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GEOPHYSICAL REPORT

ON A

MAGNETIC SURVEY

COPPER CLAIM GROUP

CRATER LAKE AREA, OMINECA M.D., B.C.

COPPER CLAIMS : 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., V6C 1H7

BY : David G. Mark, Geophysicist
GEOTRONICS
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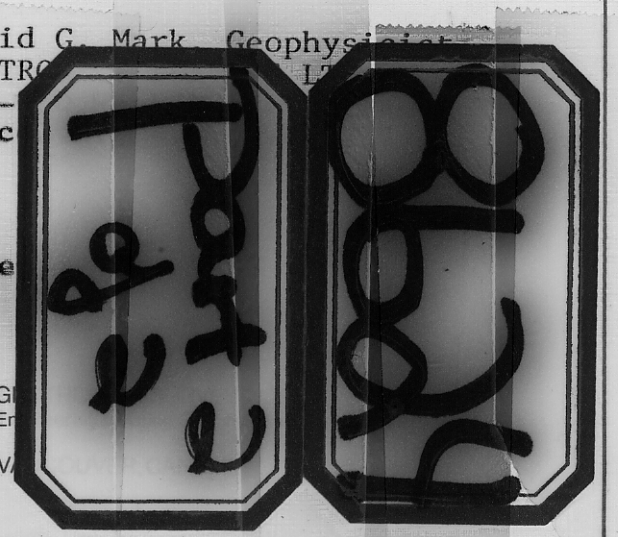
Vanc

DATE : Dece

GEOTRONICS



Part 2 of 2

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SUMMARY

During the first part of the summer of 1980, a combined magnetometer and dip needle 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 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. The magnetic survey has revealed several small lineal magnetic highs that could be reflecting sulphide mineralization containing magnetite.

2. The survey revealed 3 different phases or flows of the basalts: - 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.

RECOMMENDATIONS

No recommendations are felt necessary since this is part of a continuing program as recommended in the engineerng reports of Lorimer and Taylor. Of course the magnetic highs as well as the lows should be checked in the field through geological mapping and/or prospecting.

GEOPHYSICAL REPORT

ON A

MAGNETIC SURVEY

COPPER CLAIM GROUP

CRATER LAKE AREA, OMINECA M.D., B.C.

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey method, compilation of data and the interpretation of results of magnetometer and dip needle surveys carried out over the Copper Claim Group near Crater Lake within the Omineca M.D., B.C. All of the above work was carried out from June 24th to July 14th, 1980 by T. Higginson and J. Parker, as well as James Rutherford for part of the time. Higginson and Parker were employees of Strato Geological Services of Vancouver, B.C. The number of line km of the 2 surveys was 22.

The purpose of the magnetometer and dip needle surveys was to locate areas of copper sulphide mineralization. Several occurrences of copper-silver mineralization occur within the Copper Claims. A secondary purpose was to aid in the geological knowledge of the property through the mapping of lithology and structure.

PROPERTY AND OWNERSHIP

The property consists of 4 contiguous claims containing a total of 32 units as shown on Figure 2 and as described below:

Claim Name	No. Units	Record No.	Expiry Date
Copper 1	8 (2 x 4)	1338	August 9, 1981
Copper 2	8 (2 x 4)	1339	August 9, 1981
Copper 3	8 (2 x 4)	1340	August 9, 1981
Copper 4	8 (2 x 4)	1341	August 9, 1981

The property is wholly owned by Mecca Minerals Ltd. of Vancouver, British Columbia. If the work as described in this report is accepted for assessment work, then the expiry date will become August 9, 1981.

LOCATION AND ACCESS

The legal post of the Copper Claims is found about one km south of Crater Lake and 20 km SSW of Telkwa, B.C.

The geographical location of the post is 54° 31'N latitude, and 127° 07'W longitude.

Access to the property is most conveniently reached by a 10 minute helicopter flight from Smithers. The property is accessable by foot, but at the present time the poor condition of access roads makes a walk into the property very long and difficult.

PHYSIOGRAPHY

The property is found in the physiographic division known as the Nechako Plateau which is part of the Interior Plateau System. It covers a northerly trending mountain spur bounded by Webster

Creek and Loring Creek. A tarn, Crater Lake, lies in a cirque in the spur. The area which the present survey covers lies to the south of Crater Lake, above both the cirque and the tree-line. The terrain is a moderately steep slope, with cliffs bounding the east and west sides of the survey grid. Elevation varies from 1250 meters to 2075 meters above m.s.l. to give a range of 825 meters.

Water above the elevation of Crater Lake is scarce in the full summer season except for small seasonal ponds.

South of Crater Lake vegetation is almost non-existent, while north of the lake small trees and bushes are thick and numerous. The area which the present survey covers lies above the lake and only a few small bushes where encountered.

HISTORY OF PREVIOUS WORK

Copper was discovered near Crater Lake in 1903. The copper showings at Crater Lake are believed to have been discovered the following year. Intermittent exploration has been carried out ever since. Numerous abandoned claim posts, some from the 1920's can still be found on the property. In 1968-69 Crater Lake and the surrounding area was explored by Falconbridge Nickel Mines. In 1973 Maharaja Minerals carried out a geological-geochemical rock-sampling program on the Crater Lake area.

On the property itself a diamond drill program (two holes) was carried out in 1975. Further drilling and some trenching was carried out in 1978 and 1979.

GEOLOGY

The following is quoted from Taylor's report on the property.

"The property is underlain by Lower and Middle Jurassic rocks, - part of the Hazelton Group, - according to the B.C. Department of Mines geological compilation map 69-1. The rocks are essentially volcanic flows, pyroclastics and epiclastic sediments of volcanic material, and andesite to rhyolite in composition within the property boundaries. They are exposed as shallow dipping bands of grey, green, red and purple. A granodiorite plug lies to the south-west of the claim block, while lesser dykes and sills cut the volcanics in diverse directions.

"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 transverse faults and shear zones, and surface exposures show secondary enrichment. (See geologic map). The vein deposits exhibit hematite, bornite, malachite, azurite, chalcopyrite, chalcocite and tetrahedrite. The best exposure of this type is known as the "chimney" zone.

"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.

Magnetite is also present. Sampling of this horizon was done under hazardous conditions for a total length of 161 meters and returned 0.47% copper over a width of two meters.

"A second showing on the cirque wall, but at a higher elevation average 0.13% copper and 0.11 oz/ton silver also over a two meter width, for a length of 21 meters. It is not clear whether this sampling is part of a vein, or if the metal is contained in a specific stratigraphic horizon."

INSTRUMENTATION AND THEORY

The magnetometer survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. This is a visual-null type instrument using a digital dial read-out with a range of 100,000 gammas and a reading accuracy of 10 gammas. The G-110 has a temperature co-efficient of 2 gammas per degree centigrade.

The Dip needle survey was carried out using a Darley Dip needle, manufactured by W.S. Darley & Co., Chicago. The needle has a positive scale which extends from 0 to positive 60, and a negative scale which extends from 0 to negative 40.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

SURVEY PROCEDURE

A grid was put in with stations every 30 meters on east-west lines 30 meters apart. The stations were marked with small rock cairns. Both magnetometer and dip needle readings were taken at these stations. The diurnal change of the magnetometer readings was monitored in the field by the closed loop method using a series of base stations.

COMPILATION OF DATA

The magnetic data were plotted on Sheet 2 at a scale of 1:2,500 (1 cm = 25 meters). For ease of plotting and discussion, 50,000 gammas was subtracted from all values and contours.

The magnetic values were grouped into equal arithmetic intervals. The cumulative frequency for each interval was then calculated and then plotted against the correlating interval to obtain an arithmetic cumulative frequency graph.

The statistical parameters taken from the graph are as follows:

Anomalous low threshold	(97½% level)	2400 gammas
Sub-anomalous low threshold	(84% level	2700 gammas
Mean background	(50% level)	3000 gammas
Sub-anomalous high threshold	(16% level)	3300 gammas
Anomalous high threshold	(2½% level)	3600 gammas

The sub-anomalous and anomalous levels are 1 and 2 standard deviations away from the mean background level, respectively.

From this, the contour interval was then chosen to be 300 gammas which is that ofone standard deviation. The contours below the mean background level, 2700 gammas and lower, were dashed in,

and the contours above, 3300 gammas and higher, were drawn in solid.

The dip angle data was plotted on Sheet 3 at the same scale (1:2,500) and the statistical analysis was handled in the same manner.

Anomalous low threshold	-11^{o}
Sub-anomalous low threshold	-6^{o}
Mean background	0^{o}
Sub-anomalous high threshold	$+5^{o}$
Anomalous high threshold	$+10^{o}$

DISCUSSION OF RESULTS

The magnetic relief as is shown on Sheet 2 is quite high. The values vary from as low as 480 gammas to as high as 5560 gammas which gives a relief of 5080 gammas. This is quite indicative of basalt volcanics.

The magnetic field over different parts of the survey area each have their characteristics. This is undoubtedly due to a reflection in varying rock-types.

The geology printed on the background of the two maps show most of the survey area to be underlain by basalt. Yet the magnetic field can be divided into 3 different areas as follows:

1. Southwest corner — A magnetic high that is only moderately noisy. The dip needle data in this area is only slightly above that of the rest of the area.

2. West central section — A magnetic low that is very noisy

containing the lowest and highest values within the survey area. The dip needle data is extremely low in this area.

3. Central section trending north across the whole survey area — A magnetic field that is very quiet and contains by and large only background values.

If the above 3 areas are underlaiin by basalt as is shown, then the 3 different types of magnetic fields are reflecting different phases or flows of the basalt.

The southwest corner and east central section is underlain by red andesite and green agglomerates. The magnetic field over this rock type is characterized by a moderate magnetic low that is fairly quiet (relatively speaking for the survey area).

The writer does not know if any mineralized showings occur within the survey area and therefore can not correlate the magnetic survey accordingly. However, knowing that some of the occurrences contain magnetite suggests a possible explanation of the small magnetic highs, especially those that are more lineal in shape, to be sulphide veins containing magnetite. Some of the more prominent of these anomalies are centered at: -

1. 5N, 27W
2. 1S, 33W
3. 12S, 36W
4. 12S, 51W
5. 24S, 36W (3 small anomalies in this area)
6. 24S, 0
7. Possibly 2 anomalies in the extreme southwest corner.

The contouring along the north-south line 0 is very lineal and very suspiciously appears that the diurnal change was not corrected in this area. Very possibly a magnetic storm could have occurred in between the checks at a base station. However, the lithological contacts in this area trend north-south as well.

The dip needle data over most of the survey area except for the 2 areas as mentioned above, varies little. The data may become more useful as sulphide occurrences become known.

December 12, 1980

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

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Armstrong, J.E., Smithers, Coast District Geol., Surv. of Canada, Map 44-23, 1944

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Woodsworth, G.J., Petrographic and mineralogic report on Crater Laker specimens., 1976

Lorimer, M.K., Report on the Copper 1-4 Claim, 1978

GEOPHYSICIST'S CERTIFICATE

I, David G. Mark, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at #403-750 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc., degree in Geophysics.

2. I have been practising my profession for the past 12 years and have been active in the mining industry for the past 15 years.

3. That I am an active member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.

4. This report is compiled from data obtained from magnetometer and dip needle surveys carried out by Strato Geological Services during the period of June 24 to July 14, 1980.

5. I do not hold any interest in the Copper Claims nor Mecca Minerals Ltd. nor do I expect to receive any interest as a result of writing this report.

David G. Mark,
Geophysicist

December 12, 1980

AFFIDAVIT OF EXPENSES

The magnetic survey carried out on the Copper Claims, Crater Lake Area, Omineca M.D., B.C. June 24th to July 14, 1980 was done to the value of the following:

FIELD:

2-man crew, 21 days @ $225/day	$ 4,725.00
1-man crew, 1 day @ $100/day	100.00
Supervision	1,000.00
Instrument rental	270.00
Board and room	1,275.00
Survey supplies	25.00
Mobilization and demobilization	1,000.00
	$ 8,395.00

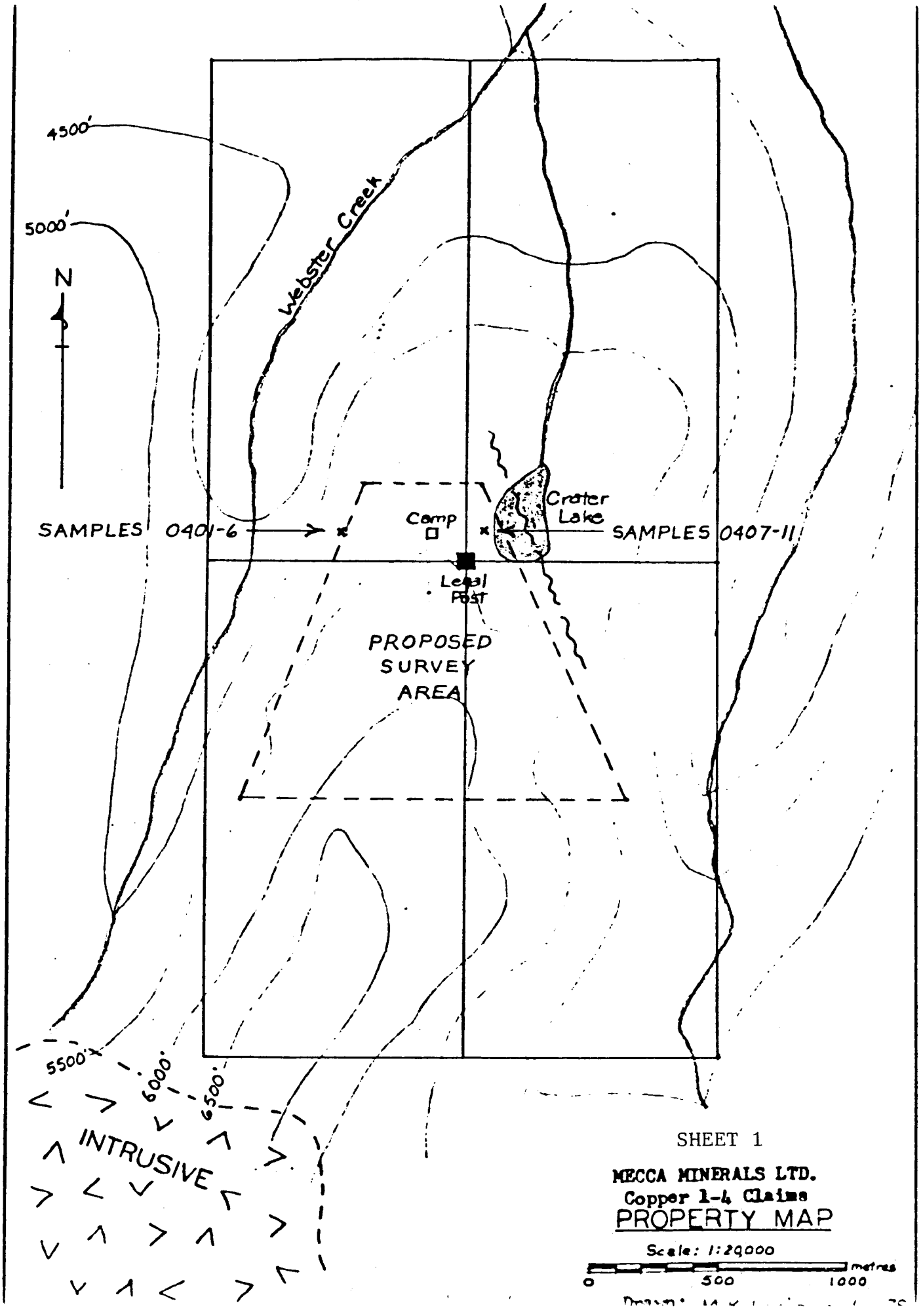
REPORT:

Geophysicist, 6 hours @ $37.50/hour	$ 225.00
Geophysical technician, 30 hours @ $20/hour	600.00
Drafting and printing	422.00
Report typing and compilation	150.00
	$ 1,397.00
Grand Total	$ 9,792.00

Respectfully submitted,
Mecca Minerals Ltd.,

James A. Rutherford
President

December 16, 1980

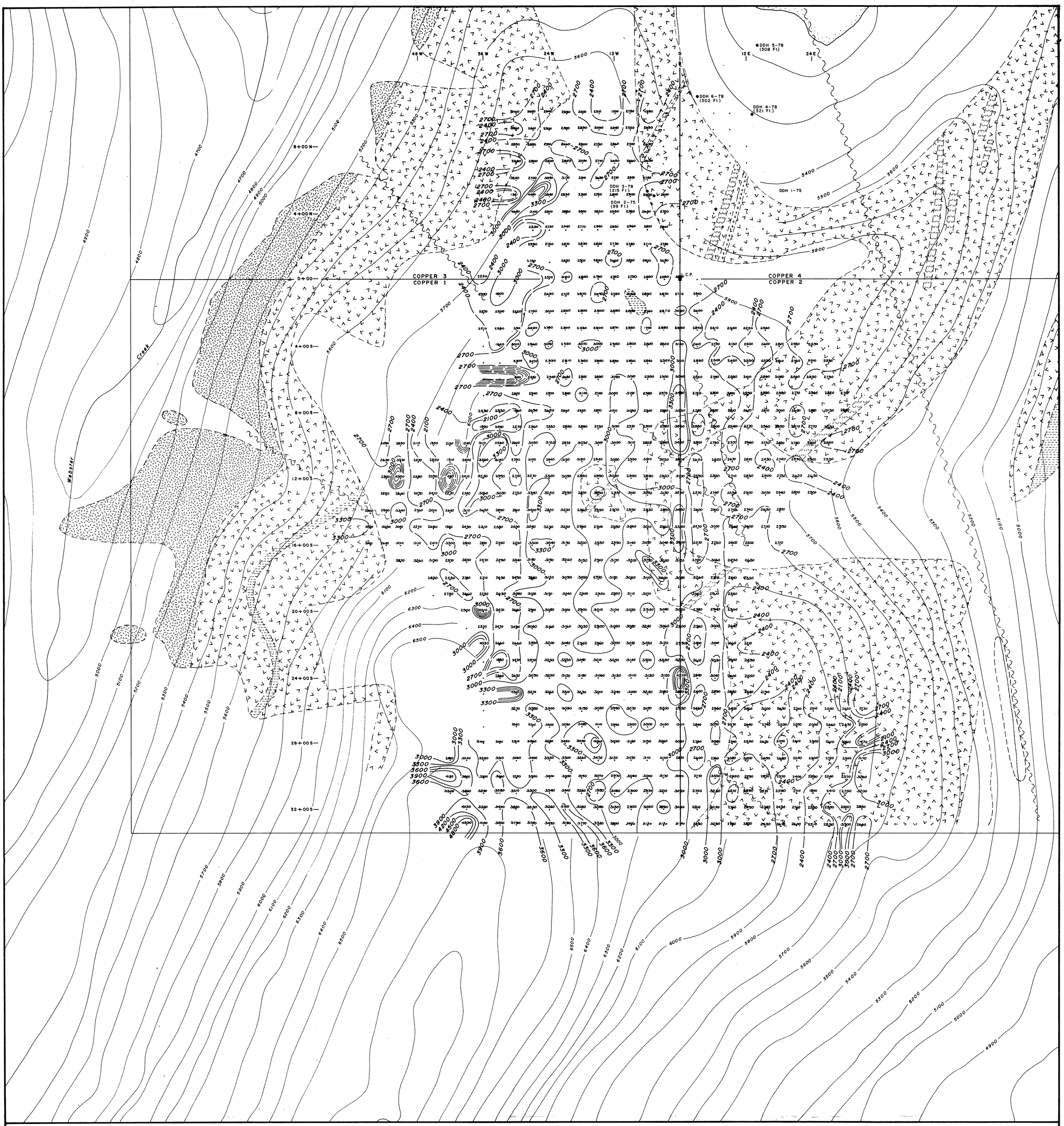


SHEET 1

MECCA MINERALS LTD.
Copper 1-4 Claims
PROPERTY MAP

Scale: 1:20000

0 500 1000 metres



GEOLOGICAL LEGEND

- Rhyodacite
- Red Andesite and Green Agglomerates
- Green Andesite
- Basalt (Flow and Dikes)
- Quartz Porphyry Felsite (Dikes and Sills)
- Diorite
- Fault
- Claim Post

Contour Interval : 100 Feet

ASSAY RESULTS

Sample N	Thickness Feet	Cu %	Ag oz/t	Au oz/t
2051	10	1.550	2.97	.004
2052	10	.010	.09	.002
2053	10	1.120	.35	.001
2054	10	.760	.87	.001
2055	10	3.825	4.02	.001
2056	10	15.600	12.40	.002
2057	10	5.220	3.75	.001
2058	10	3.775	3.06	.001
2059	10	2.190	.74	<.001
2060	10	1.620	.15	<.001
2061	5	1.024	1.17	<.001
2062	5	.760	.32	<.001
2063	5	6.750	.63	.001
2064	2	2.475	1.51	.001
1	5	2.050	6.70	.005
2	5	1.650	.90	.006
2A	5	2.220	.89	.011
3	5	4.650	1.11	.002
4	5	3.950	1.30	.002
4A	5	8.650	1.35	.007
5	3	.162	.11	.002
6	2	.2003	.15	.002
7	3	.027	.06	.001

CONTOURS

Contour Interval : 300 Gammas

2700 Gammas and Lower

3300 Gammas and Higher

INSTRUMENT : SABRE VERTICAL COMPONENT FLUXGATE MAGNETOMETER

PARAMETERS

2400 Anomalous Low Threshold Value

2700 Sub-Anomalous Low Threshold Value

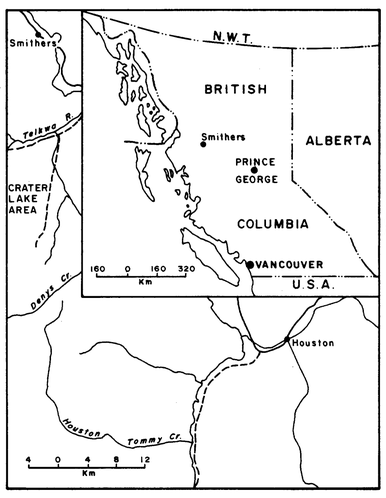
3000 Mean Background Value

3300 Sub-Anomalous High Threshold Value

3600 Anomalous High Threshold Value

55000 GAMMAS SUBTRACTED FROM EACH VALUE

i.e. 3750 READS 58750 GAMMAS



NOTE

Geological Background After J. McANDREW P.ENG. 1974.

50 25 0 50 100 150 Meters

To Accompany GEOPHYSICAL Report by D. MARK, GEOPHYSICIST

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8624
Part 2 of 2

MECCA MINERALS LTD.
1102 - 207 W. HASTINGS ST.
VANCOUVER, B.C. V6B - 1H7

COPPER CLAIMS
— CRATER LAKE AREA —

OMINECA MINING DIVISION — BRITISH COLUMBIA

MAGNETIC SURVEY
MAGNETOMETER
DATA & CONTOURS

DWN. BY:	DATE	CHK. BY:	SHEET NO.
T.M.	AUG. 1980		2

COPPER 3
COPPER 1

COPPER 4
COPPER 2

DDH 5-78 (308 Ft.)
DDH 6-78 (302 Ft.)
DDH 4-78 (321 Ft.)
DDH 3-78 (215 Ft.)
DDH 2-75 (99 Ft.)
DDH 1-75

8+00N
4+00N
0+00
4+00S
8+00S
12+00S
16+00S
20+00S
24+00S
28+00S
32+00S

48W 36W 24W 12W 0 12E 24E

Creek
Webster

GEOLOGICAL LEGEND

- Rhyodacite
- Red Andesite and Green Agglomerates
- Green Andesite
- Basalt (Flow and Dikes)
- Quartz Porphyry Felsite (Dikes and Sills)
- Diorite
- Fault
- Claim Post

Contour Interval : 100 Feet

ASSAY RESULTS

Sample N	Thickness Feet	Cu %	Ag oz/t	Au oz/t
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2055	10	3.825	4.02	.001
2056	10	15.600	12.40	.002
2057	10	5.220	3.75	.001
2058	10	3.775	3.06	.001
2059	10	2.190	.74	<.001
2060	10	1.620	.15	<.001
2061	5	1.024	1.17	<.001
2062	5	.760	.32	<.001
2063	5	6.750	.63	.001
2064	2	2.475	1.51	.001
1	5	2.050	6.70	.005
2	5	1.650	.90	.006
2A	5	2.220	.89	.011
3	5	4.650	1.11	.002
4	5	3.950	1.30	.002
4A	5	8.650	1.35	.007
5	3	.162	.11	.002
6	2	.2003	.15	.002
7	3	.027	.06	.001

CONTOURS

Contour Interval : 5°

-6° and lower

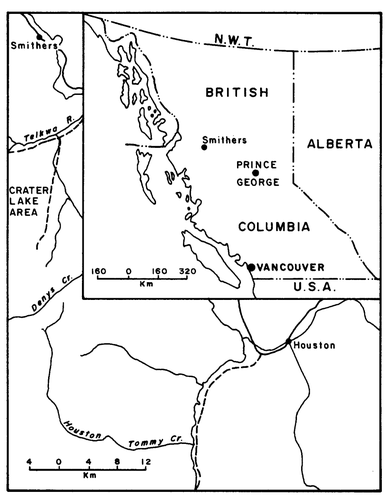
5° and higher

INSTRUMENT : DARLEY DIP NEEDLE

PARAMETERS

- -11 Anomalous Low Threshold Value
- -6 Sub-Anomalous Low Threshold Value
- 0 Mean Background Value
- 5° Sub-Anomalous High Threshold Value
- 10° Anomalous High Threshold Value

BACKGROUND CONTOUR OF 0° NOT DRAWN IN



NOTE
Geological Background After J. McANDREW P.ENG. 1974.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8624

50 25 0 50 100 150 Meters

To Accompany GEOPHYSICAL Report by D.MARK, GEOPHYSICIST

Part 2 of 2

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COPPER CLAIMS
—CRATER LAKE AREA—

OMINECA MINING DIVISION — BRITISH COLUMBIA

MAGNETIC SURVEY
DIP NEEDLE
DATA & CONTOURS

DWN. BY:	DATE	CHK. BY:	SHEET NO
T.M.	AUG. 1980		3