

87-136-15852
3/88

REPORT ON VLF-EM AND MAGNETOMETER SURVEYS

G+G I GROUP

Nicola Mining Division

Lat 50° ~~25'~~ N NTS 92I/2E Long 120° 33.2' W
7.4'

for

Owner/Operator: IOTA EXPLORATIONS LTD.

PART 2 OF 2

Claim	Record Number	Units
TOR	1411(6)	18
G+G I	1737(9)	18

FILMED

Authors:

D.C. Miller, P. Eng.
D. Moraal.

Kamloops, Feb 20, 1987

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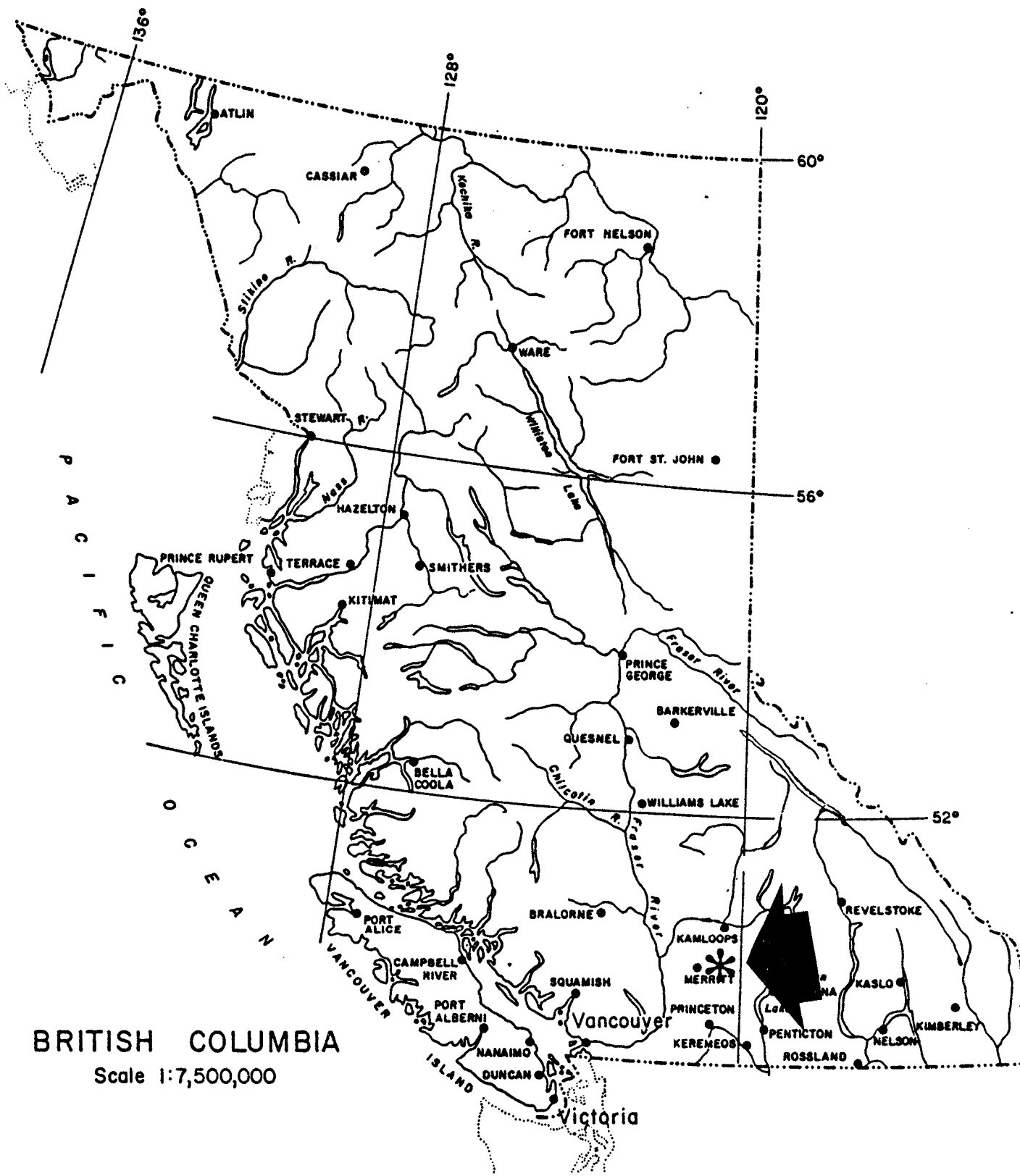
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LIST OF REFERENCES

- Miller, D.C. Diamond Drilling Report, G+G I Claim
Feb 12, 1987
- Kelly, S.F. Report on the IOTA and G+G Groups of
Mineral Claims. Dec. 1986
- Moraal, D. Assessment Report. Geochemistry, Tren-
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Geophysics, Vol34, N°6. Dec 1969



BRITISH COLUMBIA

Scale 1:7,500,000



Plate 1

LOCATION MAP	
*	G+G Group Nicola M.D. NTS 92I/2
D.M.	Feb. 20/87

1.0 INTRODUCTION

This report presents the results of geophysical surveys carried out in preparation for drilling over a zone where anomalous gold values have been recorded.

Testing the geophysical results by drilling has shown them to be a valid exploration tool for targeting future drillholes and potential gold bearing units.

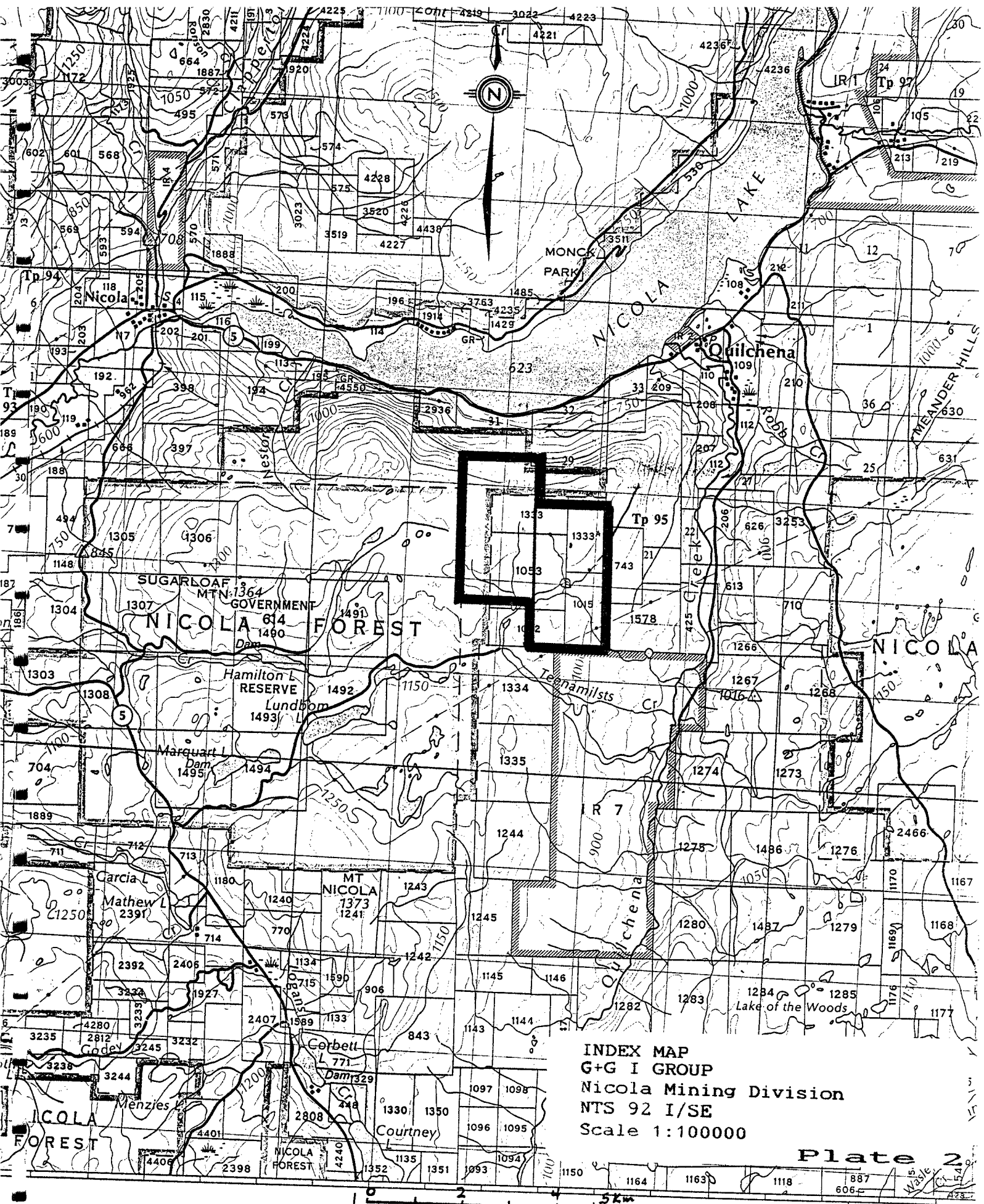
2.0 LOCATION, ACCESS AND TOPOGRAPHY

The property is situated near Quilchena B.C., a locality on Highway N°5 south, on the south shore of Nicola Lake, and 18 km due east of Merritt B.C.

Access to the property can be by 4 wheel drive vehicle from Quilchena, a distance of two km from Nicola Lake, but the preferred route is from the Merritt-Princeton Hwy, where the visitor leaves the pavement at a point some 9 km south of the town of Merritt, and travels east on the Lundbom Lake road for a distance of about 11 km to the claims. In dry weather a 2 wheel drive vehicle will suffice. The road is steep in places, and quite narrow.

Elevations range from 975 m to just over 1200 m. The terrain consists of a combination of dome shaped grassy hills and broken rocky ground with well defined gullies. Several ponds supply water to an otherwise sub arid environment. Water for drilling is obtained from one pond close to the access road.

Tree cover is sparse, with a preponderance of large Ponderosa pine while gullies and wet areas support stands of small aspen.



INDEX MAP
 G+G I GROUP
 Nicola Mining Division
 NTS 92 I/SE
 Scale 1:100000

Plate 2

66 68 70 72 74 76 78 80 82 84

To Princeton - 71 km

3.0 HISTORY AND PREVIOUS WORK

The area has seen sporadic exploration since the turn of the century but the earliest serious effort on record can be considered that made by Quilchena Mining Co., in the early 1960's under supervision of R. Renshaw, when a trenching and drilling programme recorded gold values in the order of 0.43 and 0.11 oz/ton. Deep snow on the ground at the time of the surveys prevented the writer from locating all these features, but those located indicate that the grid covers the area of interest very well.

A prospectors report was prepared by G. Elliott prior to optioning the ground to Iota, in which he records trench and mineral showings (Prospectors Report on the G+G I Claim, by G Elliott, submitted for assessment and available to the public late in 1987)

4.0 SUMMARY OF WORK DESCRIBED IN THIS REPORT

8 km of VLF-EM and concurrent magnetometer survey, using a 100x12.5 meter grid with fill-in lines each 25 meters between lines 300 S and 500 were completed. Data was filtered using a microcomputer and custom software designed by the writer and based on formulas by Parasnis, and by Fraser to produce sectional views of VLF anomalies, and corrected, smoothed magnetic values.

5.0 GEOLOGY

Drilling of the anomalies revealed a fairly complex geology underlying the grid area.

It is composed mainly of basaltic and andesitic flows, striking northerly and dipping easterly fairly steeply, and intruded by microdiorite dikes. Colour variation in the andesites is from greenish to reddish.

Miller has mapped the units as follows:

- Unit 1 Red to grey green basalt/andesite
- Unit 2 Dark grey, green, augite basalt/andesite
- Unit 3 Microdiorite

Unit 3 has three sub-units, the differences being in composition and grain size.

Gold mineralization has been found to be associated with these microdiorite intrusions. In both drill holes, a pyrite zone is located adjacent the gold bearing unit, and this, coupled with the contacts between the units provide for the EM anomalies found.

6.0 SURVEYS AND METHODS

Two geophysical methods were employed on this property, and are presented herein.

A Sabre Model 27 VLF-EM receiver was used for this survey, and was chosen for its sensitivity and the fact it can record four parameters at each station. These are the resultant dip angle (Dip), the horizontal field strength (HFS), the residual field strength, (RFS), a little used parameter useful for interpreting weak anomalies, and an experimental parameter, so far probably only used by this writer, that permits an estimation of dip angle and direction of dip of the subsurface body. Termed 'sensitivity' it records the amplitude of the deflection of the field strength meter at a certain point during the survey, at each station.

Using terms such as "steep", "moderate", and "flat", it permits a reasonable degree of accuracy.

The magnetometer survey was carried out using a reliable Scintrex MF-1 fluxgate vertical field unit, ideal for mapping structure and magnetic halfplanes. Both surveys were carried out using a 12.5 m sample interval, which provided excellent coverage. Since most of the magnetic expressions are of short length across their strike, this density is considered to be the absolute minimum for a good set of data.

VLF-EM data was collected using the conventions set out by Fraser and filtered in accordance with the original algorithm designed by him

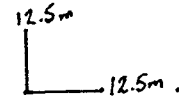
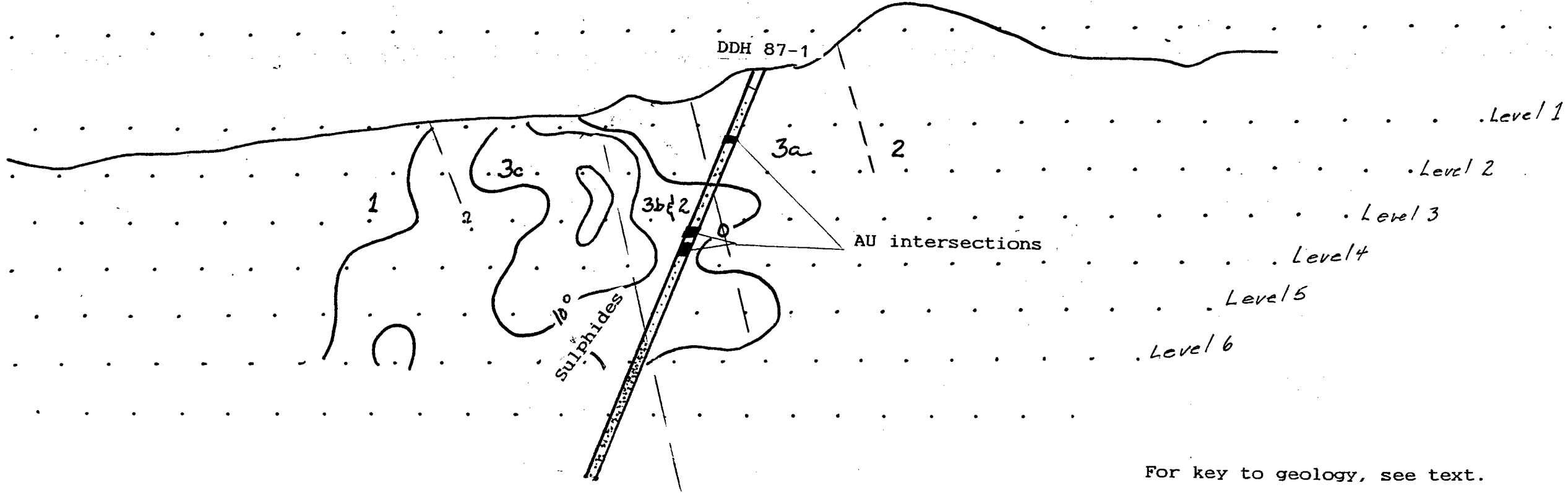
Sections were constructed for each drill site with the aid of a micro computer. The Fraser Section, as this writer terms the product, is discussed in "A Review of some useful Algorithms in



100 W

Baseline

100 E



For key to geology, see text.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,852



Dirk Moraal Geophysical Concepts

Sabre VLF-EM Vertical Section

Property: G+G I Line: 500 SDate: 15 Jan 1987

Scale: 1:1250 Field Work: D.M. PLATE: - 3 -

Geophysics" by D.C. Fraser (CIM Bulletin, Vol. 74, N°828, April 1981.) contends that geophysical data are often presented with a minimum of data processing, a view supported by this writer.

The trend towards portraying data in a more useful form has led to the development of an algorithm now in common use that transforms noisy, often meaningless VLF_EM data into less noisy, contourable form. It is known as the Fraser filter to members of the exploration fraternity.

A variant of this is a sectional presentation which permits a third dimensional view of the anomaly. Aided by a computer, up to six depth levels of filtered data can be provided. Contouring these levels in section along each traverse line provides a pictorial view of the depths of the various current concentrations.

It is important for detail and accuracy to use a relatively close spacing of stations along the survey line. Fraser's paper suggests the use of 50 feet (15 m) as a near ideal interval. The writer uses 12.5 m sample interval with a slight loss of total depth which is more than compensated for in increased accuracy and detail, plus the simplicity of using standard 100×25 m gridlines. Fill in lines should be at 25 m line spacing on either side of the main survey lines after a target has been located.

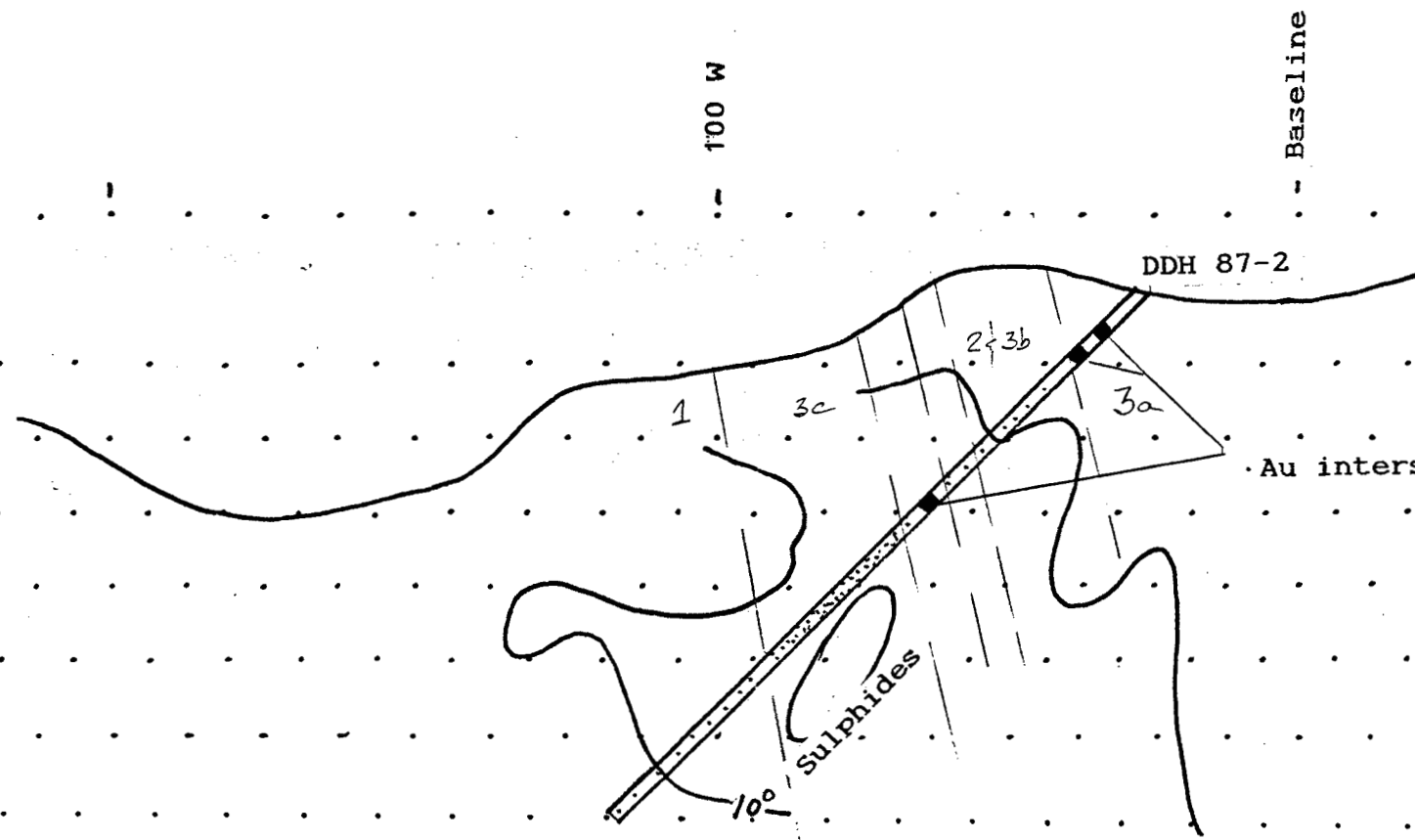
In the section, Level 1 is assigned a nominal depth of current flow equal to the station spacing. With the 12.5 m sample interval, it can be said that greatest resolution occurs at Level 2, or a depth of twice the station spacing. The digital filter operates on all dip angle values for Level 1. It then operates on every second dip angle value for Level 2, and so on till Level 6 uses every sixth dip angle value. Only positive values are contoured, the negative values representing the flanks of the conductor.

"Fraser's Section" depends on proper data collection in the field, and the use of the algorithm as originally formulated.

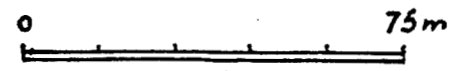
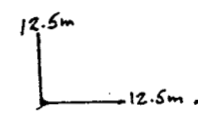
Common practice of using the reverse of this algorithm produces negative anomalies and this leads to confusion, if the data collection method is not known in the office.

Fraser suggests the following:

- 1.- All readings are taken at 50 feet. (15 m)



For key to geology, see text.



**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,852

Dirk Moraal Geophysical Concepts

Sabre VLF-EM Vertical Section

Property: G+G I Line: 400 S Date: 15 Jan 1987

Scale: 1:1250 Field Work: D.M. PLATE: -4-

Level 1
Level 2
Level 3
Level 4
Level 5
Level 6

2.- Use of the same transmitter station for every line and fill in line in the block

3.- List data in tabular form as follows:

a) always list in direction of north to south and west to east

b) always designate south dips and east dips as negative.

The filter operator as designed and used by Fraser is

$$f: (M3+M4)-(M1+M2)$$

more familiar to us as $(C+D)-(A+B)$, should be used exclusively.

Holding to these conventions will permit the construction of accurately plotted anomalies and detailed sections.

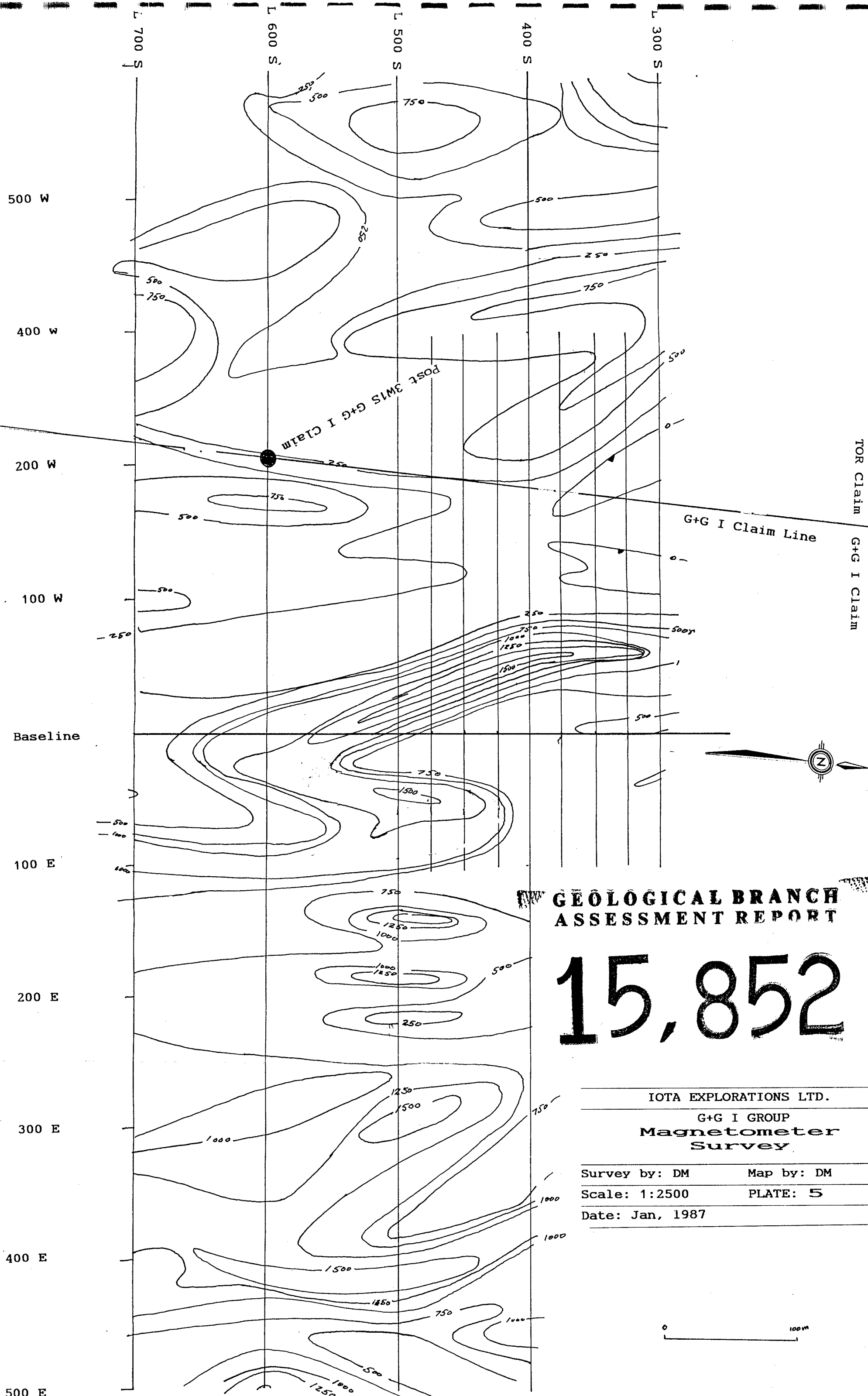
A side benefit of using the filter is the elimination of the topographic effect, but at least four consecutive readings along the slope are needed. Obviously, a close-spaced survey will be more effective in eliminating spurious readings.

Magnetic data was corrected for drift and diurnal variation, using another computer programme to spread the drift over the readings at the time the change occurred.

These corrected values were judged to be noisy due to the great number of magnetic dipoles found, magnetic lows and apparent folds or offsets caused by faulting. A smoothing filter in the form of a simple 3 point weighted running average

$$((Ax1)+(Bx2)+(Cx1)/4)$$

was applied to each set of data to eliminate the near surface variations of magnetic intensity.



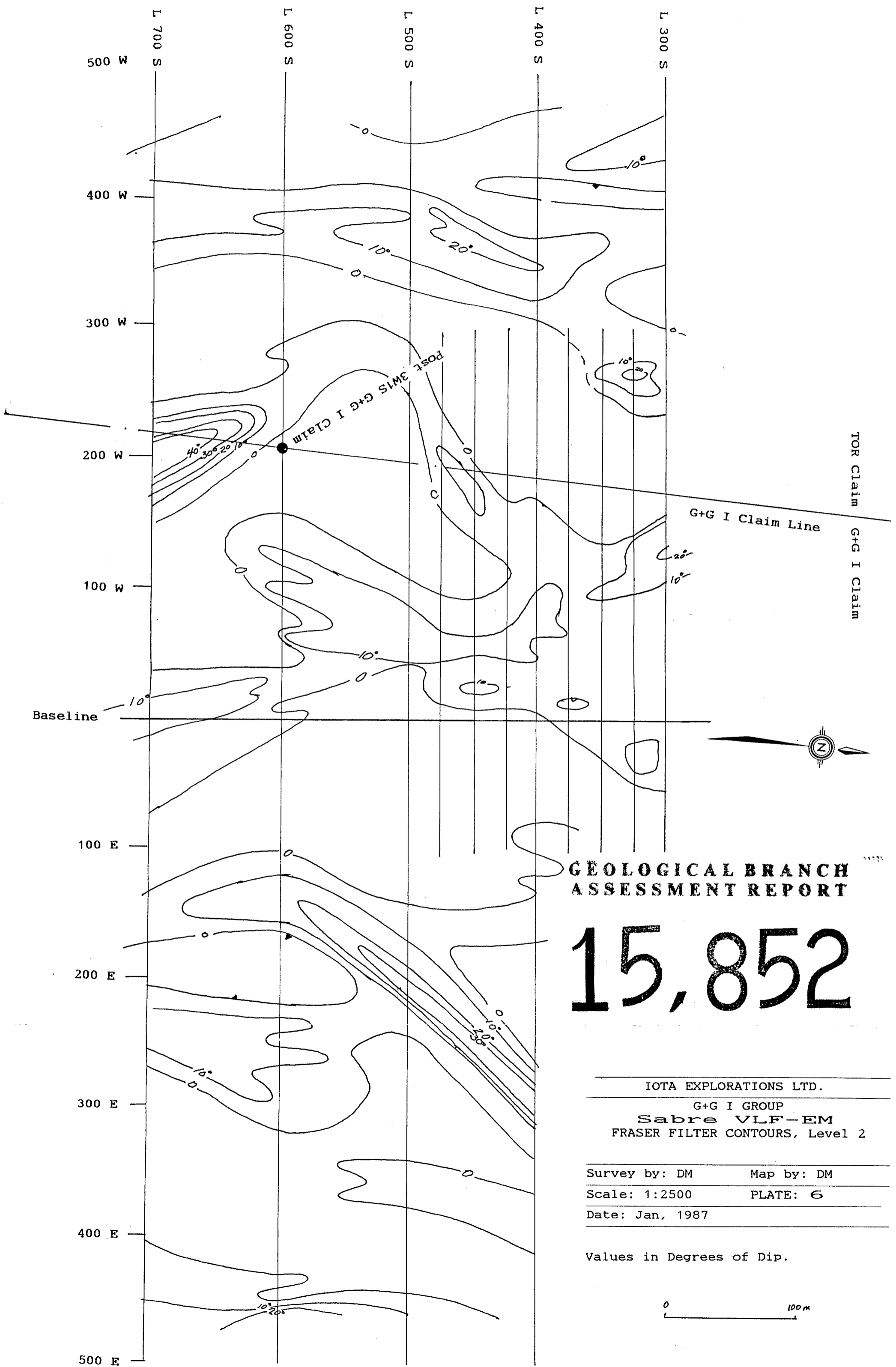
**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,852

IOTA EXPLORATIONS LTD.
G+G I GROUP
Magnetometer
Survey

Survey by: DM Map by: DM
Scale: 1:2500 PLATE: 5
Date: Jan, 1987

Contours each 250 gammas



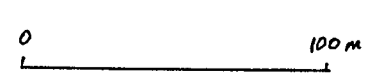
**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,852

IOTA EXPLORATIONS LTD.
 G+G I GROUP
Sabre VLF-EM
 FRASER FILTER CONTOURS, Level 2

Survey by: DM Map by: DM
 Scale: 1:2500 PLATE: 6
 Date: Jan, 1987

Values in Degrees of Dip.



7.0 CONCLUSIONS

A review of the Fraser sections and drillhole logs show that gold mineralization can occur in association with VLF-EM anomalies on the G+G I claim, and that this corresponds to the upper margins or hanging wall side of said anomaly.

These anomalies are caused by abundant pyrite mineralization and contacts of rock Units.

Magnetite concentrations may or may not be important as an indicator of gold. However, a moderate to strong magnetic dipole is found associated with the VLF-EM anomalies drilled, usually on the flanks. Notwithstanding the above, magnetic highs should not be ignored. VLF-EM can be used to locate potential gold occurrences in the andesites and basalts intruded by microdiorites.

8.0 COST STATEMENT

(1) WAGES:		
	Dirk Moraal 8 mandays Jan 5,6,7,8,9,13,14,& 15 @ \$ 150.00/day VLF and MAG	\$ 1 200.00
	Richard Elliott 8 mandays Jan 5,6,7,8,9,13,14 & 15 @ \$ 100.00/day	800.00
(2) REPORT COMPILATION & MAPS		
	Dirk Moraal 3 days @ \$ 100.00 = \$ 300.00	
	3 days @ \$ 125.00 = <u>\$ 375.00</u>	675.00
(3) TRANSPORTATION:		
	4x4 814 km x 0.33 = \$ 269.00	
	4x4 1231 km x 0.34 = <u>394.00</u>	663.00
(4) FOOD/ACCOMMODATION & TELEPHONE:		636.48
(5) SUPPLIES:		
	Universal Reproduction	
	Printing & Binding Report & grid supplies	<u>118.57</u>
	Total	\$ 4 093.05
	15% overhead, office adm.	<u>613.96</u>
	TOTAL COSTS	<u><u>\$ 4 707.00</u></u>

STATEMENT OF QUALIFICATIONS

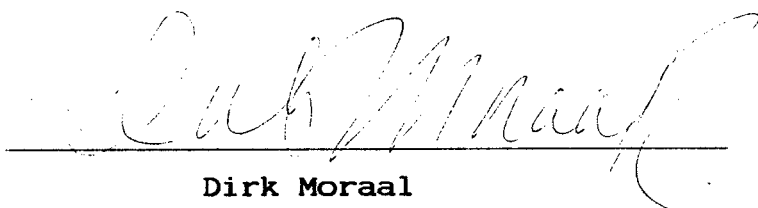
I, DIRK MORAAL, of the City of Kamloops, in British Columbia, do hereby state:that:

I am a professional Prospector and Geophysical Operator.

I have been carrying out my profession continually since 1969.

Information contained in this report was obtained by myself during January, 1987, or communicated to me as part of the information gathered during exploration of this property.

I have no material of financial interest in Iota Explorations Ltd or the properties named in this report.



Dirk Moraal

Feb 20, 1987

D.C. MILLER GEOLOGICAL SERVICES

769 Fraser Street, Kamloops, B.C. V2C 3H1 Telephone (604) 828-0244

TO WHOM IT MAY CONCERN:

I have reviewed the results of VLF and magnetometer surveys carried out by Dirk Moraal on the G & G I claim, NTS 92I/2E, in the Nicola Mining Division, during January 4 to January 16, 1987.

Instruments employed were a SABRE VLF-EM and a SCINTREX MF-1 VERTICAL FIELD FLUX-GATE MAGNETOMETER. A total of 6.8 Km of crosslines and 1 Km of baseline were surveyed at 25 meter stations.

A number of VLF-EM anomalies were determined, some of which are co-incident with magnetic highs.

Subsequent NQ Diamond Drilling in 2 holes totalling 244.45 meters tested 2 of the VLF-EM anomalies on crosslines spaced 100 meters apart. Both holes intersected 2-8% disseminated pyrite in the projected position of these anomalies. Low grade gold mineralization occurs just east of and in the hanging wall of the VLF-EM anomalies which dip steeply eastward.

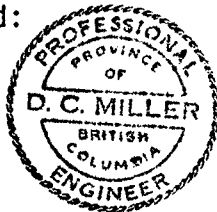
It is the writers opinion the preceding described geophysical surveys were carried out in a workman like manner and the results can be used in correlation with geology and geochemistry in planning further drilling or trenching on the property.

It should be pointed out that some of the VLF-EM anomalies may represent water saturated ground.

The magnetometer anomalies may in part be related to sulphide mineralization but in general only reflect the structural grain and magnetite content of underlying rocks.

Respectfully Submitted:

D.C. Miller
D.C. Miller, P. Eng.
769 Fraser St.,
Kamloops, B.C.
V2C 3H1



February 17, 1987