81-#1006 - 10043

GEOPHYSICAL REPORT

ON A

MAGNETIC AND ELECTROMAGNETIC SURVEY

COPPER AND LORING CREEK CLAIM GROUPS

TELKWA AREA, OMINECA M.D., B.C.

COPPER CLAIMS 2 AND 4 OLD TOM CLAIMS 1 - 2 HANKIN CLAIMS 1 - 16	: 1 km E of Crater Lake and 32 km SSE of Smithers, B.C.
	: 54° 127° NE
	: N.T.S. 93L/11E
WRITTEN FOR	: Mecca Minerals Ltd. 1102-207 West Hastings Street Vancouver, B.C., V6B 1H7
BY	: Customer Mining Services Ltd. 1102-207 West Hastings Street Vancouver, B.C., V6B 1H7
CONSULTANT	: Toru Kikuchi, Ph.D., P.Eng. Consulting Geologist, 1374 Park Drive, Vancouver, B.C., Canada, V6P 2K6
DATE	: November 30th, 1981

CUSTOMER MINING SERVICES LTD.
VANCOUVER, B.C.

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SUMMARY

During the mid-summer of 1981, a combined magnetometer and electromagnetic survey was carried out on the Copper Claims. The legal post of these claims is located 1 km east of Crater Lake and about 32 km SSE of Smithers. Access is most easily gained by helicopter. The terrain consists of moderate to steep slopes covered with trees, scrub bushes, and talus. The purpose of the surveys was to extend the known zones of copper and silver mineralization as well as mapping the structure and rock-types.

Previous work on the property consists of a rock sampling program, magnetometer and dip needle work as well as diamond drilling.

The property is mainly underlain by Jurassic and Lower Cretaceous Hazelton Group volcanics. The rock types are green agglomerate, green andesite, red andesite, and basalts. Intruding into these rocks are acidic dykes and sills. Several prospects of copper and silver mineralization occur on the property.

The magnetometer and dip needle readings were taken every 30 meters on 30-meter separated east-west lines. The readings were then diurnally corrected, statistically analyzed, plotted and contoured.

CONCLUSIONS

1. As in past magnetic surveys done in the area the 1981 work has revealed several small lineal magnetic highs

and lows that could be reflecting sulphide mineralization containing magnetite.

2. The 1981 survey revealed the 3 different phases or flows of the basalts observed in the 1980 survey: noisy magnetic high, noisy magnetic low, and quiet magnetic background.

3. The red andesite and green agglomerate were reflected by a relatively quiet magnetic low in the 1980 survey and continued to do so in the extended 1981 survey.

RECOMMENDATIONS

No recommendations are made at this time as work discussed in this report is part of a multi-phased work-program outlined by Kikuchi (1981). Additions or alterations to those 1981 recommendations will have to await the completion of more of the proposed projects.

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ON A

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TELKWA AREA, OMINECA M.D., B.C.

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey method, data compilation and interpretation of results from Magnetometer and V.L.F. EM surveys carried out over the Loring Creek and Crater Lake claims located near Telkwa, B.C. All work carried out on the properties and discussed in this report was completed between July 15th to August 15th, 1981 by Customer Mining Services Ltd. of Vancouver, B.C. The work program was under the direction of James Parker, who was following those recommendations outlined by Dr. Kikuchi (1981). The Magnetometer and Em surveys employed approximately 24 km of survey line.

The purpose of the Magnetometer and V.L.F. EM surveys was to locate areas of copper sulphide mineralization and to aid in the geological knowledge of the property through the mapping of lithology and structure.

The survey covered two areas, the first, the smallest of the two, was an extension of the 1980 Magnetometer survey (outlined

by Marks 1980) south of Crater Lake. Only Magnetometer data was collected from this area. Map "Copper-2" contains the data of this survey. The second survey area covered the "Slump Block" and southern portion of Loring Creek. Magnetometer data was collected throughout this area, while EM readings were taken at two smaller selected areas. Maps "Copper-1" and "Copper" 3-4 contain the data from these surveys.

PROPERTY AND OWNERSHIP

The Loring Creek Group includes the following adjoining Mineral claims:

Old Tom #1	#41874
Old Tom #2	#41875
Hankin 1-16	119445-119460

The Crater Lake Group includes the following adjoining Mineral claims:

Copper 1	8 Units	#1338
Copper 2	8 Units	#1339
Copper 3	8 Units	#1340
Copper 4	8 Units	#1341

The Copper 2 and 4 claims overlap with several of the Hankin 1-16 claims and Old Tom 1-2. For assessment purposes the Loring Creek group and Copper 2 and 4 claims have been grouped together.

All claims listed above are owned 100% by Mecca Minerals Limited of Vancouver, British Columbia.

LOCATION AND ACCESS

The Crater Lake Group is located at Crater Lake, approximately 20 km. south of Telkwa, British Columbia. Crater Lake, a small alpine lake, lies between Loring and Webster Creeks. The property is situated at latitude 54° 31' N. and 127° o7' W. longitude. The legal post for the Copper claims is one km. south of Crater Lake.

The Loring Creek Group overlap with the east half of the Copper 2 and 4 claims. The claims lie along the Loring Creek Valley, from the Loring Creek headwaters to the south, to where it merges with Goathorn Creek several kilometers to the south. Access to the Crater Lake claims is easiest by helicopter, notwithstanding a logging road and 4 x 4 access trail which comes to within 2 km. (walking distance) of the Loring Creek group .

TOPOGRAPHY

The Crater Lake Group covers a northerly trending mountain spur that is bounded to the west by Webster Creek and to the east by Loring Creek. Elevations vary from 1,250 to 2,075 meters above M.S.L. Cliffs bound the claims on the east, west and south sides, while Crater Lake, a tarn, lies to the north. The Loring Creek Group lies along the floor and walls of Loring Creek valley. Elevations range from 1128 meters on the north to 1,676 meters on the south, or headwater portion of Loring Creek.

Vegetation is almost non-existent south of Crater Lake and the southern, or headwater portion of Loring Creek. However, north of Crater Lake and along Loring Creek, small trees and bushes are thick and numerous.

HISTORY OF PREVIOUS WORK

Copper was discovered in the general location of the Copper and Loring Creek claim groups in 1903. Intermittent exploration has been carried out in the area ever since. Several old adit tunnels can be found along Loring Creek. In 1968-69 the Crater Lake and Loring Creek area was explored geochemically and geophysically by Falconbridge Nickel Mines. They also conducted a drilling program at the south end of Loring Creek, at the geological structure known in the literature as the "Slump Block".

In 1973 Maharaja Minerals of Vancouver acquired the properties and carried out their own geological and geochemical program. They completed diamond drill programs on the Old Tom claims in 1973 and 1978. Drill programs were carried out at Crater Lake in 1975 and 1978.

In 1980 Mecca Minerals of Vancouver conducted a Magnetometer and Induced Polarization survey over part of the Copper claims. See Map at end of report for location of the survey areas. The magnetometer survey covered approximately 18 km. of line on or around Crater Lake's cirque. The Induced Polarization survey totalled 4 km. and was centered on the west side of the

cirque, the approximate location of the Chimney showings and the location of past Crater Lake drill programs.

GEOLOGY

Introduction:

D.H. Brown, in his report for the "Old Tom, Crater, Webster, Dominion, Lava, Marmot and Dome" claims, assessment report #1810, describes the geology of the area as follows:

> "The Telkwa Range is dominantly underlain by volcanic rocks of the Hazelton Group which consist of an apparently conformable succession of interbedded sedimentary and volcanic rocks ranging in age from Pre-Middle Jurassic to Lower Cretaceous. The Hazelton Group is overlain by sediments of the Bowser formation of Lower Cretaceous age which outcrop in low parts of the valleys and in folds in the Hazelton volcanics.
>
> Intruding the Hazelton rocks in the central part of the Telkwa Range is a relatively large granodiorite or quartz monzonitic stock. Lesser diorite stocks and sills and dykes of granodiorite, felsite and rhyolite quartz porphyry cut the Hazelton rocks in diverse directions.
>
> Structure is to a large extent controlled by intrusion of the granodiorite plug and bedding generally dips outward from the granodiorite. Block faults of variable displacement are common and in Loring Creek area most have their north side displaced downward. Vertical movement has been more important than horizontal movement and most of the faults are hinged. Occasional local flat-lying similar folds are perhaps a result of low angle faulting and bedding plane slippage. Alteration and mineralization associated with the central granodiorite stock are related to a hornfelsed zone at the periphery of the stock and with porphyritic phases within the stock. The alteration within the hornfelsed zone is chiefly due to pyrite and magnetite mineralization. Within the porphyritic phases of the granodiorite, alteration is related to fracture controlled quartz stockworks bearing moderate pyrite and minor chalcopyrite and molybdenite.

> Away from the central stock where small diorite stocks and sills intrude the volcanics, the mineralization is pyrite, chalcopyrite and minor bornite associated with epidote and minor chlorite. Within the volcanic series there are two types of mineral occurrences related to volcanic tuffs and pyroclastics. One is a pyrite-chalcopyrite-tetrahedrite assemblage associated with strong quartz and epidote alteration within bedded tuffs. The other is a bornite-minor chalcopyrite-specularite assemblage associated with skarnified pyroclastic beds and exhibiting strong epidote-garnet alteration".

In general, sulphide mineralization bearing copper, silver and molybdenum from the area has been observed in lenses, dykes, sills, gneissic volcaniclastic stratiform slowings, stratiform andesitic and basaltic clasts, shear zones, holding veins and veinlets, fault zone fillings and as disseminated sulphides in volcaniclastic stock works.

Crater Lake Area

The following is quoted from Taylor's (1980) report on the Copper 1-4 claims:

> "Structurally the rocks form a broad anticline striking north-northwest and plunging northerly, with its axis passing through Crater Lake. Faults and shear zones are prominent in the cliffs above the lake and Webster Creek. Block faults with variable displacements are common, north side down for the most part, and with little horizontal displacement.
>
> "Metallic minerals occur in narrow veins in the traverse faults and shear zones, and surface exposures show secondary enrichment. The vein deposits exhibit hematite, bornite, malachite, azurite, chalcopyrite, chalcocite and tetrahedrite. The best exposure of this type is known as the 'chimney' zone". (The 'chimney' zone is found on the western side of the Crater Lake Cirque).
>
> "Samples taken along this "chimney", and reported by McAndrew (1974) ranges from 0.76% to 15.6% copper, and from 0.15 oz/ton to 12.4 oz/ton silver."

> "Copper staining occurs on bands in the cirque walls south west of the tarn. McAndrew (1974) examined two of these showings. The lower one he refers to as the 'chalcocite mineral horizon'. The chalcocite is very finely disseminated in a band of green andesite and has been designated the C2 horizon by the owners."

Loring Creek Area (Slump Block)

The following, from Dr. Kikuchi (1981), summarizes the geology of the "Slump Block", the geological structure which is the approximately center of the Magnetometer and V.L. F. EM-16 survey conducted at Loring Creek.

'McAndrew (1974) in describing the Slump Block has said:

> "The exposed portion of the Slump Block is a roughly rectangular mass of gently dipping volcanics approximately 60 meters wide by 150 meters long. Whether the Slump Block is a gravitational slump block, a fault block or due to differential erosion remains to be determined."

For reference purposes the term "Slump Block" was adopted to describe this zone of mineralization. Aside from the chip sampling of the cliff face at the Slump Block no data has been accumulated to date to answer the above questions regarding the nature of this Slump Block. Obviously this is an area that requires future drilling programs to answer these questions."

" A major amydaloidal rhyolite dyke cuts the Hazelton Volcanics in the area of the Slump Block. There is a gossan zone 100 meters east of the Slump Block which contains significant amounts of epidote, iron oxide, pyrite, magnetite, minor chalcopyrite and malachite. It was drilled by Falconbridge and averaged 0.3% copper. A large granodorite intrusive plug

exists north of the Slump Block. It was mapped by Falconbridge and was known to contain copper, silver and molybdenum. It was never drilled, and the access road, built by Maharaja Minerals ends just before reaching this area." See map C-81 for geology.

INSTRUMENTATION AND THEORY

The magnetometer survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer, manufactured by the Sabra Electronic Instruments Ltd. of Burnaby, B.C. This instrument uses a digital dial read-out with a range of 100,000 gammas and a reading accuracy of 10 gammas. Specifications of the magnetometer instrument can be found in greater detail in Appendix I.

Magnetite and pyrrhotite are the only commonly occurring strongly magnetic minerals. Therefore, magnetic surveys can be used to locate the existence of these two minerals. Different rock types have different background amounts of magnetite or pyrrhotite or both, thus magnetic data can also aid in mapping geologic lithology and structure.

The Electromagnetic Survey was carried out using a Phoenix V.L.F. - 22 Electromagnetic Unit. The primary field source was from Cutler Maine transmitting station which has a frequency of 17.8 kH_2. Vertical component and tilt angle measurements were taken at each station in the survey. Specifications of the Electromagnetic instrument used can be found in greater detail in Appendix I.

Vertical component measurements are taken in percent, while tilt angle measurements are taken in degrees positive or negative.

SURVEY PROCEDURE

A grid was established on the properties with stations every 30 meters. This grid system was tied into the one established in the 1980 survey of the Copper claims. The 1980 grid used east-west lines which were tied into the center claim post of the Copper 1-4 claims. (Please refer to Map CL-81). Stations were marked with small rock cairns or flagging attached to trees when available. Both the Magnetometer and EM readings were then taken at these stations. The diurnal shift was monitored in the field by the closed loop method using a series of base stations.

Two independent surveys were completed. The first, 1 km. south of the center claim post for the Copper 1-4 claims, was a short extension of the 1980 survey area. Only magnetometer readings were taken in this area. Refer to Map Copper-2 for the data contours of this survey. The second survey area, not a direct extension of the 1980 survey, but tied into the existing grid-system, was completed at the south end of Loring Creek. The survey centered on the geological structure known as the "Slump Block". Magnetometer readings were taken at each station established (please refer to Map Copper-1) while V.L.F. EM readings were taken at selected locations, particularly across the "Slump Block".

COMPILATION OF DATA

The magnetometer data from the two survey areas are plotted on separate Maps at a scale of 1 cm. = 10 meters. To simplify matters, 55,000 gammas has been subtracted from all values on the Copper-2 Map and 54,000 gammas from values on the Copper 1 Map. Each map (set of data) was considered as a separate survey and was treated accordingly. The magnetic values were grouped together in equal arithmatic intervals. The cumulative frequency for each established interval was then calculated and plotted to obtain a cumulative frequency graph. The statistical parameters taken from each graph and used for map construction are as follows:

Map Copper-1 (Slump Block area)

4200 gammas Anomalous High Threshold Value
3000 gammas Sub-Anomalous High Threshold Value
2400 gammas Mean Background Value
1800 gammas Sub-Anomalous Low Threshold Value
1200 gammas Anomalous Low Threshold Value

Map Copper-2 (Crater Lake South)

2350 gammas Anomalous High Threshold Value
2050 gammas Sub-Anomalous High Threshold Value
1750 gammas Mean Background Value
1450 gammas Sub-Anomalous Low Threshold Value
1150 gammas Anomalous Low Threshold Value

V.L.F. EM-22 data - tilt angles and vertical component measurements - were taken at each station used in the EM survey. All data was then plotted on Maps Copper 3 and 4, with vertical component graphs of each grid line being drawn in on Map Copper 3 and the tilt angle graphs on Map Copper 4. Vertical component readings were plotted so that 1% - 1 cm., while tilt angle readings were plotted such that 1 degree $\pm$ = 1 cm. Areas of strong tilt angle crossovers and vertical component highs were then marked in on the maps.

DISCUSSION OF RESULTS

Magnetometer Survey

South Crater Lake Area:

Anomalous high was located between stations 5W-39S to 3W-39S and stations 3W-38S to 1W-38S. A large subanomalous low was found in the northern portion of the survey area, extending into a low outlined by the 1980 magnetometer survey.

Loring Creek (Slump Block) Area:

Numberous small anomalous highs and lows were located along Loring Creek. This was to be expected, as McAndrew (1974) had discovered numerous magnetite deposits along the Creek bed. Several larger anomalous highs and lows were found, particularly near the Slump Block. This too was to be expected, as mineralization in this area has been found. However, a large anomalous high zone was located west of the Slump Block,

extending west along the edge of the present survey grid. This zone could be an interesting target for any future trenching or geophysical programs in the area.

V.L.F. EM-16 Survey

Although extremely short in length, the EM survey outlines one significant area of vertical component highs that correspond with tilt angle peaks. This area extends from 62S to 61S down through lines 30E to 34E. This area also corresponds to a moderately large sub-anomalous zone outlined in the magnetometer survey and centered at 61S-33E.

November 30, 1981

James A. Rutherford,
Geologist,
Customer Mining Services Ltd.

SELECTED BIBLIOGRAPHY

Brown, D.H., Assessment Reports, Falconbridge Nickel Mines Ltd. 1969.

McAndrew, J.M., 1973-74 Field Exploration Report, Maharaja Minerals Ltd. (N.P.L.) 1974 and Memorandum, 1976.

Taylor, B., Report on The Copper 1 - 4 Mineral Claims, Omineca M.D., British Columbia, January 31, 1980.

Mark, D.G., Geophysical Report on a Magnetic Survey, Copper Claim Group, Crater Lake Area, Omineca M.D., B.C., December 11, 1980.

Kikuchi, T., Report and Recommendations on The Crater Lake Group, Cliffs Above Webster Creek, Omineca M.D., B.C., 1981.

Kikuchi, T., Report and Recommendations on The Loring Creek Group, Loring Creek Valley, Omineca M.D., B.C., 1981.

CERTIFICATE

I, JAMES A. RUTHERFORD, of the City of Vancouver, British Columbia, the author of this report, hereby certify that:-

1. I am President and Manager of Customer Mining Services Limited, with offices at 1102-207 West Hastings Street, Vancouver, B.C., V6B 1H7.

2. I hold a B.Sc. degree (major geology) from the University of Alberta - 1955.

3. I hold an M.B.A. degree (major business administration) from the University of Western Ontario - 1957.

4. I am a Fellow of the Geological Association of Canada.

5. I am not a registered Engineer in the Province of British Columbia or of any province.

6. I have worked professionally and as a businessman in the mining and/or oil business for over 30 years.

7. As at date I have direct and indirect interest through Customer Mining Services Limited in the securities of Mecca Minerals constituting a position of "shareholder of control".

8. This report is based on personal field examination and examination of the data obtained as a result of the survey.

DATED at Vancouver, British Columbia, this 30th day of November, 1981.

James A. Rutherford
B.Sc., M.B.A., FGAC, AFCGS.

STATEMENT OF QUALIFICATIONS

I, Toru Kikuchi of the City of Vancouver, B.C., hereby certify that:-

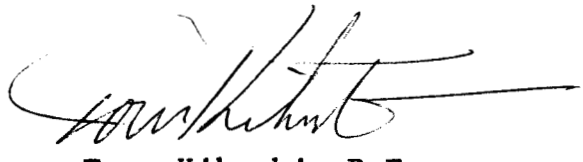
1. I am a graduate of the Hokkaido University, Japan (B.Sc., Geology and Minerology, 1946) and of the Tohoku University, Japan (Ph.D., Economic Geology, 1963).

2. I am a "GIJUTSUSHI" (a qualification for a consulting engineer authorized by the Japanese Government) and a member in good standing of the Association of Professional Engineers of the Province of British Columbia.

3. I have been practising my profession continuously for the past thirty-five years, and am an independent Consulting Geologist with my office at 1374 Park Drive, Vancouver, B.C. V6P 2K6.

4. I have no direct or indirect interest in the property, nor do I anticipate receiving any such interest, nor in the securities of Mecca Minerals Limited.

5. I inspected a portion of the work while the program was being carried out. I have read this report and personally endorse the facts and concepts contained in the text.



Toru Kikuchi, P.Eng.

Vancouver, B.C.
November 30, 1981

STATEMENT OF QUALIFICATIONS

I, James D.A. Parker of the Municipality of Surrey, B.C., hereby certify that:-

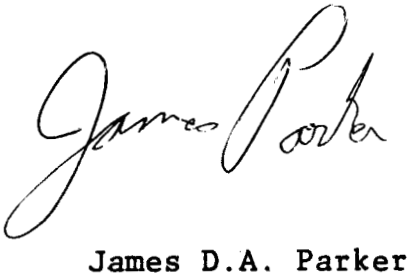
1. I am a University Student employed part time by Customer Mining Services Limited, with offices at 1102-207 West Hastings Street, Vancouver, B.C., V6B 1H7. I reside at 9469 - 127 A Street, Surrey, B.C., V3P 5X8.

2. I am working towards a B.A.degree (major: Psychology and English) at Simon Fraser University, and am in my last semester.

3. I have worked two field seasons on Smithers area properties under the direction of James A. Rutherford in the capacity of field manager.

4. As at date I have direct or indirect interest in the securities of Mecca Minerals Limited.

DATED at Vancouver, British Columbia, this 30th day of November 1981.



James D.A. Parker

AFFIDAVIT OF EXPENSES

The magnetic and electromagnetic survey carried out on the Copper Claims (grouped with the Old Tom and Hankin claims), Crater Lake Area, Omineca M.D., B. C. July 15 to August 15, 1981 was done to the value of the following:

FIELD:	
5-man crew, 31 days at $500/day	$ 15,500.00
Supervision	1,200.00
Instrument(s) rental	610.00
Board and room	4,650.00
Survey supplies	200.00
Mobilization and demobilization	1,500.00
	$ 23,660.00
REPORT:	
Drafting and printing (binding)	$ 600.00
Report typing and compilation	350.00
	$ 950.00
Grand Total	$ 24,610.00

Respectfully submitted,
Mecca Minerals Ltd.,

James A. Rutherford

James A. Rutherford
President

November 30, 1981

APPENDIX I

geophysical industrial instruments and services

SABRE MODEL 22 PORTABLE MAGNETOMETER

The model 22 magnetometer is an accurate and rugged instrument that is simple to operate yet fulfills all the requirements of a first class geophysical exploration instrument.

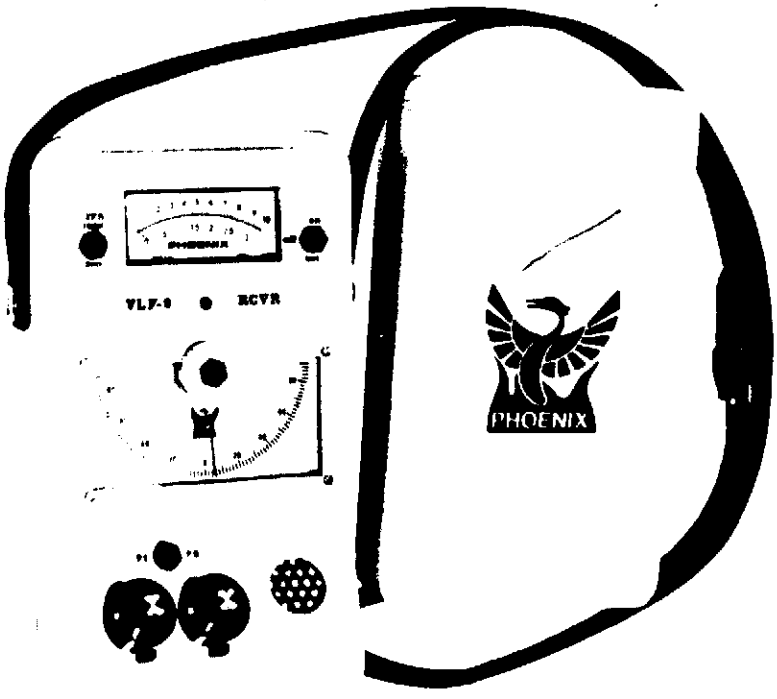
Specifications

Principle of Operation:	Neutralized fluxgate.
Type of Readout:	Meter to indicate null and precision digital dial to indicate value of earth's vertical field directly in gammas.
Range:	0 to 100,000 gammas (without the use of complicated latitude controls or range switches)
Sensitivity:	20 gammas per division on digital dial. Constant and linear throughout the entire range.
Operating Temperature Range:	$-30^{\circ}C$ to $+85^{\circ}C$.
Temperature Drift:	Less than 2 gammas per degree throughout the entire operating range.
Fluxgate Suspension System:	Oil-damped gimbal, self-levelling.
Dimensions:	Magnetometer:9 inches high x 7-1/4 in. wide x 4 in. deep. Battery Case:4-3/4 in. x 4-3/4 in. x 1-1/2 in.
Weight:	Magnetometer 4 lbs. Battery Case 2 lbs. (complete with batteries)
Field Cases:	Magnetometer and battery case are both housed in heavy saddle leather cases with convenient carrying straps.
Batteries:	4 Eveready No. 246 transistor batteries (9 volt), with service life of approx. 2 months depending on use.

VLF-2

Electromagnetic Unit

- Lightweight, low battery drain, rugged, simple to operate
- Two independent channels
- Each channel may select any station between 14.0 and 29.9 kHz
- Single crystal used for all frequencies
- Locking clinometer provides tilt-angle memory
- Superheterodyne detection and digital filtering provide extremely high selectivity and noise rejection



Military and time standard VLF transmitters are distributed over the world. These stations are used for geophysical EM surveying thus eliminating the need for a local transmitter and permitting one-man operation.

To ensure that a station excites the prospective conductor, two stations at approximately right angles are used during a survey (see data on back).

The choice of 160 frequencies in the range 14.0 to 29.9 kHz permits the use of a local EM transmitter when no suitable regular VLF station is available.

PHOENIX

PHOENIX GEOPHYSICS LIMITED

Geophysical Consulting and Contracting, Instrument Manufacture, Sale and Lease.

Head Office: 200 Yorkland Blvd. Willowdale, Ont., Canada M2J 1R5 Tel: (416) 493-6350
310 - 885 Dunsmuir St. Vancouver, B.C., Canada V6C 1N5. Tel: (604 684-2285
4690 Ironton St. Denver, Colorado, U.S.A. 80239. Tel: (303) 373-0332

Specifications

Parameters Measured	:	Orientation and magnitude of the major and minor axes of the ellipse of polarization.
Frequency Selection, Front Panel	:	Dual channel, front panel selectable (F1 or F2) each with independent precision 10-turn dial gain control.
Frequency Selection, Internal	:	F1 and F2 can be selected by internal switches within the range 14.0 to 29.9 kHz in 100 Hz increments.
Detection And Filtering	:	Superheterodyne detection and digital filtering provide a much narrower bandwidth and thus greater rejection of interfering stations and 60 cycle noise than conventional receivers.
Meter Display	:	2 ranges: 0 to 300 or 0 to 1000. Background is typically set at 100. Meter is also used as dip angle null indicator and battery test.
Audio	:	Crystal speaker. 2500 Hz used as null indicator.
Clinometer	:	±90°, +0.5° resolution. Normal locking, push button release.
Battery	:	One standard 9v transistor radio battery. Average life expectancy - 1 to 3 months (battery drain is 3 mA)
Temperature Range	:	-40° to + 60° C.
Dimensions	:	8 x 22 x 14 cm (3 x 9 x 6 inches).
Weight	:	850 grams (1.9 pounds).

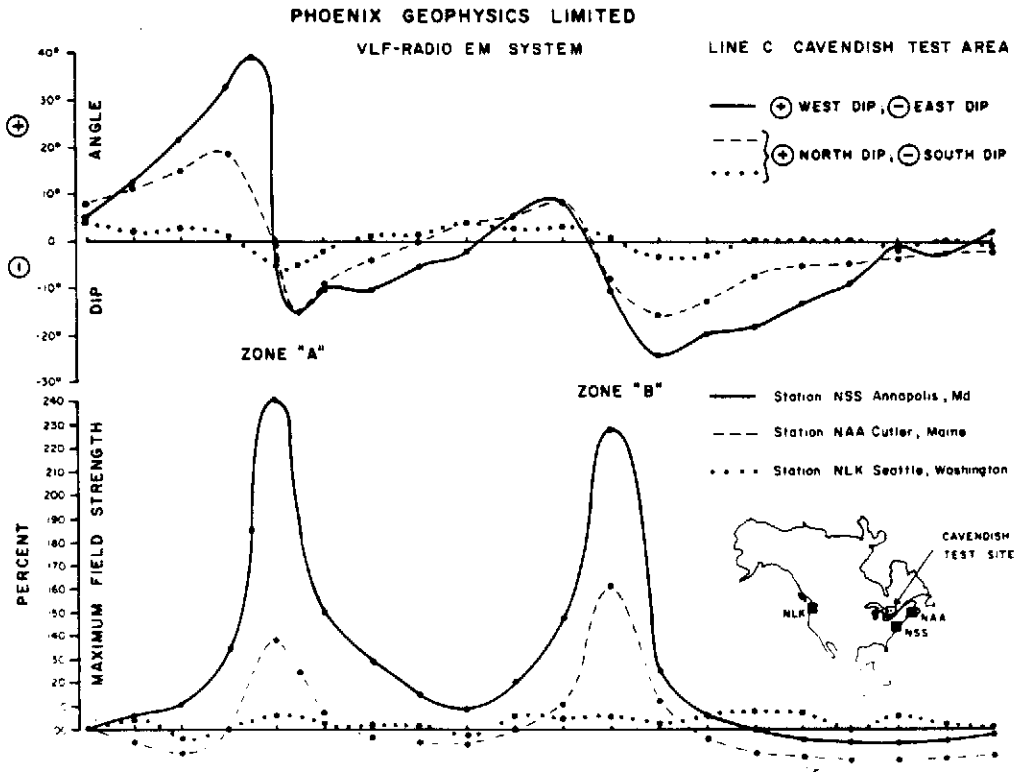
All of the established stations may be selected, or alternatively, a local VLF transmitter may be used which transmits at any frequency in the range 14.0 to 29.9 kHz.

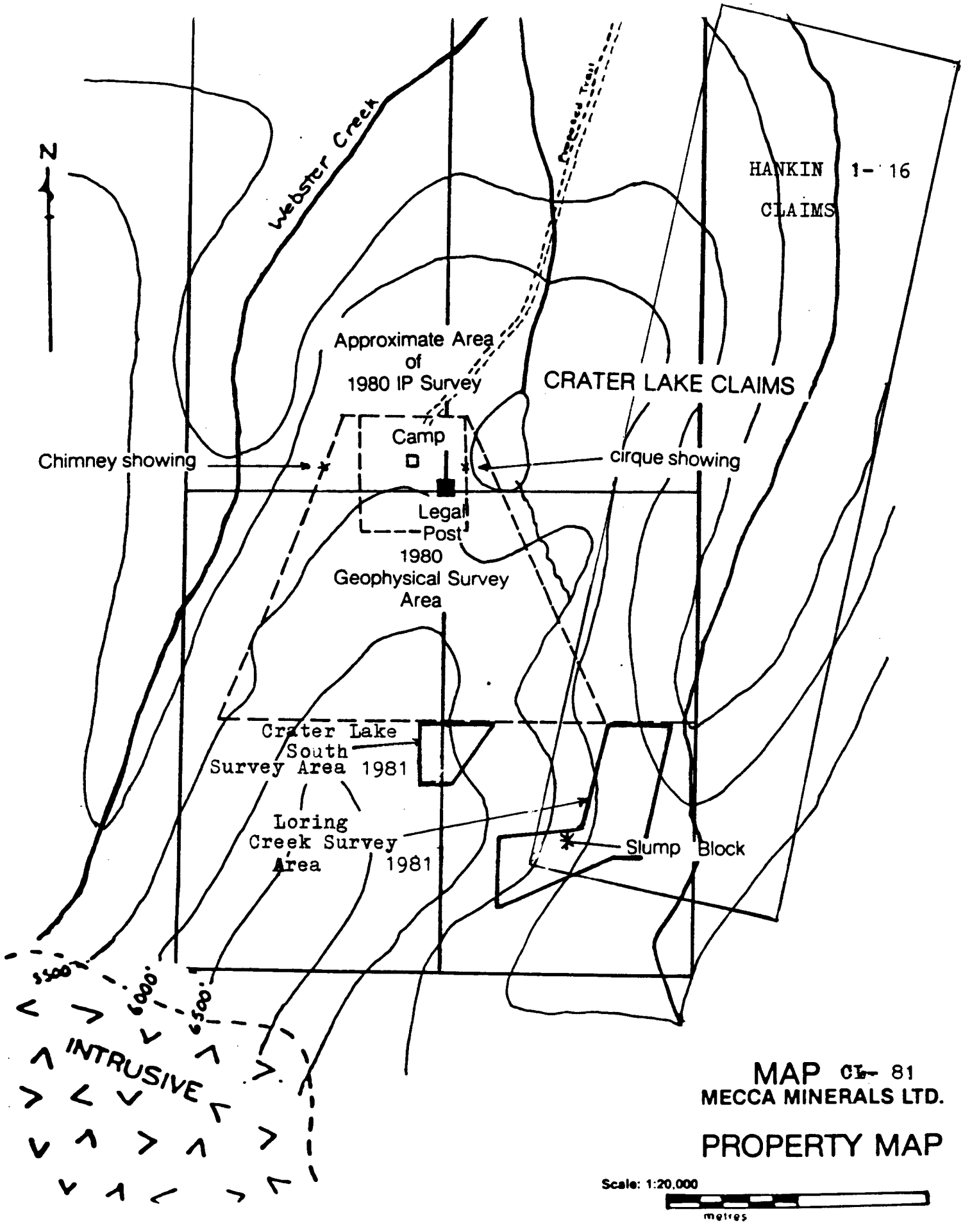
VLF Station	Frequency (kHz)
Bordeaux, France	15.1
Odessa (Black Sea)	15.6
Rugby, U.K.	16.0
Moscow, U.S.S.R.	17.1
Yosamai, Japan	17.4
Hegaland, Norway	17.6
Cutler, Maine	17.8
Seattle, Washington	18.6
Malabar, Java	19.0
Oxford, U.K.	19.6
Paris, France	20.7
Annapolis, Maryland	21.4
Northwest Cape, Australia	22.3
Lauluolei, Hawaii	23.4
Buenos Aires, Argentina	23.6
Rome, Italy	27.2

Field Data

The results below illustrate the need for using two orthogonal stations when the strike of the prospective conductor is not well-known. The dip angle and amplitude data measured using station NLK in Seattle, Washington, show only a very weak anomaly associated with the two conductive sulphide zones at Cavendish, Ontario.

The results obtained using Cutler, Maine reveal a more prominent anomaly, but the best response was obtained using Annapolis, Maryland since the station lies almost due south and the transmitted electromagnetic field is thus maximum-coupled with the North-South trending conductors.





MAP CL- 81
MECCA MINERALS LTD.

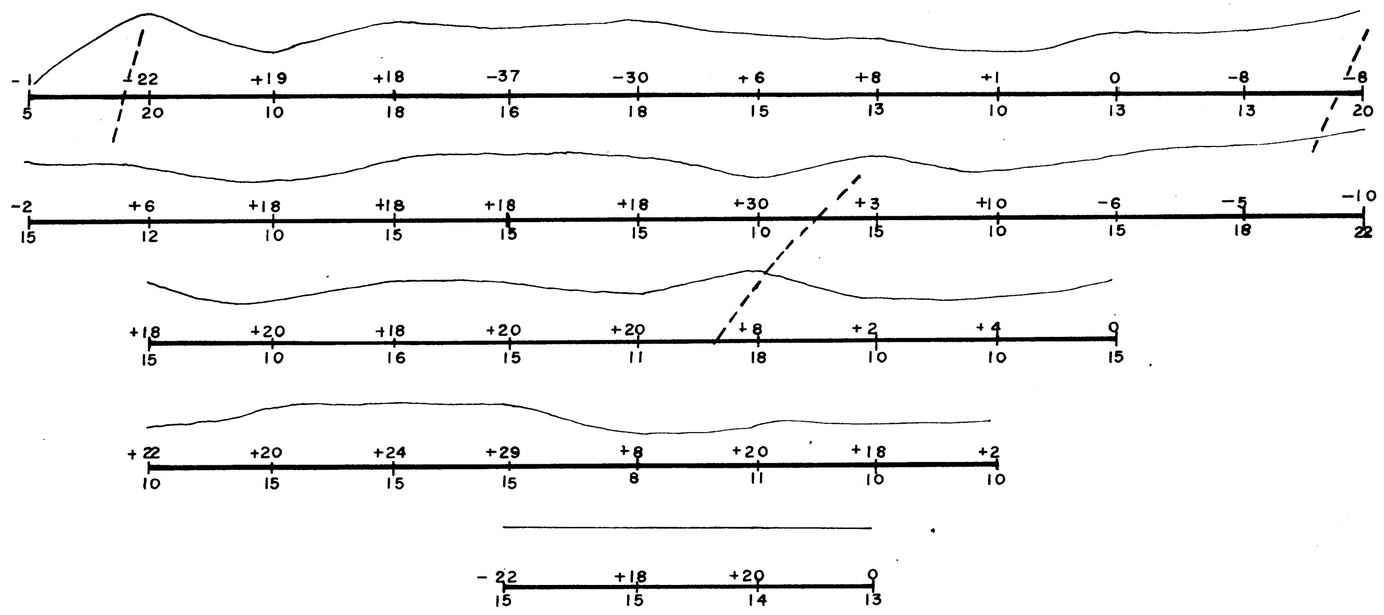
PROPERTY MAP

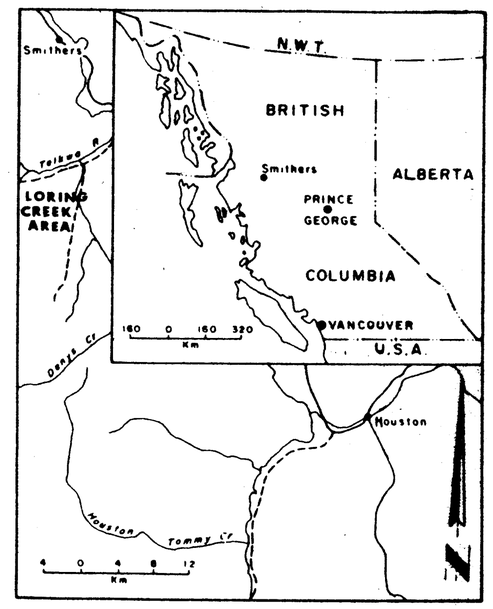
Scale: 1:20,000

metres

68S 67S 66S 65S 64S 63S 62S 61S 60S 59S 58S 57S 56S 55S 54S 53S 52S

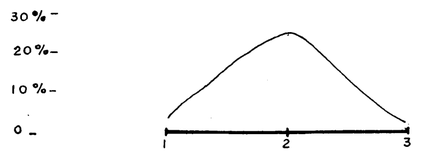
29E
30E
31E
32E
33E
34E
35E
36E
37E
38E
39E
40E
41E
42E





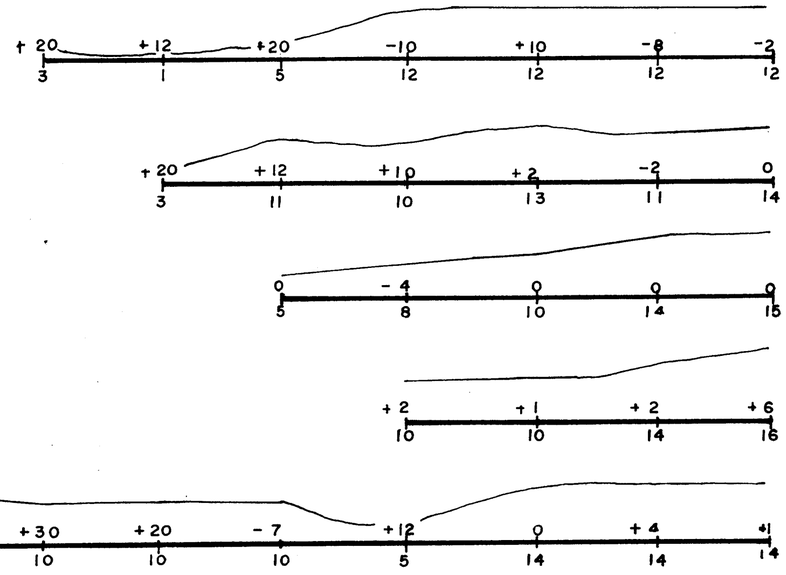
LEGEND

GRID STATION – TILT ANGLE (DEGREES) / VERTICAL COMPONENT (%) +10 / 24



VERTICAL COMPONENT SCALE: 1 CM = 10 %

VERTICAL COMPONENT HIGHS – – – – – – – –



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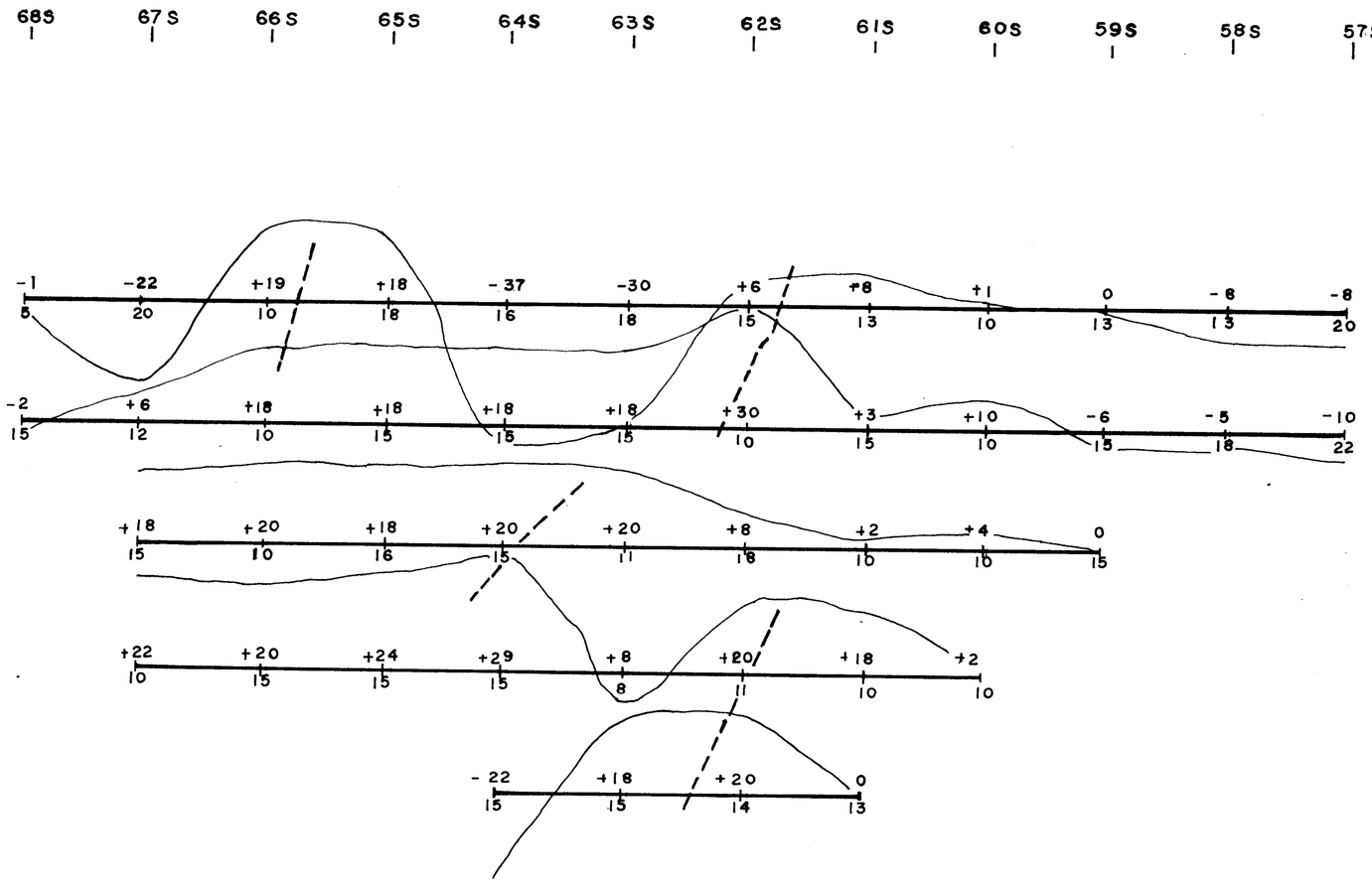
COPPER CLAIMS "SLUMP BLOCK" AREA

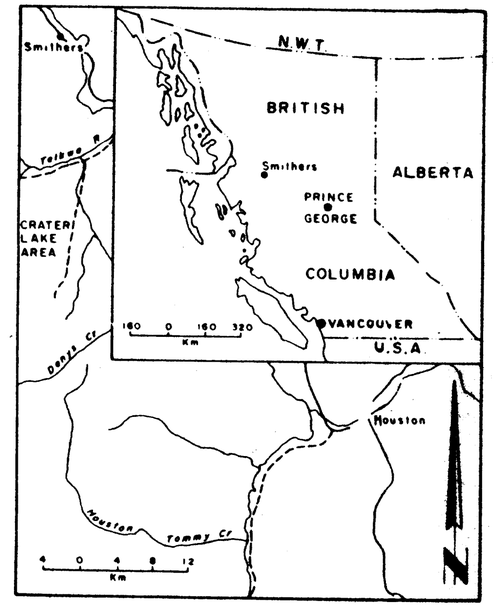
V.L.F. ELECTROMAGNETIC SURVEY

MAP COPPER 3

SCALE: 1 CM = 10 METER

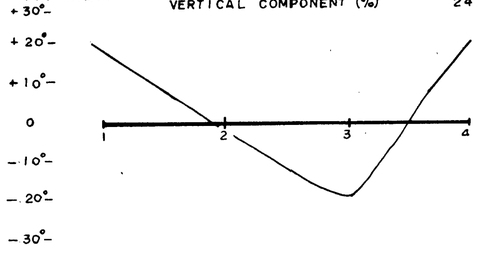
10 0 10 20 30 40 50
Meters





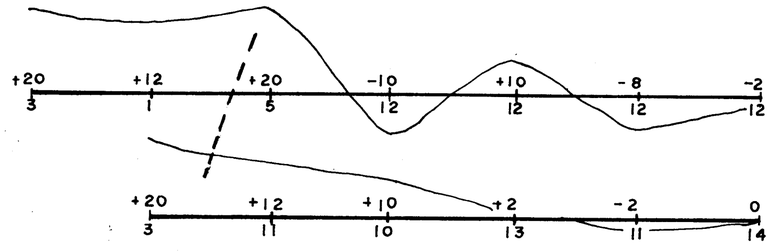
LEGEND

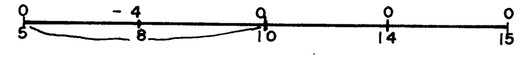
GRID STATION — TILT ANGLE (DEGREES) / VERTICAL COMPONENT (%) — +10 / 24

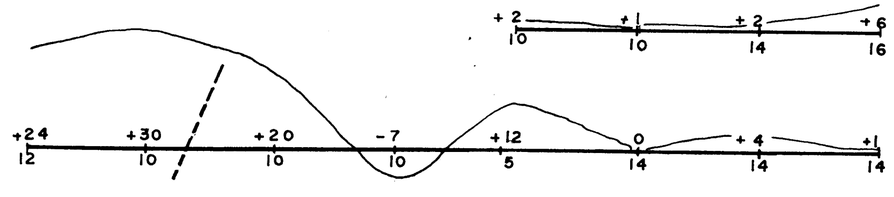


TILT ANGLE SCALE: 1 CM = 10°

TILT ANGLE PEAKS ——————







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COPPER CLAIMS "SLUMP BLOCK" AREA

V.L.F. ELECTROMAGNETIC SURVEY

MAP COPPER 4

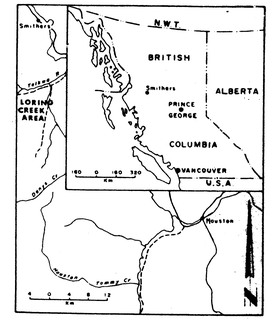
SCALE: 1 CM = 10 METERS.

69 S 67 S 65 S 63 S 61 S 59 S 57 S 55 S 53 S 51 S 49 S 47 S 45 S 43 S 41 S 39 S 37 S 35 S 33 S

27 E
29 E
31 E
33 E
35 E
37 E
39 E
41 E
43 E
45 E

LORING CREEK

FALCONBRIDGE'S DRILL-SITE OF THE "SLUMP BLOCK"



CONTOURS

CONTOUR INTERVAL: 300 GAMMAS
3000 GAMMAS AND HIGHER ———
1800 GAMMAS AND LOWER - - - - -
INSTRUMENT: SABRE MODEL G-110 FLUXGATE MAGNETOMETER

PARAMETERS

4200 GAMMAS ANOMALOUS HIGH THRESHOLD VALUE
3000 GAMMAS SUB ANOMALOUS HIGH THRESHOLD
2400 GAMMAS MEAN BACKGROUND VALUE
1800 GAMMAS SUB ANOMALOUS LOW THRESHOLD VALUE
1200 GAMMAS ANOMALOUS LOW THRESHOLD VALUE

BACKGROUND CONTOUR OF 2400 GAMMAS NOT DRAWN IN.
54 000 GAMMAS SUBTRACTED FROM EACH VALUE
i. e. 3000 READS 57 000 GAMMAS

ASSESSMENT REPORT
10,043

Meters

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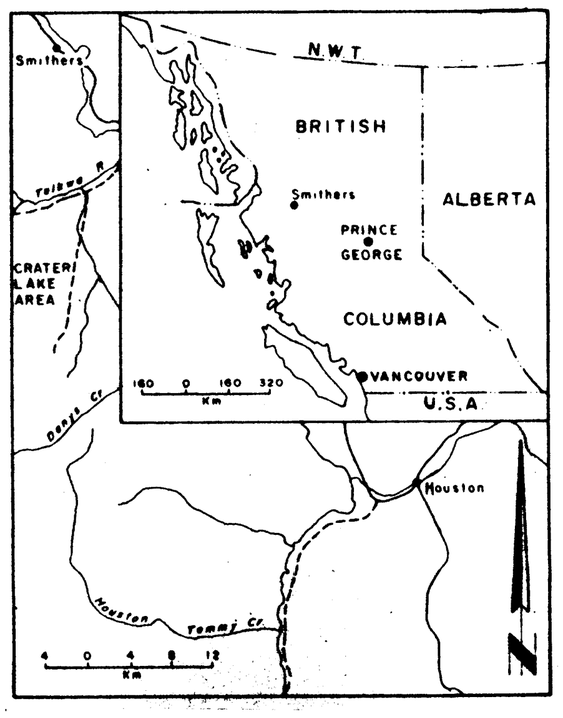
VANCOUVER B.C. V6B 1H7

COPPER CLAIMS "SLUMP BLOCK" AREA

MAGNETOMETER SURVEY
MAP COPPER I

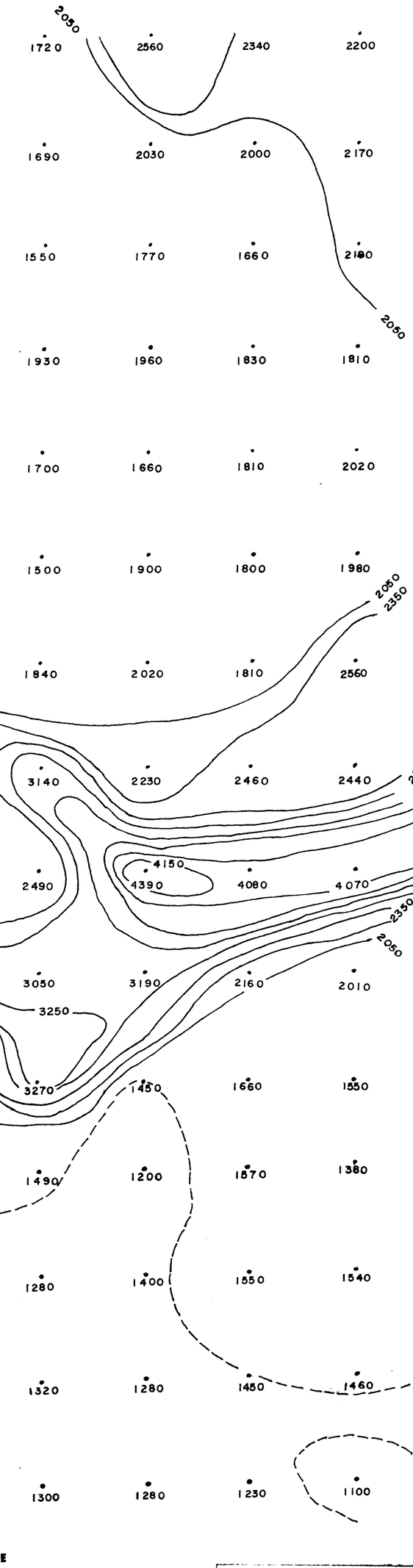
DATA AND CONTOURS

DRAWN BY	DATE	CHK. BY	SCALE
E. LI	NOV. 1981		1 CM =1METERS



6E 4E 2E 0 2W 4W

47S 45S 43S 41S 39S 37S 35S 33S



1 Km TO LCP – 1.2 Km TO CRATER LAKE

10 0 10 20 30 40 50
Meters

CONTOURS

CONTOUR INTERVAL: 300 GAMMAS
2050 GAMMAS AND HIGHER IS ——————
1450 GAMMAS AND LOWER IS – – – – – –

INSTRUMENT: SABRE MODEL G 110 FLUXGATE MAGNETOMETER

PARAMETERS

GAMMAS ANOMALOUS HIGH THRESHOLD VALUE
GAMMAS SUB-ANOMALOUS HIGH THRESHOLD
GAMMAS MEAN BACKGROUND VALUE
GAMMAS SUB-ANOMALOUS LOW THRESHOLD VALUE
GAMMAS ANOMALOUS LOW THRESHOLD VALUE

BACKGROUND CONTOUR OF 1750 GAMMAS NOT DROWN IN.
55 000 GAMMAS SUBTRACTED FROM EACH VALUE
I.e. 1850 READS 56 850 GAMMAS

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VANCOUVER BC V6B 1H7

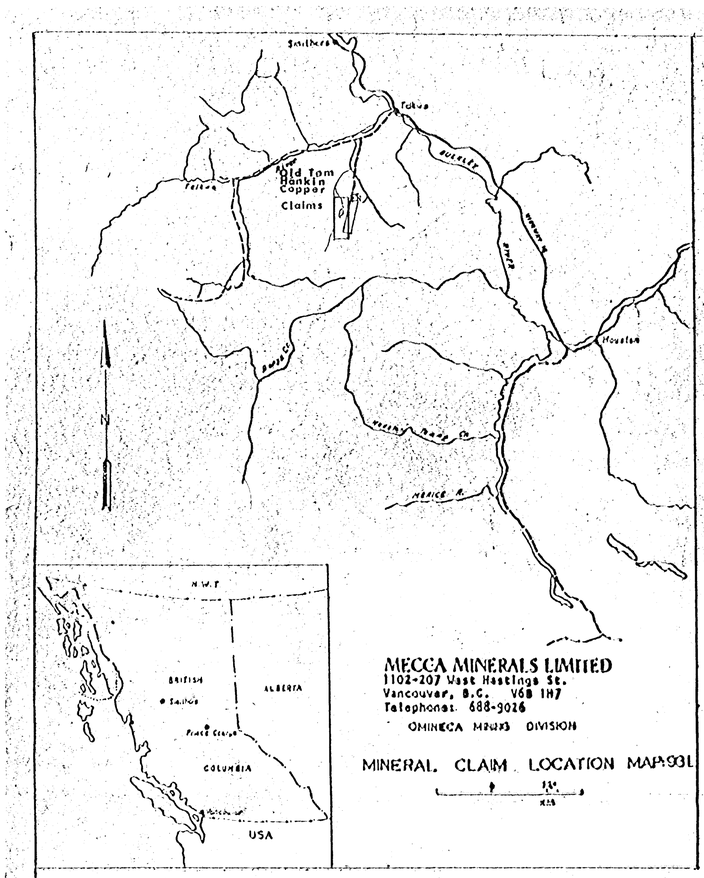
COPPER CLAIMS " CRATER LAKE " AREA

MAGNETOMETER SURVEY

MAP COPPER 2

DATA AND CONTOURS

DRAWN BY	DATE	CHK BY	SCALE
E. LI	NOV. 1981	J.H. Brakeford	1 CM = 10 METERS



MECCA MINERALS LIMITED
1102-207 West Hastings St.
Vancouver, B.C. V6B 1H7
Telephone: 688-9026

OMINECA MINING DIVISION

MINERAL CLAIM LOCATION MAP-93L

LEGEND

INTRUSIVE ROCK (in order)

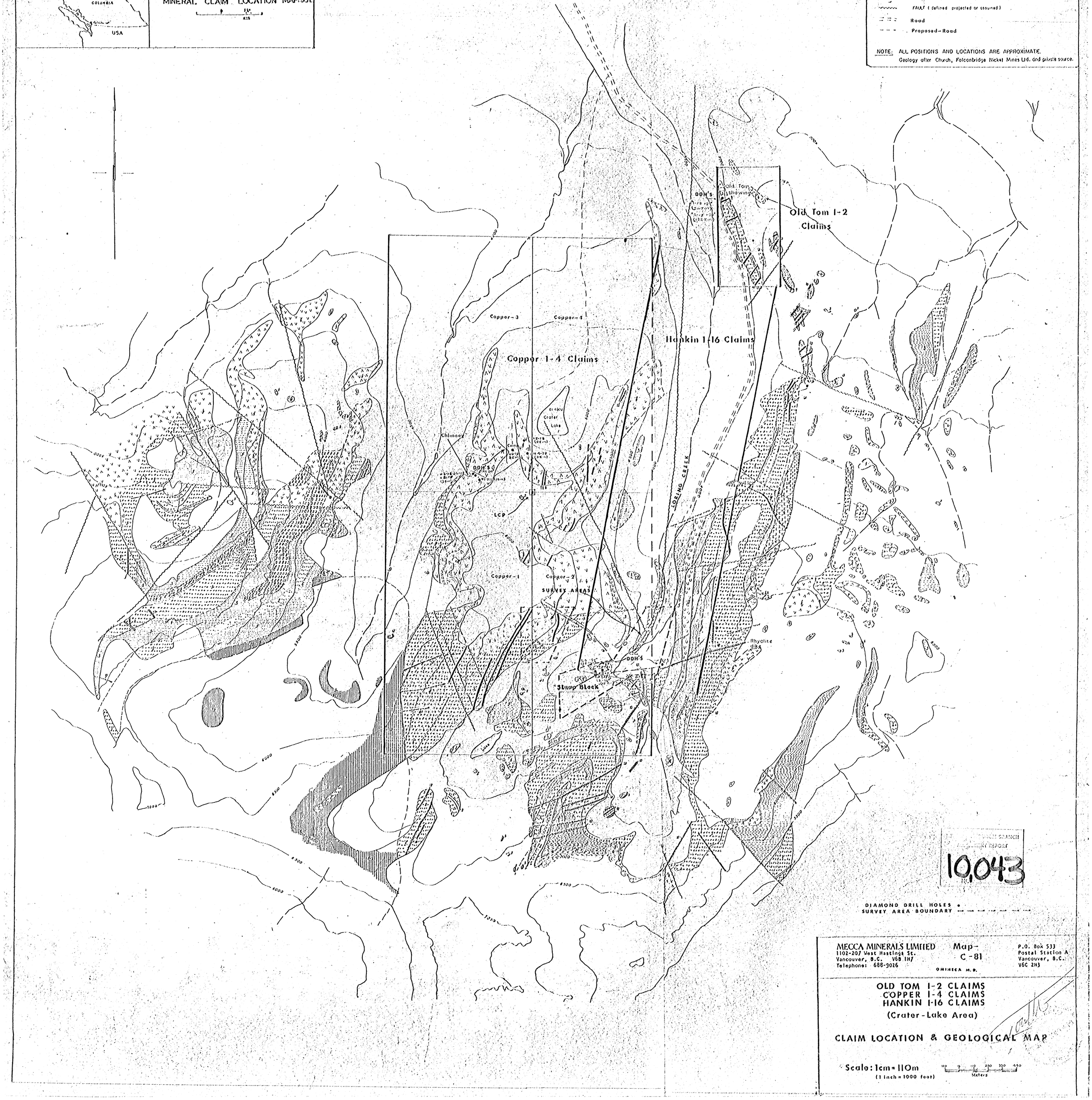
- BASALT (dykes)
- GRANODIORITE (porphyritic Quartz Monzonite) (dykes and plugs) (also Quartz Monzonite dykes of Dominion Basin area)
- QUARTZ PORPHYRY FELSITE (dykes and sills)
- DIORITE (sills and irregular crosscutting intrusives some may be meta diorite)
- GREEN ANDESITE

HAZELTON GROUP
Layered rock (not in lithologic order)

- LIMESTONE (fossiliferous)
- BASALT (lava) (black to dark green massive rock commonly limey)
- RED TUFFS RED and/or GREEN FRAGMENTALS (agglomerates) and RED ARGILLITE SOME PURPLE ANDESITE TUFFS MINOR CLASTIC SEDIMENTS
- GREEN ANDESITE MASSIVE FINE GRAINED FLOW ROCKS SOME VESICULAR and/or WITH HORNBLENDE PHENOCRYSTS
- LATITE VOLCANIC ROCK INTERMEDIATE IN COMPOSITION BETWEEN RHYODACITE AND GREEN ANDESITE
- RHYODACITE ACID VOLCANIC ROCK MAINLY TUFFACEOUS IN ORIGIN POSSIBLY MINOR FLOWS FINE GRAINED TO APHANITIC GROUNDMASS LIGHT GRAY OR PURPLE LESS COMMONLY BLACK OR RED IN COLOUR COMMONLY WITH QUARTZ EYES and/or WHITE OR PINK FELDSPAR PHENOCRYSTS ROCK IS USUALLY LESS COMMONLY THINLY BEDDED OR FRAGMENTAL

- BEDDING
- CLEAVAGE
- BEDDING PLANE JOINT
- JOINT
- FAULT (defined projected or assumed)
- Road
- Proposed-Road

NOTE: ALL POSITIONS AND LOCATIONS ARE APPROXIMATE.
Geology after Church, Falconbridge Nickel Mines Ltd. and private source.



DIAMOND DRILL HOLES •
SURVEY AREA BOUNDARY

MECCA MINERALS LIMITED
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Map-C-81

OMINECA M.D.

P.O. Box 533
Postal Station A
Vancouver, B.C.
V6C 2N3

OLD TOM 1-2 CLAIMS
COPPER 1-4 CLAIMS
HANKIN 1-16 CLAIMS
(Crater-Lake Area)

CLAIM LOCATION & GEOLOGICAL MAP

Scale: 1cm = 110m
(1 inch = 1000 feet)

110 0 110 220 330 440
Meters