

180-931-8816

REPORT ON THE  
VLF-EM SURVEY  
MB-2 CLAIM [20 UNITS]  
QUEEN CHARLOTTE ISLANDS, B.C.

SKEENA M. D.

Lat. 53°37'N

Long. 132°14.5'W

NTS 103F/9E

for

ANGELO TOSI  
Vancouver, B. C.

by

A. F. ROBERTS, P. ENG.

MINERAL	SEARCH
NO. 8816	

PART  
2 of 3

February 6, 1981

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	
INTRODUCTION.....	1
LOCATION, ACCESS, TOPOGRAPHY.....	2
CLAIM.....	3
HISTORY.....	3
GENERAL GEOLOGY.....	4
GEOCHEMISTRY.....	4
GEOPHYSICAL SURVEY.....	5
CONCLUSIONS.....	6
RECOMMENDATIONS.....	7
ESTIMATED COSTS.....	7
CERTIFICATE.....	8
STATEMENT OF COSTS.....	9

APPENDICES

Ref. No.

- 10] Appendix A: Sabre Model 27  
Operating Instructions  
Fraser Filter Calculations

MAPS

- 1] Location Map: B.C. Road Map;  
1 cm = 24 km.....[Frontispiece]
- 2] Road Map: MacMillan, Bloedel  
7/16" = 1 mile.....[Follows page 1]
- 3] Topographic Map: NTS 103F/9E.....[Follows page 2]
- 4] Claim Map: B.C. Department of Mines  
& Petroleum Resources. Part obtained  
from other sources, 1:50,000.....[Follows page 3]
- 7] Geology Map: Bulletin 54, Enlarged  
to 1:62,500.....[Follows page 4]

TABLE OF CONTENTS [Cont'd]

MAPS [Cont'd]

<u>Ref. No.</u>		<u>Page</u>
12]	Plate A: Plan, Dip Angle 1 cm = 25 m.....	[Back Pocket]
13]	Plate B: Plan, Total Field, 1 cm = 25 m.....	[Back Pocket]
14]	Plate C: Plan, Fraser Filter 1 cm = 25 m.....	[Back Pocket]
15]	Plate D: Cross-sections of lines, Dip Angle, Fraser Filter, Total Field, 1 cm = 25 m.....	[Back Pocket]

REFERENCES

- 5] B.C. Department of Mines & Petroleum Resources, Bulletin 54, Geology of the Queen Charlotte Islands, B.C., A. Sutherland Brown, 1968
- 6] History of the Queen Charlotte Islands, B.C., Vol. II, K. Dalzell
- 8] B.C. Department of Mines & Petroleum Resources, Specogna Gold Prospect, Queen Charlotte Islands, B.C., A. Sutherland Brown, T.G.Schroeter, 1977
- 9] Reports, Drill Logs, for Consolidated Cinola Mines Ltd., and other companies; A.F. Roberts, P. Eng., 1977 to date
- 11] Contouring VLF-EM Data, D.C. Fraser; Geophysics Vol. 54, No. 6, 1969



ANGELO TOSI  
VANCOUVER, B.C.

MB 2  
QUEEN CHARLOTTE ISLANDS, B.C.  
SKEENA M.D.  
NTS 103 F / 9E, 8E.

**LOCATION MAP**

SCALE IN KILOMETRES

0 24 48 72 96

TO ACCOMPANY REPORT BY A.F. ROBERTS, P.Eng. Feb 6, 1981

S U M M A R Y

The recently completed VLF-EM survey over the MB-2 Claim has found two strong anomalies with dimensions of 1,200 metres by 125 metres and 600 metres by 200 metres.

A detailing of these anomalies, and other smaller anomalies is recommended.

A Phase I program of "fill in" VLF-EM work on lines between those now existing plus geochemistry over the entire claim is recommended.

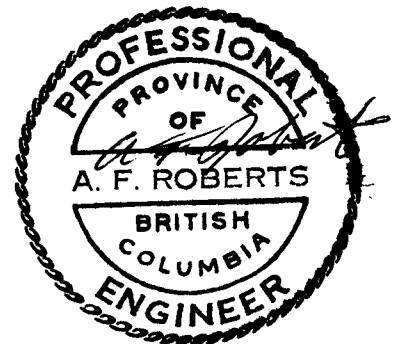
Phase I is estimated at a cost of \$39,000.00.

With good indications from Phase I, Phase II would cost in the order of \$100,000.00 for trenching and for diamond drilling.

Respectfully submitted,



A.F. Roberts, P. Eng.,  
February 6, 1981



REPORT ON THE  
VLF-EM SURVEY  
MB-2 CLAIM [20 UNITS]  
QUEEN CHARLOTTE ISLANDS, B.C.  
SKEENA M. D.

Lat.  $53^{\circ}37'N$  Long.  $132^{\circ}14.5'W$

NTS 103F/9E

for

ANGELO TOSI  
Vancouver, B.C.

by  
A.F. ROBERTS, P.ENG.

February 6, 1981

### INTRODUCTION

This report is authorized by Mr. Angelo Tosi, registered owner of the claim.

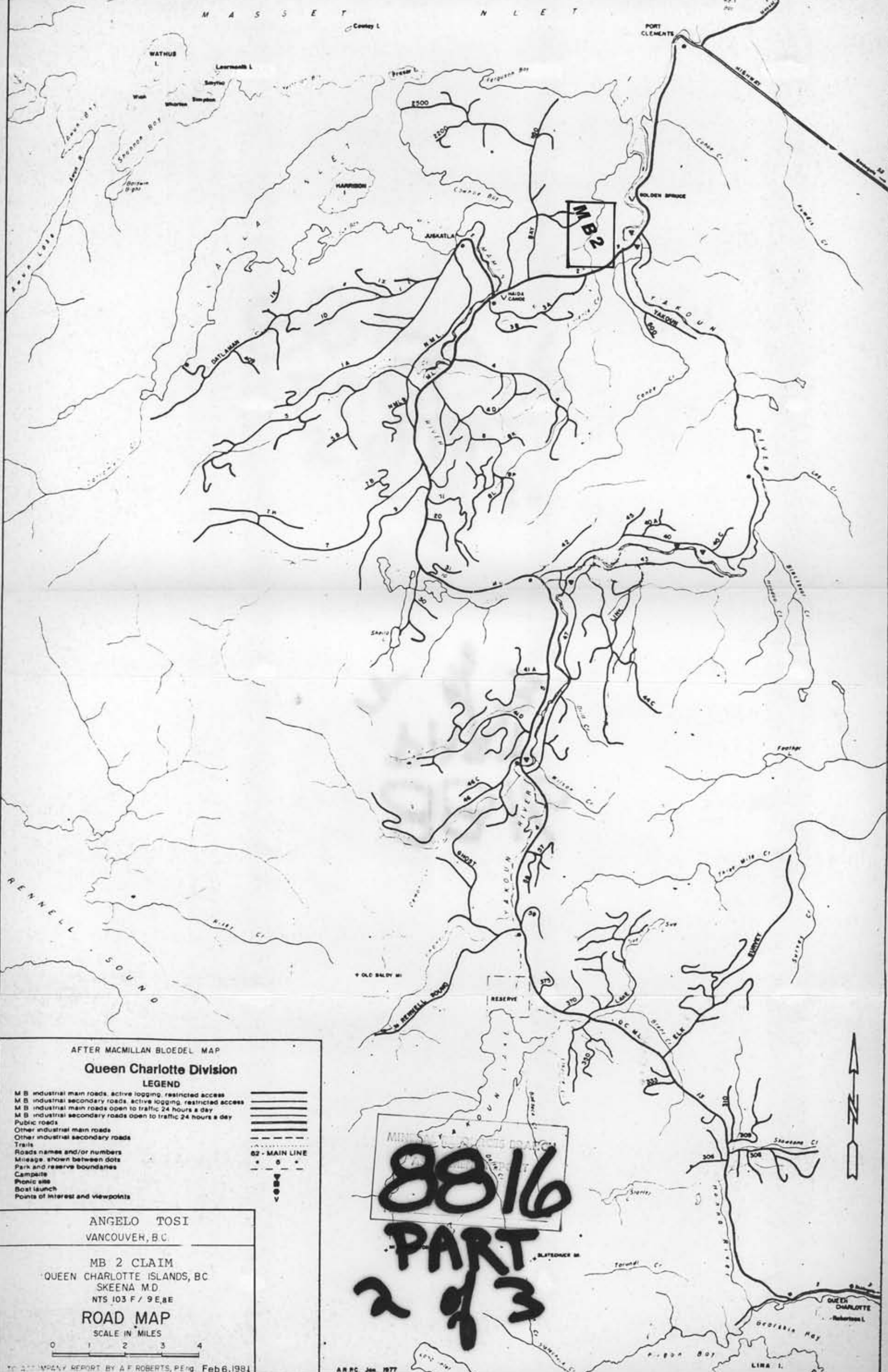
Its purpose is to analyze the results of the survey, and if considered worthy, recommend a continuing exploration program.

The field work and the map plotting was done by Strato Geological Ltd., of Vancouver, B.C.

The writer is responsible for the contouring.

The field work was done in the period August 12-26, 1981.

A minor reconnaissance type geochemical survey was done by Team Mineral Services Inc., of Delta, B.C., in 1979. This survey is referred to in the text.



MB 2

8816  
PART  
2 of 3

AFTER MACMILLAN BLOEDEL MAP

### Queen Charlotte Division

#### LEGEND

- MB industrial main roads, active logging, restricted access
- MB industrial secondary roads, active logging, restricted access
- MB industrial main roads open to traffic 24 hours a day
- MB industrial secondary roads open to traffic 24 hours a day
- Public roads
- Other industrial main roads
- Other industrial secondary roads
- Trails
- Roads names and/or numbers
- Mileage shown between dots
- Park and reserve boundaries
- Campsite
- Picnic site
- Boat launch
- Points of interest and viewpoints

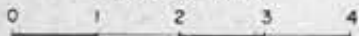


ANGELO TOSI  
VANCOUVER, B.C.

MB 2 CLAIM  
QUEEN CHARLOTTE ISLANDS, BC  
SKEENA MD  
NTS 103 F / 9E,8E

### ROAD MAP

SCALE IN MILES



LOCATION, ACCESS, TOPOGRAPHY 1] 2] 3]

A logging road branches into the property on its west side at the north end.

The main road from Port Clement, going south passes through the southeast corner of the property, at 10 km.

A logging road from the west side of the property serves the north end.

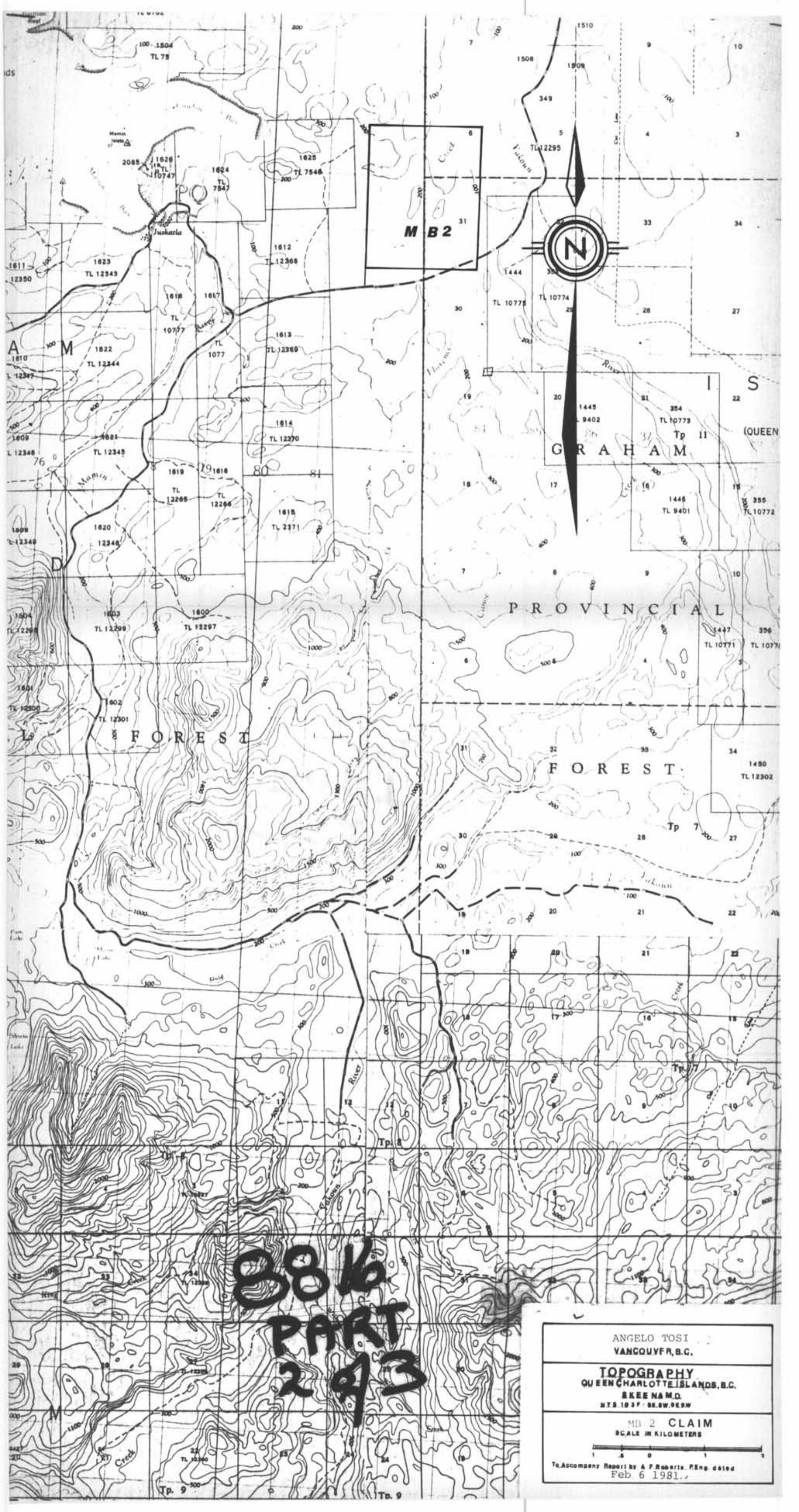
Florence Creek, flowing north, bisects the property, from south to north.

The property has been logged off on its northern end, and is covered with second growth and slash. It is about 50% virgin timber.

The major portion of the property lies between elevation of 30 and 60 metres A.S.L. rising quite steeply from Florence Creek.

- 
- |    |  |                  |
|----|--|------------------|
| 1] | Location Map: B.C. Road Map;<br>1 cm = 24 km   | [Frontispiece]   |
| 2] | Road Map: MacMillan Bloedel,<br>7/16" = 1 mile | [Follows Page 1] |
| 3] | Topographic Map: NTS 103F/9E                   | [Follows Page 2] |





**MB 2**

**GRAHAM**

PROVINCIAL

FOREST

**8816  
PART  
293**

ANGELO TOSI  
VANCOUVER, B.C.

**TOPOGRAPHY**  
QUEEN CHARLOTTE ISLANDS, B.C.  
SKEENA M.D.  
NTS 103P - 88.SW.969W

**MB 2 CLAIM**  
SCALE IN KILOMETERS

To Accompany Report by A.F. Roberts, P.Eng. dated  
Feb 6 1981.

CLAIM 4]

The MB-2 claim is described as follows:

<u>Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
MB-2	20	854	December 20, 1980

Assessment work, of which this report is part, has been filed for one year, so that, on confirmation from the Mining Recorder, the expiry date is December 20, 1981.

The exact location, and the area of the claim can only be proved by a legal survey.

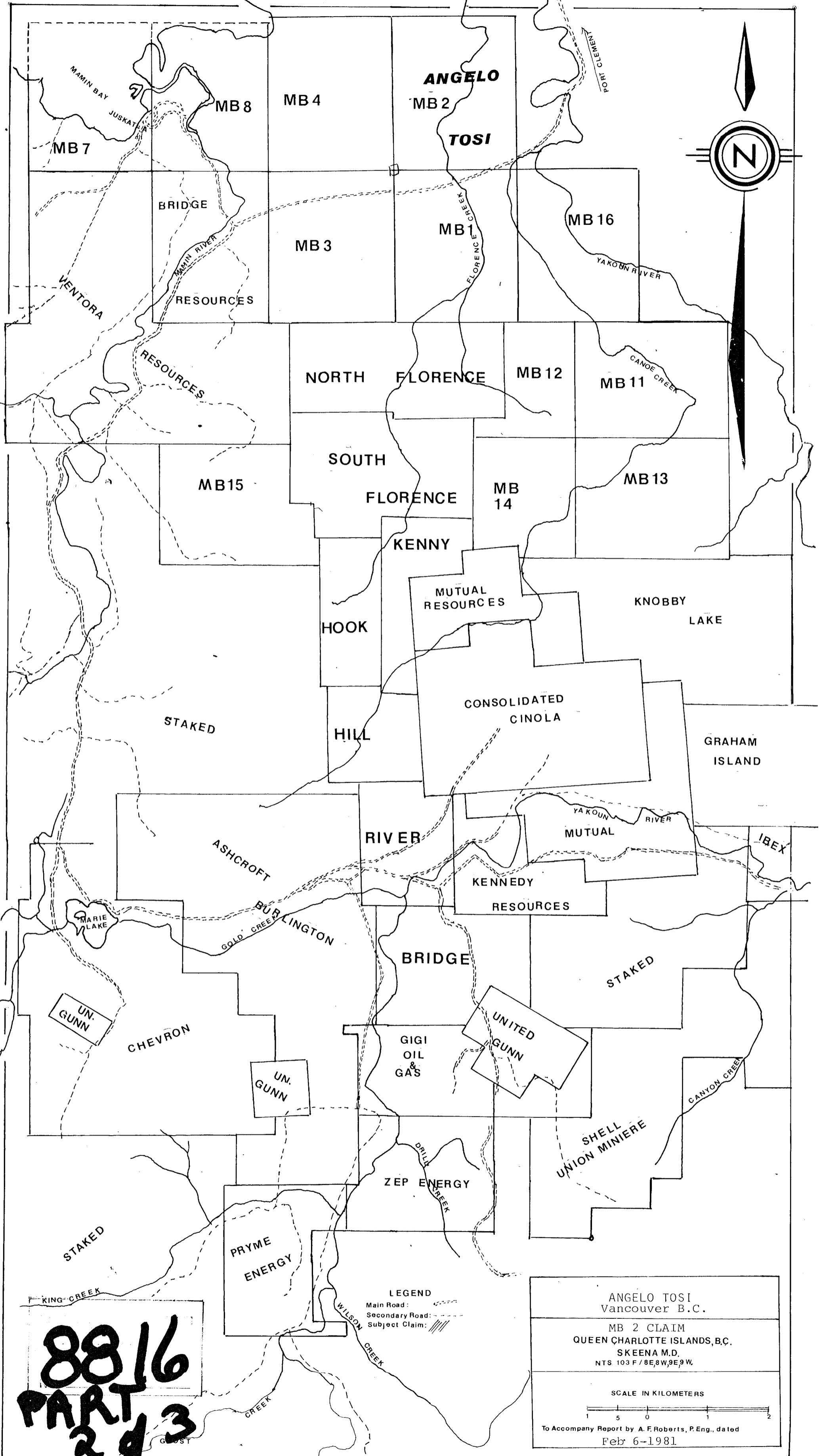
The L.C.P., and other posts seen, were in accordance with the specifications of the Mining Act.

HISTORY 5] 6]

There is no known history for this property. It was staked in the rush that followed the announcement of successful drilling results on the Consolidated Cinola property, where preparations are being made to go into production at 10,000 tons per day of open pit ore.

A number of companies, including majors, are actively diamond drilling.

- 
- 4] Claim Map: B.C. Department of Mines & Petroleum Resources, 103F/9E, 1:50,000. Part obtained from other sources [Follows page 3]
- 5] B.C. Department of Mines & Petroleum Resources, Bulletin 54, Geology of the Queen Charlotte Islands, B.C., A. Sutherland Brown, 1968
- 6] History of the Queen Charlotte Islands, B.C., Vol. II, K. Dalzell



**8816**  
**PART**  
**2 of 3**

**LEGEND**  
 Main Road: ———  
 Secondary Road: - - -  
 Subject Claim: // // //

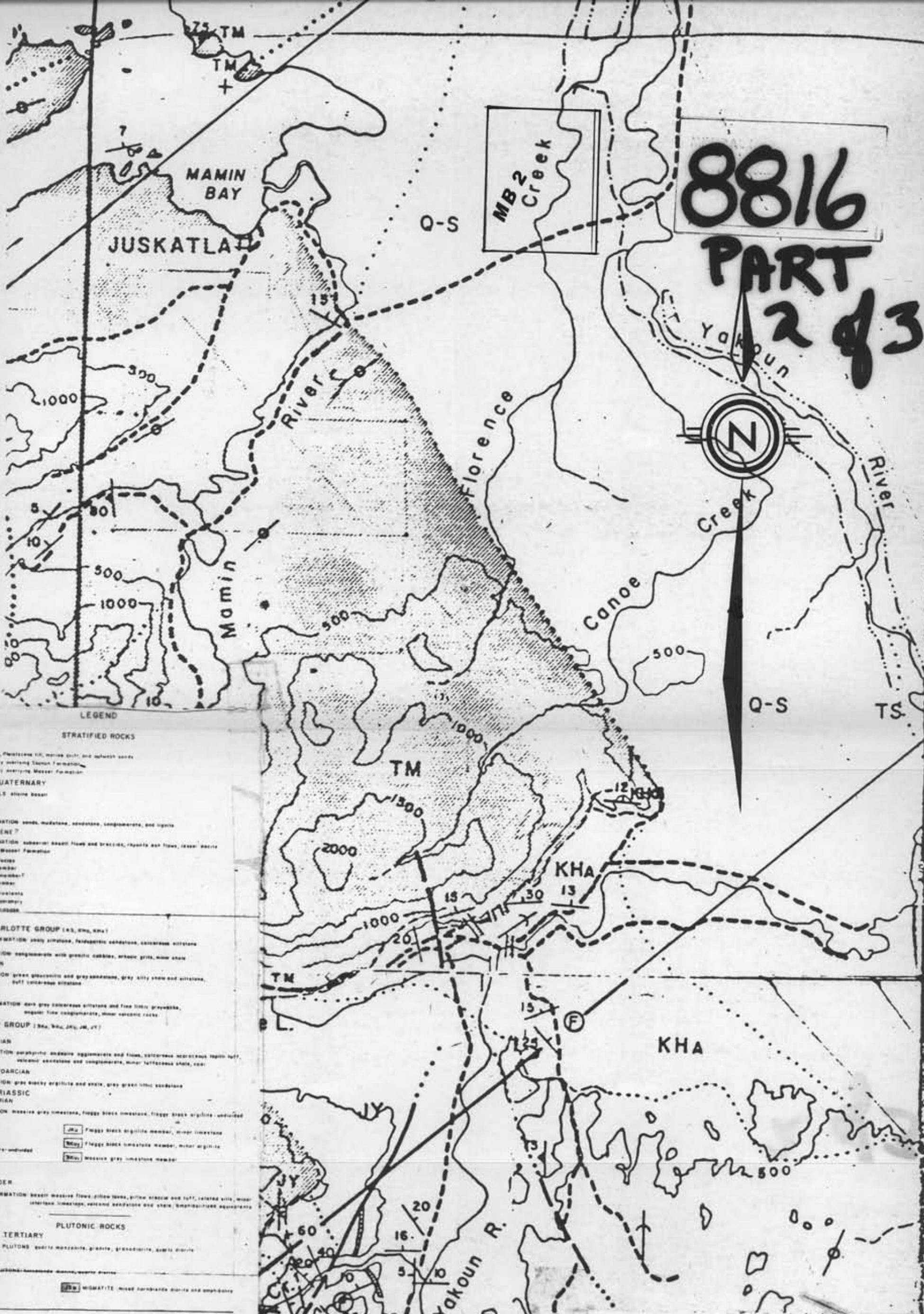
ANGELO TOSI  
 Vancouver B.C.

MB 2 CLAIM  
 QUEEN CHARLOTTE ISLANDS, B.C.  
 SKEENA M.D.  
 NTS 103 F / 8E, 8W, 9E, 9W.

SCALE IN KILOMETERS  
 1 5 0 1 2

To Accompany Report by A. F. Roberts, P. Eng., dated  
 Feb 6-1981

**8816**  
**PART**  
**2 of 3**



- LEGEND**
- STRATIFIED ROCKS**
- QUATERNARY**
- Q-S Quaternary alluvial deposit
  - Q-T Quaternary terrace deposit
  - Q-M Quaternary moraine deposit
- TERTIARY OR QUATERNARY**
- TM Tertiary or Quaternary
- TERTIARY**
- MID-PLIOCENE**
- TM Tertiary or Quaternary
- PALEOCENE-EOCENE?**
- TM Tertiary or Quaternary
- CRETACEOUS**
- QUEEN CHARLOTTE GROUP (KHA, KHA, KHA)**
- KHA KHA Formation
- NEOCOMIAN**
- KHA KHA Formation
- VANCOUVER GROUP (JY, JY, JY, JY)**
- JURASSIC**
- SAUVOIAN-CALLOVIAN**
- JY JY Formation
- PLIENSCHACHAN-TOARCICAN**
- JY JY Formation
- JURASSIC AND TRIASSIC**
- KARNIAN-SINEMURIAN**
- JM JM Formation
- TRIASSIC**
- KARNIAN AND OLDER**
- JM JM Formation
- PLUTONIC ROCKS**
- CRETACEOUS AND TERTIARY**
- JM JM Formation

ANGELO JOSI  
 VAN COUVER, B.C.

**GENERAL GEOLOGY**  
 QUEEN CHARLOTTE ISLANDS, B.C.  
 SKEENA MD  
 NTS 102 F/ 88, 89, 90, 91.

Scale: 1:62,500

MB 2 CLAIM

To Accompany Report by A. E. Roberts, P. Eng., dated  
 Feb. 6, 1981

GENERAL GEOLOGY 7] 8] 9]

The entire property is overlain by Quaternary sediments which are believed to overlie the Masset Formation of sub-aerial basalt flows, rhyolite, ash and conglomerate, which are overlain by Skonun formation of mudstones, sandstones and conglomerates.

No outcrops were seen or have been reported on this property.

GEOCHEMISTRY

The geochemistry survey carried out by Team Mineral Services Inc., of Delta, B.C., was done on a north-south grid 100 metres by 500 metres - a reconnaissance survey.

Total samples	- 64	- Horizon not stated or mapped
Gold samples	- 2	at 10 ppb, or twice background of 5 ppb
Mercury	- 12	at plus 300 ppb, which is the threshold value

It has been found impossible to correlate these samples with the current VLF-EM survey, as the flagged locations could not be found in the field.

- 
- 7] Geology Map: Bulletin 54,  
Enlarged, 1:62,500 [Follows page 4]
- 8] B.C. Department of Mines and Petroleum Resources,  
Specogna Gold Prospect, Queen Charlotte Islands, B.C.,  
A. Sutherland Brown, T.G. Schroeter, 1977
- 9] Reports, Drill Logs for Consolidated Cinola Mines Ltd.,  
and other companies, A.F. Roberts, P.Eng., 1977 to date

GEOPHYSICAL SURVEY 10] 11] 12] 13] 14] 15]

This survey was carried out on a 25 metre by 200 metre grid based on the L.C.P.

The instrument used was a Sabre Model 27, Serial No. 103, made by Sabre Electronics Ltd., of Burnaby, B.C.

The frequency source was Seattle at 18.6 KHz.

The cross-sections show good crossovers in quite a few locations. A strong one occurring at 2+00N, 19+00E can be traced to 4+00N and through to 14+00N at 16+00E combined with good positive Fraser Filter values and total field values to 65%.

On line 6+00N, a strong set appears at 11+50E, and traces to 8+00W, 10+75E. On line 12+00N there is a weak expression of it.

A strong crossover 8+00N, 11+00E follows through to 14+00N, 11+00E.

- 
- 10] Appendix A - Operating Instructions  
for Sabre Model 27, Fraser Filter Calculations [End of Report]
- 11] Contouring VLF-EM Data, D.C. Fraser;  
Geophysics, Vol. 54, No. 6, 1969
- 12] Plate A: Plan, Dip Angle  
1 cm = 25 m. [Back Pocket]
- 13] Plate B: Plan, Total Field,  
1 cm = 25 m. [Back Pocket]
- 14] Plate C: Plan, Fraser Filter,  
1 cm = 25 m. [Back Pocket]
- 15] Plate D: Cross-sections of lines,  
Dip Angle, Fraser Filter,  
Total Field, 1 cm = 25 m. [Back Pocket]

In plan, these show up as north to northwesterly structures of good width.

The Fraser Filter Plan shows the same trend, the eastern anomaly being strongest on Line 0+00 - 14+00N, and the next one west on Line 12+00N, similar to others to the west where strong areas are confined to single lines.

If closer line spacing had been used, these might stretch another 100 metres either way.

Total field values, are quite flat, showing little relief. The best values, plus 60%, do coincide with the strongest anomaly, and the strongest Fraser Filter, with Total Field and Fraser Filter appearing to rise and fall together on the anomalies.

It should be noted that a very strong Total Field anomaly shows on Line 18+00N at 7+00E to 13+50E, but is not confirmed by the other parameters.

### CONCLUSIONS

There is a strong VLF-EM anomaly having a northwesterly trend of 1,200 metres by 125 metres, and open to the north.

A similar one more to the east can be traced from 8+00N through 14+00N and open. Although not as strong, it is much greater in size.

There are several other Fraser Filter anomalies of fair size, but not too strong.

All these anomalies are worthy of further work.

RECOMMENDATIONS

It is recommended that a Phase I program of "fill-in" VLF-EM program be done, running extra lines between those already in, together with a geochemistry program over the entire property.

Phase II will consist of trenching and/or diamond drilling.

ESTIMATED COSTSPhase I

[a]	VLF-EM, 11 lines, 2 km long @ \$250/km	\$ 5,500.00
[b]	Geochemistry, 44 km, 25 metre spacing, 1,760 samples	
	Collection cost	5,000.00
	Assaying 1,760 @ \$9.00 for Gold, Silver, Arsenic, Mercury	15,840.00
	Supervision, Reports, etc.	<u>5,000.00</u>
	Sub-total	\$31,340.00
	15% contingencies	<u>7,701.00</u>
		<u>\$39,041.00</u>
	Say <u>\$39,000.00</u>	

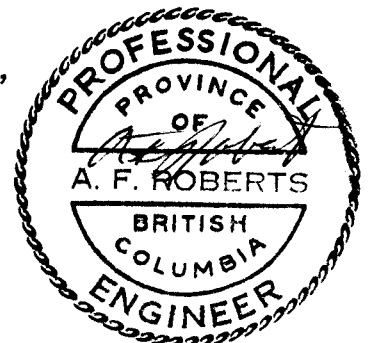
Phase II

With the location of good anomalies in Phase I, trenching and/or diamond drilling may cost in the order of \$100,000.00

Respectfully submitted,



A.F. Roberts, P. Eng.,  
February 6, 1981





CERTIFICATE

I, A.F. Roberts, of 812 Fairbrook Crescent, Richmond, British Columbia, do hereby certify that:

- 1] I am a graduate of the University of British Columbia, B.Ap.Sc., in Mining Engineering, 1951.
- 2] I am a Registered Professional Engineer of the Province of British Columbia; and am a Member of the Canadian Institute of Mining and Metallurgy.
- 3] I have practiced my profession since 1951, with Quatsino Copper-Gold Mines Ltd., Giant Mascot Mines Ltd., Cochenour-Willans Gold Mines Ltd., Mogul Mines Ltd., Kerr-Addison Gold Mines Ltd., Atlantic Coast Copper Corporation Ltd., Wasamac Mines Ltd., Brenda Mines Ltd., and T.C. Explorations Ltd.

Since January 1970, I have been an independent Consulting Engineer.

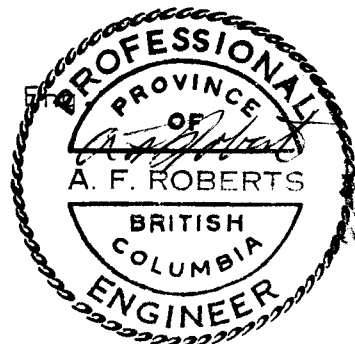
Previous to, and during University, I worked underground as a miner, and on several exploration-development projects.

- 4] The accompanying report is based entirely on my personal examination of the property during examinations of adjacent properties in the last three years, and on material referred to in the text.
- 5] I have no interest, direct or indirect, in the MB-2 Claim, nor have I any interest, direct or indirect, in any companies with whom Mr. A. Tosi may be associated. I have not, nor do I expect to receive any interest in the shares of any company, in its securities, or any company with which it may become associated.
- 6] I consent to the use of this report in, or in conjunction with, a prospectus, or a statement of material facts, relating to the raising of funds for this project.

DATED at Vancouver, British Columbia this sixth day of February, 1981.

*A. F. Roberts*

A.F. Roberts, P. Eng.



## STATEMENT OF COSTS

MB-2 CLAIM [20 UNITS]

RECORD NO. 854

GROUP MB-2, MB-4, MB-7, MB-8 [80 UNITS]

RECORD NOS. 854, 856, 859, 860

Labour, Room and Board	\$3,200.00	
Transportation	600.00	
Drafting and supplies	240.00	
E.M. Rental	<u>80.00</u>	
Total		\$ 4,120.00

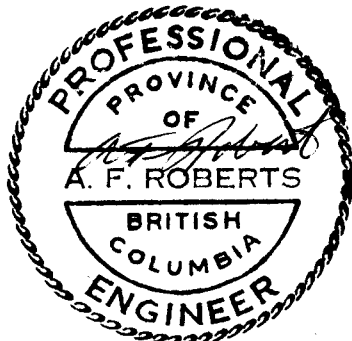
## Employees:

T. Higginson  
 B. Parker  
 B. Mann  
 K. Allicksuav  
 W. Davidson

[period of August 13-26, 1980]

The above data supplied by  
 Strato Geological Ltd.,  
 Vancouver, B.C.

Engineer's Report		<u>1,227.80</u>
Total		\$ <u><u>5,347.80</u></u>



*A. F. Roberts*  
 A.F. Roberts, P.Eng.,  
 February 6, 1981

APPENDIX A

SABRE MODEL 27, VLF-EM UNIT  
OPERATING INSTRUCTIONS  
FRASER FILTER CALCULATIONS

SABRE ELECTRONIC  
INSTRUMENTS LTD.

4245 EAST HASTINGS STREET

BURNABY, B.C. V5C 2J5

TELEPHONE: 291-1617

SABRE MODEL 27 VLF-EM RECEIVER

The model 27 EM unit was designed originally for a large Canadian mining company to overcome the deficiencies inherent in existing units.

The instrument is so stable and selective that completely reliable measurements can be made on distant stations without interference from nearby powerful transmitters. Stability and selectivity are especially important when making field-strength measurements, which are now being emphasized as a means of locating conductors.

This EM receiver is very compact, requires no earphones or loudspeakers and is housed in a heavy scotch saddle leather case. All of these features add up to make an ideal one-man EM unit of unexcelled electrical performance and mechanical ruggedness.

SPECIFICATIONS

Source of Primary Field - VLF radio stations (12 to 24 KHz.)

Number of Stations - 4, selected by switch; Cutler, Main on 17.8 KHz. and Seattle, Washington on 18.6 KBz. are standard, leaving 2 other stations that can be selected by the user.

Types of Measurement

1. Dip angle in degrees, read on a meter-type inclinometer with a range of  $\pm 60^{\circ}$  and an accuracy of  $\pm \frac{1}{2}^{\circ}$ .
2. Field strength, read on a meter and a precision digital dial with an accuracy exceeding 1%.
3. Out of phase component, read on the field strength meter as a residual reading when measuring the dip angle.

SABRE MODEL 27 VLF-EM RECEIVER - (Continued)

Dimensions and Weight

Approx. 9½" x 2½" x 8½"; Weight 5 lbs.

Batteries

8 alkaline penlite cells. The instrument will run continuously on 1 set of batteries for over 200 hours; So that in normal on-off use, the batteries will last all season. The battery condition under load is shown by pushing a button and reading voltage on the field strength meter.

### SELECTION OF STATIONS:

The stations are selected by the switch on the control panel, with the following abbreviations being used;

C = Cutler, Maine.	Frequency = 17.8 Khz.
S = Seattle, Wash.	Frequency = 18.6 Khz.
A = Annapolis, Md.	Frequency = 21.4 Khz.
H = Hawaii.	Frequency = 23.4 Khz.

The two most useful stations are Cutler and Seattle and these will be used almost exclusively. Note that Seattle is off the air for several hours on Thursdays for maintenance (between 10 A.M. and 2 P.M. usually). Cutler is off the air for the same length of time every Friday.

If Equipment fails to operate:

- (a) Check that station is transmitting (see above). If one station appears to be dead, check another one to see if it is operating normally.
- (b) Check batteries. If they read low or the reading begins to drop after the test button is held down for a few seconds, replace them. Note also that there are 8 batteries in the instrument and they cannot be individually checked by the test button. If the batteries have been in the unit for a long time it is possible that one is dead or very weak but that the total voltage indicated by the test button is near normal. It is cheap insurance to instal new batteries before starting a big survey.
- (c) If unit still fails to operate check that battery connectors are tight, then check wiring of battery connectors for breaks or damage.

## VLF-EM OPERATING INSTRUCTIONS

The equipment is operated in the usual way as follows:

1. With the instrument held horizontal in front of you, turn around until a null appears on the field strength meter. You should now be facing the station.
2. With the receiver still facing the station, lift it to the vertical position and rotate it slightly in the vertical plane to your right or left until the best null appears on the field strength meter. Record the angle on the inclinometer at which the null appears. This is the DIP ANGLE (Positive or negative).
3. Return the instrument to the horizontal plane and turn around until the field strength meter is at its maximum reading. Set this maximum reading at 100 on the meter and record the reading on the gain control dial. This is the Field Strength Reading.
4. Repeat steps 1, 2 and 3 at each station.
5. To test the batteries turn the power switch on and push the test button. The field strength meter should read above the red mark. Battery life is approximately 200 hours and if the instrument is turned off between readings, the batteries should last for an entire season.

NOTE: An alternative way of measuring field strength is as follows:

PREFERRED METHOD >  
Proceed as in step 3, setting the meter to 100. Now push the field strength button (marked FS) and the meter will read 50. (If it doesn't, adjust the gain control slightly). Leave the Gain Control setting where it is and take comparative Field Strength readings at each station by pressing the Field Strength button and recording the meter reading, which will vary from its Base Station Reading as you pass over conductive zones.

157415D  
OPERATING INSTRUCTIONS  
SABRE VLF-EM RECEIVER

INTRODUCTION:

The VLF-EM method utilizes electromagnetic field transmitted from radio stations in the 15-25 K Hz range. The signals are propagated with the magnetic component of the field being horizontal in undisturbed areas.

Conductivity contrasts in the earth create secondary fields, producing a vertical component and changes in the field strength or amplitude. These conductive areas may be located, and to a degree, evaluated by measuring the various parameters of this electromagnetic field.

The Sabre VLF-EM receiver is tuned to receive any 4 transmitter stations: usually C-Cutler Maine, S-Seattle, H-Hawaii and P-Panama.

The station used in the survey should be selected so that the direction of the signal is roughly perpendicular to the direction of the grid lines which, in turn, should be laid out perpendicular to the regional strike.

MEASUREMENTS:

The Sabre VLF-EM receiver can be used to measure the following characteristics of the VLF field.

- (a) Tilt angle of resultant field;
- (b) Field strength of (a) horizontal component of field  
(b) vertical component of field

Field Procedure

The following procedure should be followed to measure the dip angle of null and the field strength of the horizontal component of the VLF field.

Initial Field Strength Adjustment

Adjust the gain control to provide a suitable relative field strength measurement, as follows:-



(a) hold receiver in horizontal position (meter faces horizontal) and rotate in a horizontal plane until a null is indicated on the F.S. meter; rotate  $90^\circ$  in this horizontal plane (F.S. meter reads maximum)

(b) adjust gain control so that the F.S. meter reads 100

(c) record gain control setting (000 to 999). Close guard over gain control and do not readjust unless a major field strength occurs.

The above procedure should be carried out at the beginning of each day's survey and checked during the day.

#### Dip Angle Measurement Procedure

1. Hold receiver in horizontal position and rotate in the horizontal plane until a null is observed. This aligns receiver in the field and the operator should be facing southerly or easterly depending on transmitter location.

2. Bring receiver up to the vertical position (meter faces vertical) and rotate the receiver in the vertical plane perpendicular to the transmitter direction until a null or minimum reading is observed on the field strength meter.

3. Hold the receiver in this field strength null position and read the inclinometer in degrees. Record this dip angle of null along with sign (+ or -).

#### Horizontal Field Strength Measurement Procedure

1. Return receiver to the horizontal position.  
2. Reestablish null bearing in horizontal plane.  
3. Rotate receiver  $90^\circ$  in the horizontal plane.  
4. Depress ~~lamp~~<sup>F.S.</sup> push button switch and observe field strength meter reading for sufficient time to obtain an average F.S. meter reading. (depressed ~~lamp~~<sup>F.S.</sup> switch slows needle action and reduces meter reading by half. The reading will normally range around 50).

5. Record F.S. reading.

### Filtering Technique For VLF-EM Dip Angle Data

The standard profile method of presenting dip angle data may be difficult to interpret. A filtering technique, described by D.C. Fraser 1969 (Geophysics, V.34 No. 6, P. 958-967) enables the data to be presented on a plan map with conductive areas defined by contours.

The following explains the calculation:-

Line	Station	Null	Filter
8N	0 E	+ 3	
	1 E	+ 4	
	2 E	+ 4	
	3 E	+ 6	
	4 E	+ 7	
	5 E	+ 9	
	6 E	+ 12	
	7 E	+ 16	
	8 E	+ 2	
	9 E	- 4	
	11 E	- 6	
	12 E	- 1	
		+3+4= +7	+7-(+10)= -3
		+4+4= +8	+8-(+13)= -5
		+4+6= +10	+10-(+16)= -6
		+13	
		+16	
		+21	
		+28	
		+18	
		-2	
		-14	
		-16	
		-6-1= -7	-14-(-7)= -7

Fig. 1 is an example of a field sheet showing null angle reading, filtered reading and relative field strength. Fig. 2 shows the field sheet with filter card overlaid. The small window in the side of the card shows the four readings used to calculate the filtered reading, and an arrow showing that the filter reading is to be plotted between station 8E and 9E as indicated in fig. 1. The card is moved down the field sheet, one reading at a time as a guide while carrying out the filtering procedure. Throughout the survey care must be taken to ensure that the filtered data has the correct sign. The positive values only are plotted and contoured while for negative values, only the negative sign is plotted.

Crone suggests in instructions for the Radem VLF-EM, the use of N-S or E-W notation instead of (+ or -) signs, however for filtering a sign must be substituted.

The following convention may be used to ensure the correct sign of filtered data and provide a consistent crossover pattern when studying the profiled null angle data.

1. When taking a reading, always face southerly, on east-west lines, and always face easterly on north-south lines.

2. Record data on field sheets (top to bottom) as follows: on N-S lines record from south to north

: on E-W lines record from west to east

3. Plot and profile dip angle data on plan maps facing map north or map west.

The above convention will provide correct data regardless of the property location relative to the transmitter being used.

J.T. WALKER

MAY 17, 1974

VLF-PM SURVEY

0.2 V

PROPERTY G. 1. 1. 2. TRANS SCOTTIE PAGE 1  
 ( TATOR. INVER SCOTTIE DATE NOV 4/74

Line	Sta.	Null	Filter	f. S.
SW	0E	+3		50
(	1E	+4	-3	50
	2E	+4	-5	52
	3E	+6	-6	52
(	4E	+7	-8	52
	5E	+9	-12	52
	6E	+12	+3	52
	7E	+16	+30	60
	8E	+2	-32	65
	9E	-4	+11	62
	10E	-10	-7	50
	11E	-6	-13	48
	12E	-1	-14	48
	13E	+2	-5	50
	14E	+4	-1	50
(	15E	+4	+6	50
	16E	-4	+10	55
	17E	-2	+1	55
(	18E	0	-2	50
	19E	+1		
	20E	-1		

X OVER

X OVER

Fig. 1 Example of Field Sheet

024 VLF-EM SURVEY

PROPERTY G.I.E.S. TRANS SCOTTIE PAGE 1  
 OPERATOR INSTR. SOURCE DATE May 4/74

						Filter	F. S.
							50
						-3	50
FILTER CARD						-5	52
						-6	52
						-8	52
						-12	52
						+3	52
						+20	60
						+32	65
FILTERED READING		+ a	+ b		+16	+32	62
$(a+b) - (c+d)$		- c	- d		-4	+11	50
$(+16+2) - (-4+(-10)) =$					-10	-7	48
$(+18) - (-14) = +32$					-15	-14	48
						-6	50
						-1	50
						+5	55
						+10	55
						+1	52
						-2	50

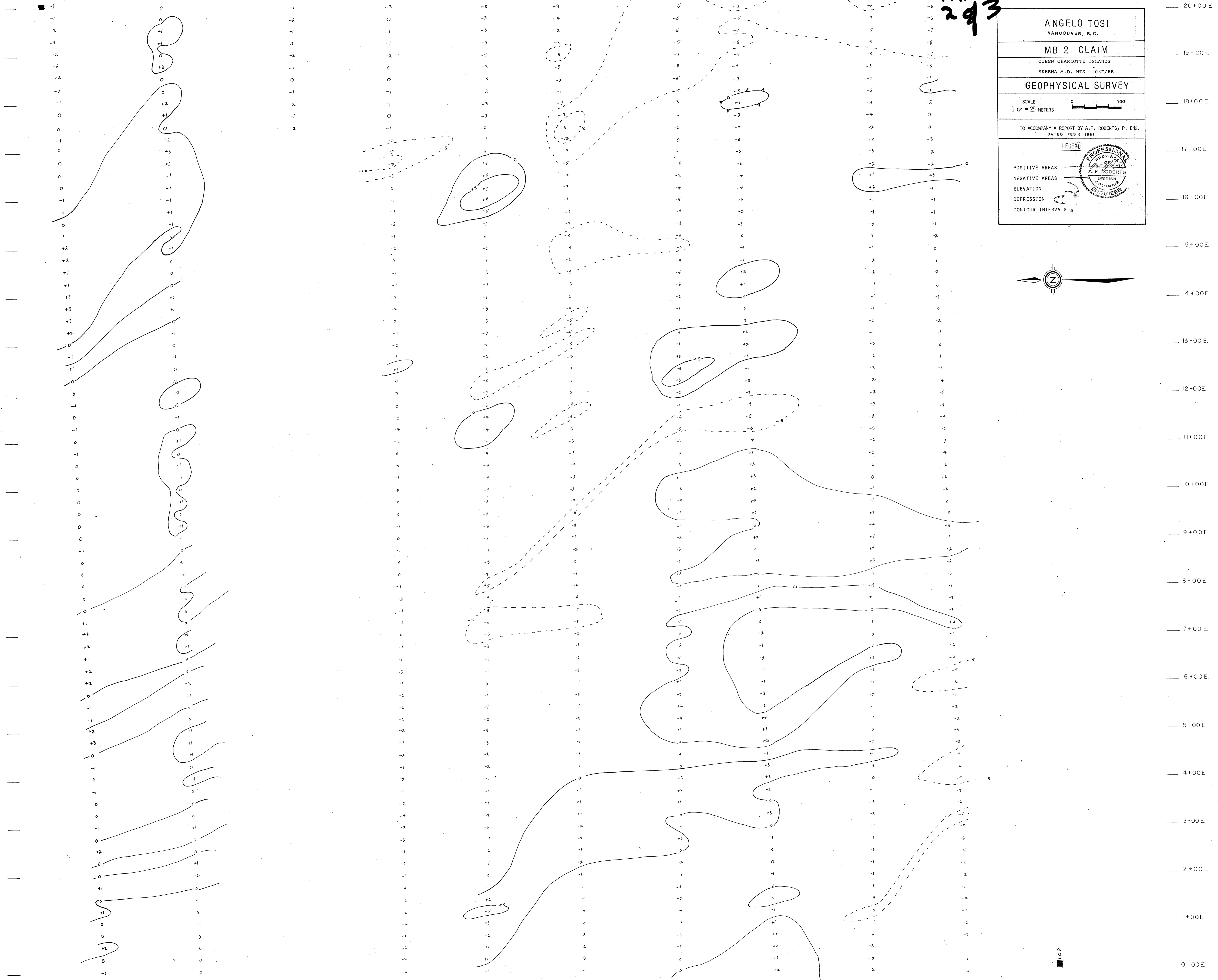
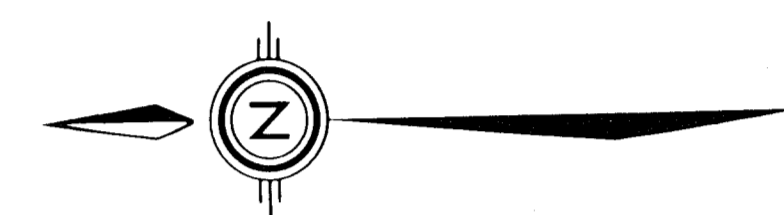
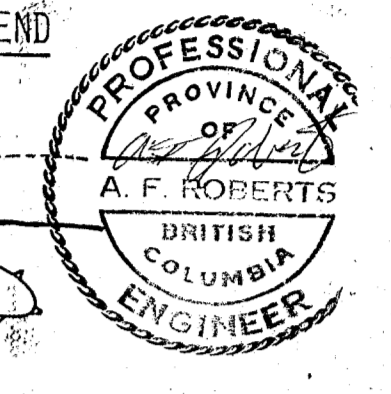
Fig. 2 Field Sheet with Filter Card Overlaid

20+00N. 18+00N. 16+00N. 14+00N. 12+00N. 10+00N. 8+00N. 6+00N. 4+00N. 2+00N. 0+00N.

8816  
PART  
293

PLATE A DIP ANGLE

ANGELO TOSI VANCOUVER, B.C.
MB 2 CLAIM QUEEN CHARLOTTE ISLANDS SKEENA M.D. NTS 103F/8E
GEOPHYSICAL SURVEY
SCALE 1 CM = 25 METERS
TO ACCOMPANY A REPORT BY A.F. ROBERTS, P. ENG. DATED FEB 8 1981
LEGEND
POSITIVE AREAS
NEGATIVE AREAS
ELEVATION
DEPRESSION
CONTOUR INTERVALS 5



8816

PLATE B TOTAL FIELD

ANGELO TOSI  
VANCOUVER, B.C.

MB 2 CLAIM  
QUEEN CHARLOTTE ISLANDS  
SKEENA M.D. NTS 103F/8E

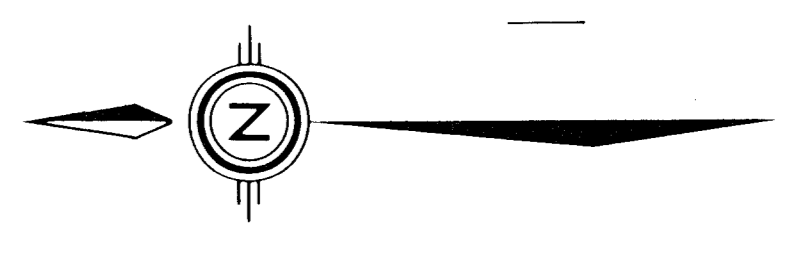
GEOPHYSICAL SURVEY

SCALE  
1 CM = 25 METERS

TO ACCOMPANY A REPORT BY A.F. ROBERTS, P. ENG.  
DATED FEB 8 1981

LEGEND

POSITIVE AREAS  
NEGATIVE AREAS  
ELEVATION  
DEPRESSION  
CONTOUR INTERVALS 5



20+00N. 18+00N. 16+00N. 14+00N. 12+00N. 10+00N. 8+00N. 6+00N. 4+00N. 2+00N. 0+00N.

20+00E. 19+00E. 18+00E. 17+00E. 16+00E. 15+00E. 14+00E. 13+00E. 12+00E. 11+00E. 10+00E. 9+00E. 8+00E. 7+00E. 6+00E. 5+00E. 4+00E. 3+00E. 2+00E. 1+00E. 0+00E.



PLATE C FRASER FILTER

ANGELO TOSI  
VANCOUVER, B.C.

MB 2 CLAIM  
QUEEN CHARLOTTE ISLANDS  
SKRENA M.D. NTS 103P/8E

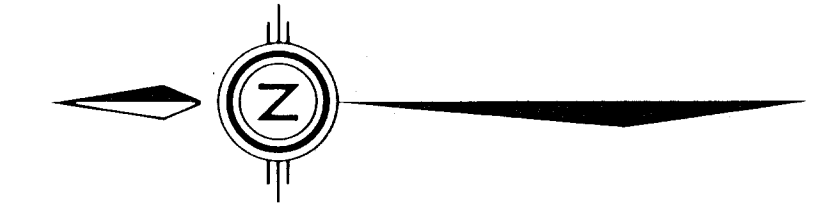
GEOPHYSICAL SURVEY

SCALE  
1 CM = 25 METERS

TO ACCOMPANY A REPORT BY A.F. ROBERTS, P. ENG.  
DATED FEB 6 1981

LEGEND

POSITIVE AREAS  
NEGATIVE AREAS  
ELEVATION  
DEPRESSION  
CONTOUR INTERVALS 5





PART  
8816 293

PLATE D CROSS SECTIONS

ANGELO TOSI  
VANCOUVER, B.C.

MB 2 CLAIM  
QUEEN CHARLOTTE ISLANDS  
SKEENA M.D. NTS 1037/8E

GEOPHYSICAL SURVEY

SCALE  
1 CM = 25 METERS

TO ACCOMPANY A REPORT BY A.F. ROBERTS, P. ENG.  
DATED FEB 6 1981

LEGEND

- FIELD STRENGTH
- DIP ANGLE
- FRASER FILTER

