

1M04SW0101 2.1286 STRATHY

AUG 31 1973

SECTION

REPORT ON
THE MAGNETOMETER SURVEY
AND
VLF-EM SURVEY
FOR
KANICHEE MINING INCORPORATED
IN
STRATHY TOWNSHIP, ONTARIO

Toronto, Ontario August 28, 1973 Richard C. Beard P. Engineer

#### INTRODUCTION

This report and accompanying maps present the results of magnetometer and VLF-EM surveys carried out on a group of 16 contiguous unpatented mining claims located in Strathy Township, Ontario.

These claims lie immediately west of another group of unpatented claims also held by Kanichee, upon which a copper-nickel orebody with a 500 tons per day mill is presently being developed.

The primary purpose of the present program was to determine if geological conditions similar to those occurring in the vicinity of the Kanichee orebody are also found on the claim group presently under investigation.

At the Kanichee Mine, copper and nickel sulphides are found disseminated in and concentrated along the base of a peridotite mass. Several orientation traverses across the Kanichee orebody confirmed that the peridotite mass could be outlined magnetically, even when in contact with basic volcanics. It was also found that the sulphide mineralization was of such a nature that good VLF-EM response could be obtained over the orebody.

Geological mapping by the O.D.M. (Strathy Township, Preliminary Map P. 667) indicated several masses of gabbro in the southwest quarter of the property presently under investigation. Geophysical surveys were carried out to determine the extent of these basic (and ultrabasic?) masses, to search for any additional masses or intrusives not revealed by the O.D.M. mapping, and to detect any sulphide mineralization related to the masses of basic or ultrabasic rocks.

The O. D. M. mapping also indicated an assemblage of intermediate to felsic fragmental volcanic rocks, largely outcropping in the northwest half of the

property. The program was also designed to detect, by means of the VLF-EM survey, any massive, stratabound sulphides related to these fragmental volcanics.

# PROPERTY

The claim group consists of 16 unpatented mining claims situated in Strathy Township, in Larder Lake Mining Division, Ontario. The claims are numbered as follows:

L-244801	L-244807	L-244813
L-244802	L-244808	L-244814
L-244803	L-244809	L-244815
L-244804	L-244810	L-244816
L-244805	L-244811	
L-244806	L-244812	

# LOCATION & ACCESS

The property is located in the western part of Strathy Township, Ontario, approximately 65 miles north of North Bay. Access to the property is by a 3 mile mine road turning off Highway 11 at Goward station and passing through the new Kanichee open pit. This road passes within several hundred feet of the northeastern part of the property, then westward across the southern tier of claims.

# TOPOGRAPHY

The topography of the claim group varies from flat, very wet spruce swamp to gently rolling high ground covered with thick moose maple and occassional large high spruce and birch. Many of the streams are flooded by beaver dams making traversing difficult.

Scattered outcrops were observed across the claim group, especially on the higher ground, in the western portion.

### GEOLOGY

As indicated on O. D. M. Preliminary Map P. 667, Strathy Township, the claim group is underlain by Keewatin volcanics ranging in composition from acid to basic. The more acid volcanics, which are best exposed in the northwest half of the property, are largely fragmental to tuffaceous. Basic flows are most common through the central part of the property.

The strike of these volcanics varies somewhat but is generally northeasterly.

In the southwest corner of the claim group several masses of gabbro have been intruded into the volcanics.

# CONTROL

A picket grid, with cross lines at 400 foot intervals, was cut and chained across the entire claim group not occupied by water, for control for the magnetometer and E. M. surveys.

Cross lines, labelled L-0 to L-76 West, were turned off a 7,600 foot baseline cut through the center of the property on an azimuth of 55 degrees.

A 2,000 foot tie line was also cut between L-24W and L-44W, to serve as control north of the small pond near the center of the property.

Stations were established by horizontal chainage at even 100 foot intervals along the baseline and all cross lines.

A total of 1.8 miles of baseline and 15.9 miles of cross lines were cut and chained for this program.

# MAGNETOMETER SURVEY

A magnetometer survey was carried out over the property during the period August 1-15, 1973, using a McPhar M-700 fluxgate magnetometer.

Readings were taken at 100 foot intervals along the baseline and cross-lines, with occassional 50 foot stations paced in and occupied where required to define anomolies. Parts of some lines could not be occupied due to flooding along streams at the time of the survey.

Two magnetic base stations were established, one at the west end and one at the east end of the property, and all readings have been corrected for diurnal variation and instrument drift.

Corrected values, in gammas, have been plotted and contoured on the enclosed 'Magnetometer Survey' map, at a scale of 1 inch = 200 feet.

A total of 1,051 stations were occupied for this survey.

#### VLF-EM SURVEY

A VLF-EM survey was also carried out over the entire property not covered by water during the same period, using Crone's RADEM VLF-EM unit.

This instrument, in addition to locating the edges of any conductors by measurement of dip angles, also allows a rough estimate of the attitude and conductivity by providing field strength measurements. Specifications and parameters measured by this instrument are outlined in the Appendix.

Readings were taken at 100 foot intervals with occassional 50 foot stations occupied to pinpoint crossovers and define anomalies.

The same base stations established for the magnetometer survey were used for the VLF-EM survey. All field strength measurements have been corrected for drift in the same manner as the magnetometer readings.

Corrected field strength measurements and dip angles have been plotted, and field strengths contoured, on the enclosed VLF-EM Survey map, at a scale of 1 inch = 200 feet.

A total of 863 stations were occupied.

# RESULTS

The magnetometer survey outlined a number of magnetic features on the Kanichee property. Of these, the only ones of any economic significance are a group of anomalies located in the southwest corner of the property which have magnetic contrasts of up to 2,600 gammas above background. Anomaly "A", the strongest and most significant of these, occurs on lines 60W and 64W between 4S and 14S. This anomaly is relatively short (500 to 800 feet long) and irregular and is difficult to correlate between lines. What appears to be extensions of the northern segment of this anomaly can be observed on L-68W and as far east as L-40W but these extensions are very intermittent and generally quite weak.

Another relatively strong anomaly, Anomaly "B", was picked up on L-76W but its position at the extreme south end of the traverse, on the property boundary, makes any correlation impossible.

While detailed geological mapping to explain the magnetic anomalies and conductors was not undertaken as part of the present program, several outcrops located over the above anomalies were examined and revealed basic rocks with a composition of gabbro. The VLF-EM survey revealed no EM response associated

with the above basic intrusives and resulting magnetic anomolies.

Anomaly "C", located along the road on lines 52W to 64W, is a narrow, linear anomaly with a nearly east-west strike. A highly mineralized outcrop of fragmental volcanic rock was observed on the side of the road 20 feet west of L-52W/2+50N, co-inciding with the narrow magnetic anomaly. While there does not appear to be any EM anomaly co-incident with magnetic anomaly "C", the strong effects of EM conductor "C" located 400 feet to the north of the anomaly may have masked any EM response from this anomaly. It therefore is quite probable that magnetic anomaly "C" reflects a narrow zone of sulphides, containing pyrrhotite, within a fragmental vocanic unit.

Anomaly "D" is a narrow, continuous anomaly which follows the regional strike of the volcanics and extends across the entire southeast corner of the property. It is generally of only moderate magnetic intensity, with a maximum magnetic contrast of 900 gammas. This anomaly probably reflects a more basic volcanic flow interlayered within a sequence of less magnetic, intermediate to acidic volcanic rocks. Several other short, linear anomalies (including anomaly"E") with the same strike occur to the southeast of anomoly "D" and these too probably reflect more basic phases or flows within the volcanic sequence. The only EM conductor coincident with any of these is at the west end of magnetic anomaly "D". This conductor "E" is very weak and does not appear to indicate massive sulphides.

Magnetic anomoly "F" obviously reflects a north-south trending basic dike. This anomaly is rather narrow and continues across almost the entire claim group. It is actually part of a group of parallel anomalies having a width of over 800 feet and these combined anomalies probably represent a number of narrow parallel dikes intruded along a north-south fault zone.

Several first-order EM anomalies were outlined by the VLF-EM survey in the north and west sections of the property. While these EM anomalies, labelled A, B, C and D, are all quite strong, they generally correspond with the edges of swamps or other topographic features, and none have any magnetic correlation.

#### CONCLUSIONS & RECOMMENDATIONS

The chances of finding an orebody on these claims which is similar in character and size to the adjacent Kanichee orebody are not too good. The only basic intrusive of any size is outlined by magnetic anomaly 'A'. There were no EM anomalies co-incident with this intrusive and indications are that this anomaly is caused by gabbro rather than favourable peridotite. However, since the favourable peridotite host rock is often only a phase of a larger differentiated basic intrusive, the outcrops in the vicinity of magnetic anomalies A and B should be mapped in detail to determine if peridotite phases are present.

Evidence indicates that magnetic anomaly 'C" reflects a narrow zone of sulphides contained within a fragmental volcanic unit. While this zone appears quite narrow, it does extend for a length of over 1000 feet and additional work is definitely warranted on this anomaly. Detailed mapping, prospecting and geochemical soil sampling should be undertaken along the axis and adjacent to the anomaly.

Although some evidence suggests that conductors A, B, C and D may be overburden conductors rather than true bedrock conductors, their strength, orientation along the regional strike and position within a sequence of favourable

fragmental volcanic rocks is encouraging. Detailed mapping and geochemical soil sampling should also be undertaken in the vicinity of these conductors.

The geological mapping, prospecting and geochemical soil sampling on the three magnetic anomalies and four EM conductors listed above can be carried out at a total cost of \$1800.

Respectfully submitted,
GHD CONSULTANTS LIMITED,

Toronto, Ontario August 28, 1973.

Richard C. Beard, P. Eng.

## ASSESSMENT WORK DETAILS

VLF-EM



Type of vey_	V DI -ENI			_
Township or Area	A separate form is required for each STRATHY TOWNSHIP	type of s	10 900	)
Chief Line Cutter.			MINING CLAIMS TRAVERSED List numerically	7
or Contractor	Name		L-244801	1
Party Chief	Address R. C. BEARD		L-244802	
rarty Chief	Name SUITE 301, 199 Bay St. To	oronto	L-244803	"
C1	Address		L-244804	
Consultant	Name		L-244805	"
	Address DC BEADD			
Geological field mapping by R. C. BEARD  Name  Ste. 301, 199 Bay St. Toronto		L-244806 L-244807 3 Covered	"	
	<del>`</del>	Address	L-244808	: P list
COVERING DATES		L-244809	t, attac	
Line Cutting		<u> </u>	L-244810 3	space insufficient, attach list
FieldA	UGUST 1-14, 1973  Instrument work, geological mapping, sampli		T244811	ce insu
Office A	UGUST 20-28, 1973	ing etc.	L-244812	if spa
			L-244813	•
INSTRUMENT D.	CRONE'S RADEM V	LF_EM	L-244814	"[
Make, Model and	1 ype		L-244815	
	Sensitivity rument data from Manufacturer's brochure.		L-244816 3	•
Radiometric Back	ground Count _		13-211010	-
Number of Station	ns Within Claim Group		<b></b>	+
Number of Readir	ngs Within Claim Group	863		-
Number of Miles of	of Line cut Within Claim Group _	17.7		1
Number of Samples Collected Within Claim Group			:	
			TOTAL CLAIMS 16	
CREDITS REQUI	ESTED 20 DAYS 40 DAYS per claim per claim		Send in Duplicate to:	_ ]
Geological Survey	p of	01	FRED W. MATTHEWS	
Geophysical Surve	ey 🗷	Show Check ✓	SUPERVISOR-PROJECTS SECTION DEPARTMENT OF MINES & NORTHERN AFFAIRS	
Geochemical Surv	ey 🗍 🗀		NORTHERN AFFAIRSECEIVED WHITNEY BLOCK RECEIVED QUEEN'S PARK	
DATE aug 30	1973 SIGNED ROEAN	4	TORONTO, ONTARIAUG 3 1 1973	_

FROJECTS SECTION

# SUBMISSION OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

#### AS ASSESSMENT WORK

In order to simplify the filing of geological, geochemical and ground geophysical surveys for assessment work, the Minister has approved the following procedure under Section 84 (8a) of the Ontario Mining Act. This special provision does not apply to airborne geophysical surveys.

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

- (a) substantial and systematic coverage of each claim
- (b) line spacing not exceeding 400 foot intervals
- (c) stations not exceeding 100 foot intervals or
- (d) the average number of readings per claim not less than 40 readings

it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

Each additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Similarly, a geochemical survey using the same grid system with the average number of collected samples per claim being not less than 40 samples, and meeting the requirements for the submission of geochemical surveys for maximum credits, will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geochemical survey a credit of 40 days per claim will be allowed for the survey.

Credits for partial coverage or for surveys not meeting requirements for full credit will be granted on a pro-rata basis.

If the credits are reduced for any reason, a fifteen day Notice of Intent will be issued. During this period, the applicant may apply to the Mining Commissioner for relief if his claims are jeopardized for lack of work or, if he wishes, may file with the Department, normal assessment work breakdowns listing the names of the employees and the dates of work. The survey would then be re-assessed to determine if higher credits may be allowed under the provisions of subsections 8 and 9 of section 84 of the Mining Act.

If new breakdowns are not submitted, the Performance and Coverage credits are confirmed to the Mining Recorder at the end of the fifteen days.

# OFFICE USE ONLY

# GEOPHYSICAL — GEOLOGICAL — GEOCHEMICAL TECHNICAL DATA STATEMENT

RECEIVED

MAR 1 2 1974

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

PROJECTS UNIT

Type of Survey MAGNETOMETER & VLF	
Township or Area Strathy Twp.  Claim holder(s) KANICHEE MINING IN	C. MINING CLAIMS TRAVERSED
· · · · · · · · · · · · · · · · · · ·	List numerically
Author of Report R. C. BEARD	1 1 244801 I
Address #10-1131 Minto Avenue,	
Covering Dates of Survey July 27 - A	ug. 28,1973 L-244802
Total Miles of Line cut	L-244803
	L-244804
SPECIAL PROVISIONS CREDITS REQUESTED Coophysical	DAYS per claim
GeophysicalElectromag	7.04/006
ENTER 40 days (includes line cutting) for first  —Magnetome	
survey. —Radiometri	
ENTER 20 days for each —Other	L-244.808
additional survey using Geological	L_244809
same grid.  Geochemical	L-244810
AIRBORNE CREDITS (Special provision credits do not app	ly to airborne surveys) L-244811
Magnetometer Electromagnetic Ra (enter days per claim)	diometric L-244812
DATE: March 4/74 SIGNATURE: RO	13 Enrice L-244813
	L-244814
PROJECTS SECTION  Res. Geol Qualification	sL_244815
Previous SurveysQuanneation	
	L_244816
Checked bydate	
GEOLOGICAL BRANCH	
Approved bydate	
GEOLOGICAL BRANCH	
Approved bydate	TOTAL CLAIMS 16

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

# GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS	
Number of Stations MAG1,051; VLF-EM - 863	Number of Readings SAME
Station interval 100 feet w/ 501 intervals as	required
Line spacing 400 feet	
Profile scale or Contour intervals Mag 200 Gamma	Contour Interval;
VLF-EM FIELD STRENGTH, 20% CONTOUR INTE	of survey) RVAL; DIP ANGLE PROFILES, 1"= 20 Degrees
Instrument McPHAR M700	
Accuracy - Scale constant Accuracy and Readabili	ty 5 Gammas
Diurnal correction method One of two base statio	ns tied into on average of every 3 hours
Base station location BS#1, off map, on Mine ro BS#2, L-52W at 10+00\$	ad, Approx. 600 ft. north of Claim # 244803
ELECTROMAGNETIC -	
Instrument Crone's Radem VLF-EM	
Coil configuration Not App.	
Coil separation Not App.	
Accuracy Dip Angle + ½ degree,	F.S. ± 2%
Method:	oot back
Frequency Cutler, Maine	
(specify V.L. Parameters measured <u>Dip Angle &amp; Field Streety CRAVITY</u>	
Instrument	
Scale constant	
Corrections made	
Base station value and location	
Elevation accuracy	
Instrument	
Time domain	. Frequency domain
Frequency	_ Range
Power	
Electrode array	-
Electrode spacing	
Type of electrode	

	MACNETOMETE	מכ	SPECIAL PROVISION CREDITS	ļ
Type Survey MAGNETOMETER  A separate form is required for each type of survey  STRATHY TOWNSHIP			for PERFORMANCE & COVERAGE	
Township or Area		TOW NSHIP	MINING CLAIMS TRAVERSED	╡
Chief Line Cutter.			List numerically	
or Contractor	KIRKLAND L	AKE, ONTARIO	L-244801	]
Party Chief	R. C. BEARD	ddress	L-244802	
	SUITE 301, 199 B	ay Street, TORONTO	L-244803 3 covere(	
Consultant	Ac	ddress	L-244804	Ì
	Na	ame	L-244805	
Geological field m	D C I	ddress BEARD	L-244806	
<b>B</b>	••	Name 1, 199 Bay St. Toronto	L-244807 3	
		Address	L-244808	ch list
COVERING DAT	ES		L-244809	t, atta
Line Cutting	AUGUST 1-14, 197	73	L-244810 /3	space insufficient, attach list
FieldAUC	GUST 6-15		L-244811	e insu
OfficeAUC	Instrument work, geological m GUST 20-28	napping, sampling etc.		If spac
			L-244812	.[
INSTRUMENT DATA		L-244813		
Make, Model and	Type McPhar M-7	700 Fluxgate MAG	L-244814	
Scale Constant or	Sensitivity20 Gamn	nas Per Scale Div.	L-244815	
Or provide copy of inst	rument data from Manufacturer's	brochure.	L-244816 3	
Radiometric Back	ground Count			
Number of Station	ns Within Claim Group			
Number of Readin	ngs Within Claim Group	1051		
Number of Miles	of Line cut Within Claim	Group17.7		ł
Number of Sampl	es Collected Within Clain	a Group		
•		•	TOTAL CLAIMS 16	
CREDITS REQUI	ESTED 20 DAYS per claim	40 DAYS Includes per claim (Line cutting)		j 1
Geological Survey	•		Send in Duplicate to: FRED W. MATTHEWS	
Geophysical Surve	еу	Show Check	SUPERVISOR-PROJECTS SECTION DEPARTMENT OF MINES &	
Geochemical Surv	vey 🗆 🕳		NORTHERN AFFAIRS RECEIVED	
D. T. 14. 3/	0 1973 CNED (R)	CBSand	QUEEN'S PARK TORONTO, ONTARIO AUG 3 ( 1070	

ASSESSMENT WORK DETAILS

#### SUBMISSION OF GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

#### AS ASSESSMENT WORK

In order to simplify the filing of geological, geochemical and ground geophysical surveys for assessment work, the Minister has approved the following procedure under Section 84 (8a) of the Ontario Mining Act. This <u>special provision</u> does not apply to airborne geophysical surveys.

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

- (a) substantial and systematic coverage of each claim
- (b) line spacing not exceeding 400 foot intervals
- (c) stations not exceeding 100 foot intervals or
- (d) the average number of readings per claim not less than 40 readings

it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

Each additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Similarly, a geochemical survey using the same grid system with the average number of collected samples per claim being not less than 40 samples, and meeting the requirements for the submission of geochemical surveys for maximum credits, will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geochemical survey a credit of 40 days per claim will be allowed for the survey.

<u>Credits for partial coverage or for surveys not meeting requirements for full credit</u> will be granted on a pro-rata basis.

If the credits are reduced for any reason, a fifteen day Notice of Intent will be issued. During this period, the applicant may apply to the Mining Commissioner for relief if his claims are jeopardized for lack of work or, if he wishes, may file with the Department, normal assessment work breakdowns listing the names of the employees and the dates of work. The survey would then be re-assessed to determine if higher credits may be allowed under the provisions of subsections 8 and 9 of section 84 of the Mining Act.

If new breakdowns are not submitted, the Performance and Coverage credits are confirmed to the Mining Recorder at the end of the fifteen days.









