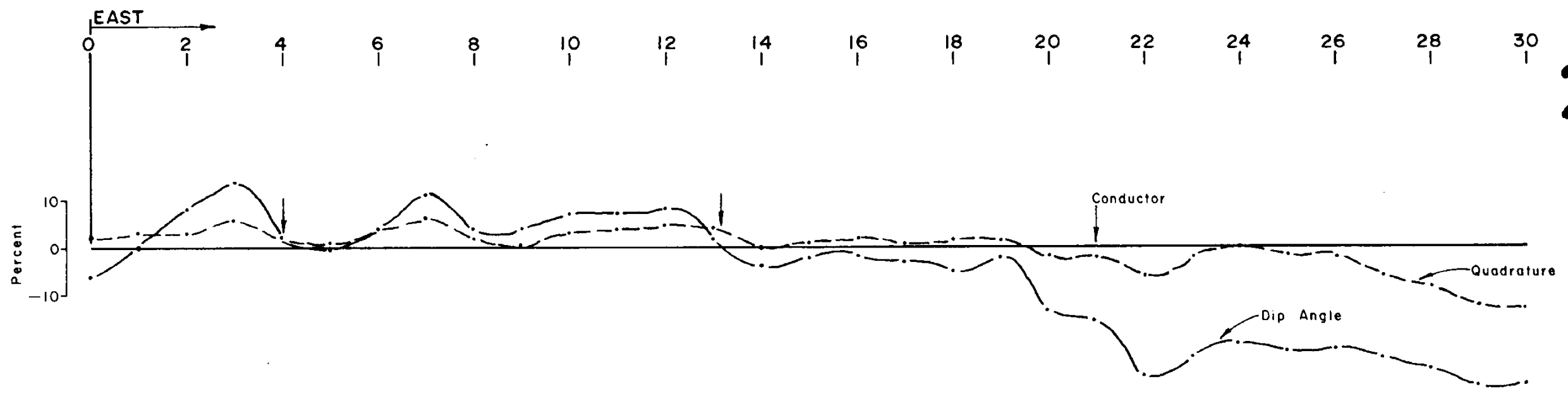
Active experience in all Geologic provinces of Canada.

COST BREAKDOWN

<u>Personnel</u>	<u>Dates</u>	<u>Wages</u>	<u>Total</u>
J. Miller.....	Dec. 18-22/79.....	\$175/day.....	\$875.00
G. Smedley.....	"....."	\$125/day.....	625.00
Instrument Lease, EM-16 and Max-Min 2.....			450.00
Vehicle.....			130.00
Drafting and Reports.....			550.00
Total.....			<u>\$2630.00</u>

MINERAL RESOURCES BRANCH  
 RESULT REPORT  
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**PART**  
**20/2**



INSTRUMENT : RONKA EM-16



N.T.S. 92 P-15

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 — ROBINSON PROPERTY —

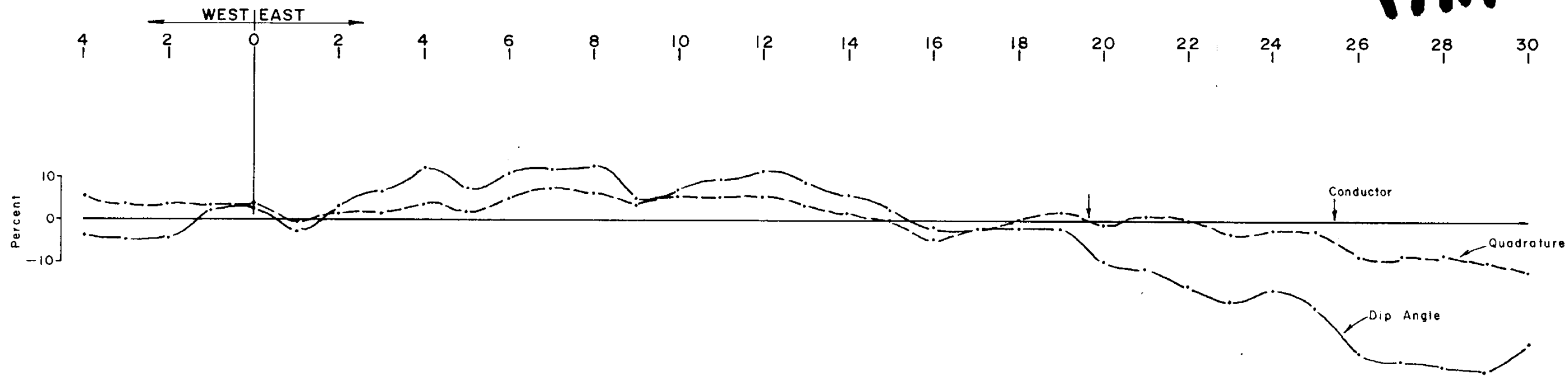
VLF-EM PROFILES  
 LINE 'A'

*Glen E. White*  
 geophysical consulting  
 services ltd.

PROFESSIONAL  
 INTERPRETED BY G.E. WHITE  
 DRAWN BY GLEN E. WHITE  
 CHECKED BY JONATHAN  
 DATE: FEB 1988  
 FIG. No.: 2

To Accompany Geophysical Report on  
 THE ROBINSON PROPERTY  
 Date -----  
 By GLEN E. WHITE - B.Sc. ----- GEOPHYSICIST

8410  
PART 2 of 2



INSTRUMENT : RONKA EM-16



N.T.S. 92 P-15

BOVILLE RESOURCES LTD.  
— ROBINSON PROPERTY —

VLF-EM PROFILES  
LINE 'B'

To Accompany Geophysical Report on  
THE ROBINSON PROPERTY  
Date \_\_\_\_\_  
By GLEN E. WHITE - B.Sc. ----- GEOPHYSICIST

*Glen E. White*  
geophysical consulting  
services ltd.

INTERPRETED BY  
DRAWN BY T.M.  
CHECKED BY GLEN E. WHITE  
DATE: FEB 1980  
FIG. No.: 3

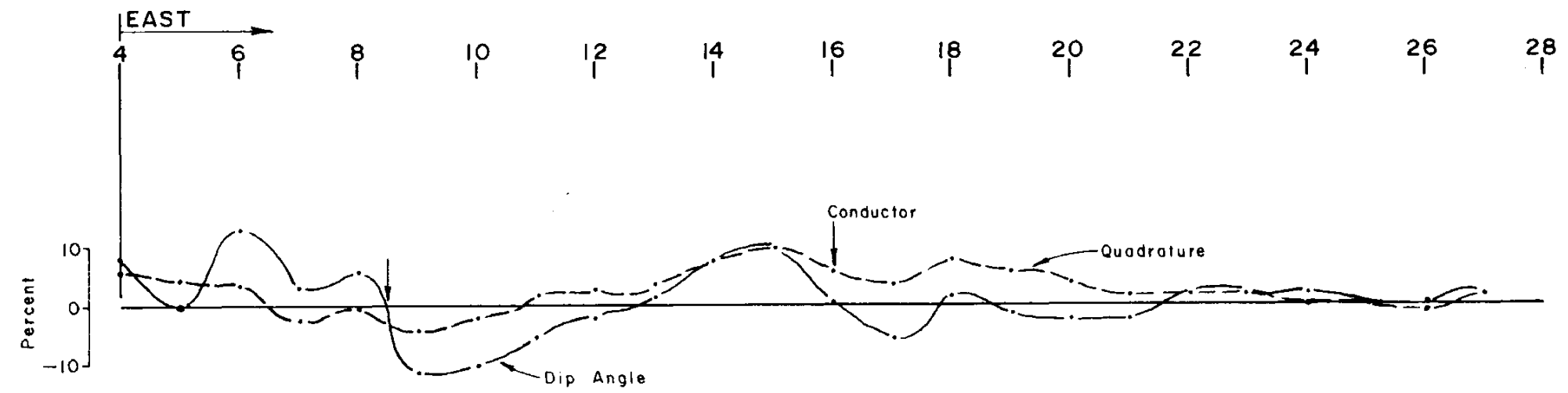
MINERAL RESOURCES BRANCH

APPROPRIATE DIVISION

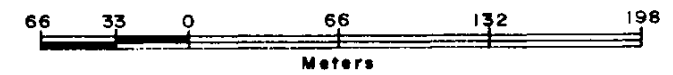
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PART  
292



INSTRUMENT : RONKA EM-16



NTS 92 P-15

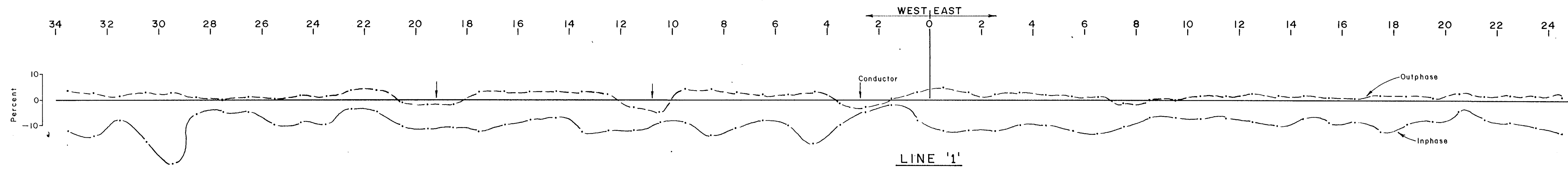
**BOVILLE RESOURCES LTD.**  
 — ROBINSON PROPERTY —

VLF-EM PROFILES  
 LINE '1'

*Glen E. White*  
 geophysical consulting  
 B  
 services ltd.

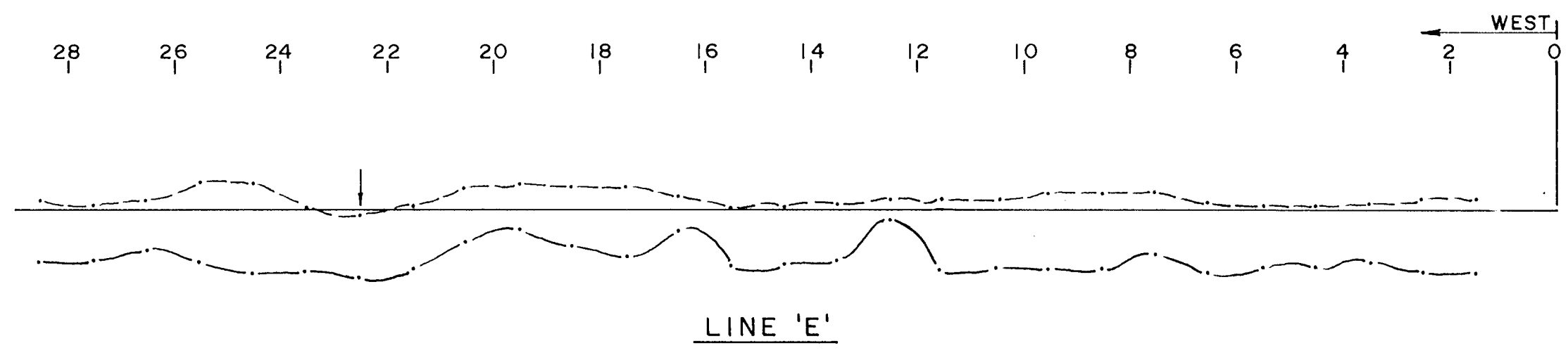
PROFESSIONAL  
 INTERPRETER BY: G.E.W.  
 DRAWN BY: GLEN E. WHITE  
 CHECKED BY: BRITISH COLUMBIA  
 DATE: FEB. 1982  
 FIG.No.: 4

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 THE ROBINSON PROPERTY  
 Date -----  
 By GLEN E. WHITE - B.Sc. ----- GEOPHYSICIST

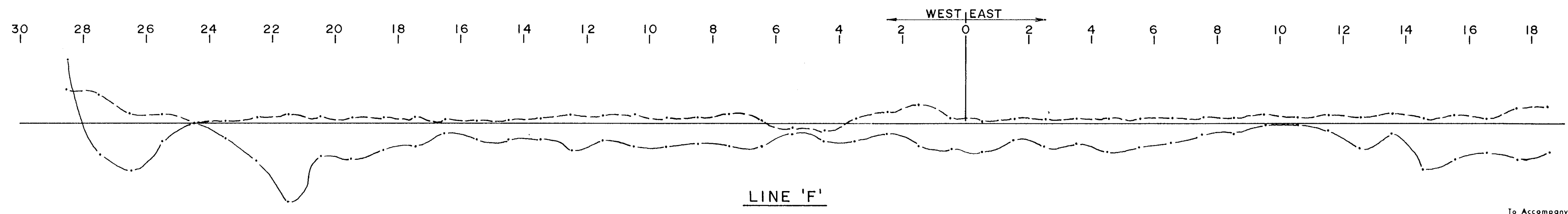
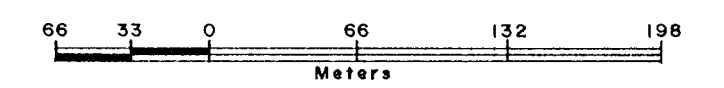


MINERALS BRITISH COLUMBIA  
 8410  
 NO.

PART  
 2 of 2



INSTRUMENT : APEX MAX. MIN. II  
 1777 Hz  
 COIL SEPARATION 100m



To Accompany Geophysical Report on  
 THE ROBINSON PROPERTY  
 Date \_\_\_\_\_  
 By GLEN E. WHITE - B.Sc. - GEOPHYSICIST

N.T.S. 92 P-15

**BOVILLE RESOURCES LTD.**  
 - ROBINSON PROPERTY -

MAX. MIN. II PROFILES  
 LINES '1, E, F'

*Glen E. White*  
 geophysical consulting  
 services Ltd.

INTERPRETER: GLEN E. WHITE  
 DRAWN BY: T. N. COLUMBY  
 CHECKED BY: T. N. COLUMBY  
 DATE: FEB. 1980  
 FIG. No.: 5