010

ASSESSEMENT REPORT

VLF SURVEY

MINING CLAIMS L 893844 and L 893845

LOT 7, CONCESSION III

CATHARINE TOWNSHIP

DISTRICT OF TIMISKAMING

S. A. Gamble
December 12, 1988

TABLE OF CONTE

INTRODUCTION

This report contains the results of a ground VLF-EM survey carried out on Mining Claims L893844 and L 893845, Township of Catharine, District of Timiskaming in November, 1988. This claim is held by B. G. Cook, as a part of a group held by B. G. Cook, and S.A. Gamble in Catharine Township.

LOCATION AND ACCESS

The property is reached by travelling north from Englehart on Highway 624 approximately 14 miles to where a well used bush road leaves Highway 624 towards the northwest. This road can be followed by truck for approximately 2½ miles. Recently a beaverdam which previously blocked the road has been removed, and the beavers have relocated to the south of the bush road, making access possible beyond where the road became impassible in June, 1988. An overgrown logging road leads south approximately 3/4 mile beyond the beaverdam. This overgrown logging road meets the former bush trail to the property approximately 3/4 mile south. Frequent use of the overgrown logging roads, and cutting deadfall with a chainsaw are making the property somewhat more accessible than previously.

HISTORY

The claimshave been held by a number of individuals and companies since 1916. It had been part of a group surrounding the " shaft" claim of Ostrom Gold Mines and Canora Gold Copper Mines Ltd.

(also Primary Gold Mines Ltd.). In the early 1970's, it was held by Moncreiff Uranium Mines as part of a group called the J.M. French claims. In the early 1980's it was part of a group optioned to Kennco Exploration Ltd.

TOPOGRAPHY AND VEGETATION

The topography of M.C. L 893844 is mostly low lying with some moderately higher areas (to 6 meters) along the northern and western boundaries. Large areas of water occur where two beaverdams influence the topography of the south limit and central section of the claim. Small islands of higher ground occur near the intersections of the base line and L4W and the baseline and L8W before again encountering higher ground at approximately L11W.

Mining Claim L 893845 also consists of low ground sharing a common wet boundary with M.C. L 893844. A creek meanders north- south through a large grassy swamp through the center section of the claim, with higher areas (up to 6 meters occurring in the S.E. quadrant of the claim along L2W, L4W, and L6W. The western boundary along L12W and L 14 W also consists of higher ground with some outcrop.

At the time of this survey the large open areas of water in the beaverponds were unsafe, however in shallow areas there was some ice lying under the water making access to some water covered areas possible.
Vegetation consists of alders and swamp grass with evergreen and deciduous trees in the higher areas.

VLF - EM Survey

In late November, 1988 an EM - 16 VLF unit was used to take readings at every accessible station on Mining Claims L 893844 and L 893845 on a pre-existing grid (See Magnetometer Report M.C. L 893844 and L 893845, January, 1988, S. A. Gamble). The grid was established in the fall of 1987 and is presently in excellent condition, having been cut out with a brush cutter and chain saw when originally done. The Tyvek tags used in 1987 have been well preserved as well. The direction of the grid lines exists approximately along the lines of primary magnetic field at right angles to the direction of the station selected for use - Cutler, Maine.
The signal was found to be at a minimum when the EM-16 was oriented sideways and pointed towards the station, thus the magnetic field was confirmed to be at right angles to the receiving coil in the handle.

All readings were taken facing north along the grid lines.

INTERPRETATION

The interpretation of the VLF EM 16 results indicate one strong discrete bedrock conductor is present in the survey area. The conductor axis extends from Line 2 West, Station 4+50 South to Line 10 West 1+00 South. The inflection points marking the crossovers from positive to negative in phase % on Lines 2 West and 6 West are well defined. On Lines 4 West, 8 West

and 10 West the inflection points are water covered and therefore are inferred from the last accessible readings on each line. (See Map 1 at end of report)

North of the baseline in the central part of claim L 893844 the VLF - EM responses are attributed to wet swampy areas, conductive overburden.

CONCLUSIONS

The VLF EM 16 survey revealed one strong bedrock conductive source that extends 800 feet along strike on Mining Claim L 893845, that warrants further investigation.

CERTIFICATE OF THE AUTHOR

I, S. A. Gamble, of 70 First Street, Kirkland Lake, Ontario formerly of Kamloops, British Columbia, certify that:

1. I am a prospector residing at the above address and have held an Ontario Prospector's licence since 1979.

2. I am a graduate of the University of Ottawa and Simon Fraser University, and I have studied earth science for two years at the University of Ottawa, and one year at Laurentian University.

3. I have more than nine years relevant practical experience relating to prospecting.

4. I have in conjunction with B. G. Cook planned, directed, and carried out the geophysical survey represented by this report. I have interpreted the results of this survey.

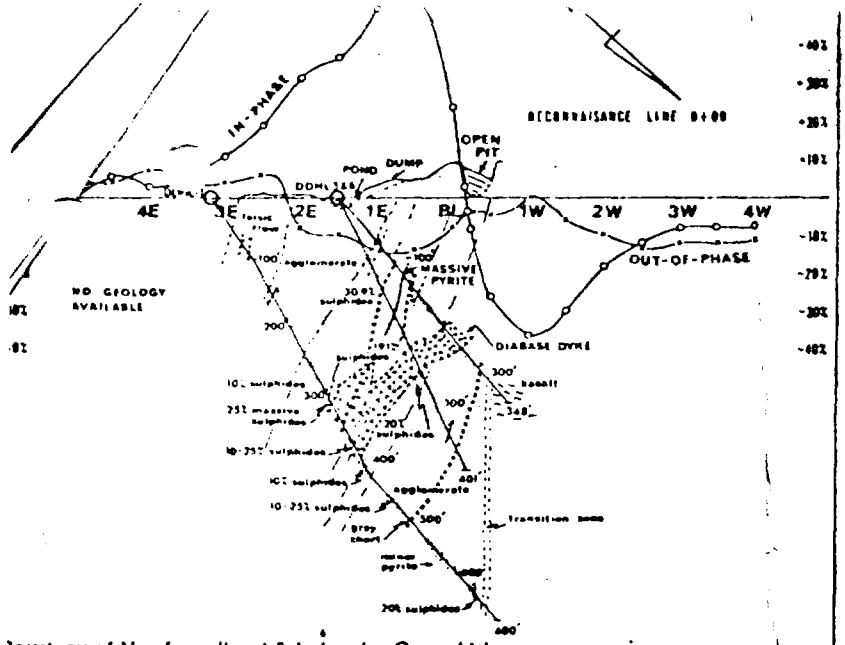
5. I hold a 50% interest in M.C. L 893844 and L 893845.

Respectfully submitted,

S. A. Gamble
December 12, 1988

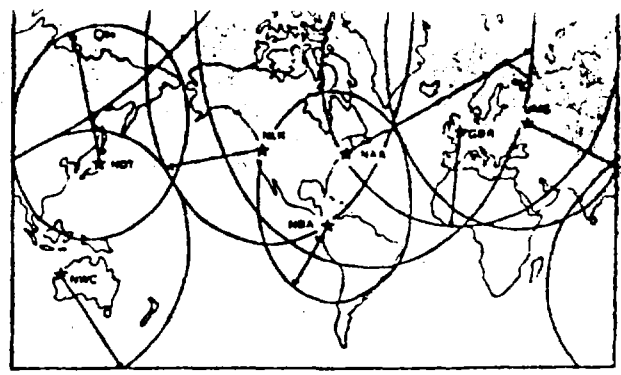
APPENDIX A.

Geonics EM 16 Specifications

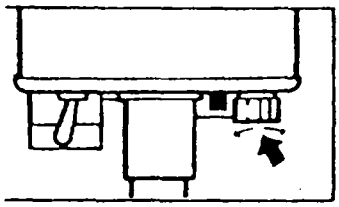


Courtesy of Newfoundland & Labrador Corp. Ltd.

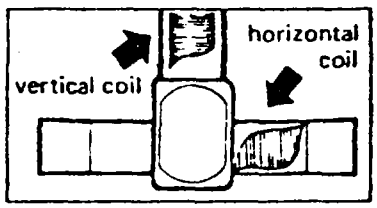
M 16 Profile over Lockport Mine Property, Newfoundland
Additional case histories on request.



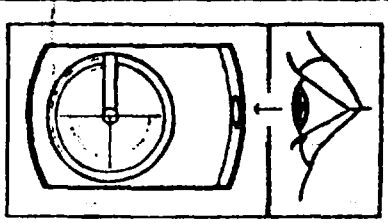
Areas of VLF Signals
Coverage shown only for well-known stations. Other reliable, fully operational stations exist. For full information regarding VLF signals in your area consult Geonics Limited. Extensive field experience has proved that the circles of coverage shown are very conservative and are actually much larger in extent.



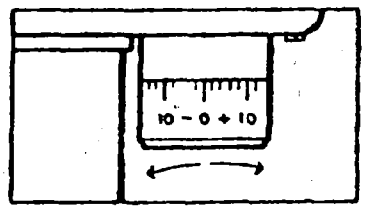
ation Selector
...o t... units can be plugged ...st o... ...me. A switch selects ...her station.



Receiving Coils
Vertical receiving coil circuit in instrument picks up any vertical signal present. Horizontal receiving coil circuit, after automatic 90° signal phase shift, feeds signal into quadrature dial in series with the receiving coil.



In-Phase Dial
shows the tilt-angle of the instrument for minimum signal. This angle is the measure of the vertical in-phase signal expressed in percentage when compared to the horizontal field.



Quadrature Dial
is calibrated in percentage markings and nulls the vertical quadrature signal in the vertical coil circuit.

r selecting a suitable transmitter station as a source, the M 16 user can survey with the most suitable primary field ...muth.

...e EM 16 has two receiving coils, one for the pick-up of the ...rizontal (primary) field and the other for detecting any ...omalous vertical secondary field. The coils are thus ortho-...nal, and are mounted inside the instrument "handle".

...e actual measurement is done by first tilting the coil ...sembly to minimize the signal in the vertical (signal) coil and ...en further sharpening the null by using the reference signal ... buck out the remaining signal. This is done by a calibrated ...quadrature" dial.

The tangent of the tilt angle is the measure of the vertical in-phase component and the quadrature reading is the signal at right angles to the total field. All readings are obtained in percentages and do not depend on the absolute amplitude of the primary signals present.

The "null" condition of the measurement is detected by the drop in the audio signal emitted from the patented resonance loudspeaker. A jack is provided for those preferring the use of an earphone instead.

The power for the instrument is from 6 penlight cells. A battery tester is provided.

NPG SEATTLE
NAA CUTLER
NSS ANNAPOLIS
NBA PANAMA

EM16

Pioneered and patented exclusively by Geonics Limited, the VLF method of electromagnetic surveying has been proven to be a major advance in exploration geophysical instrumentation.

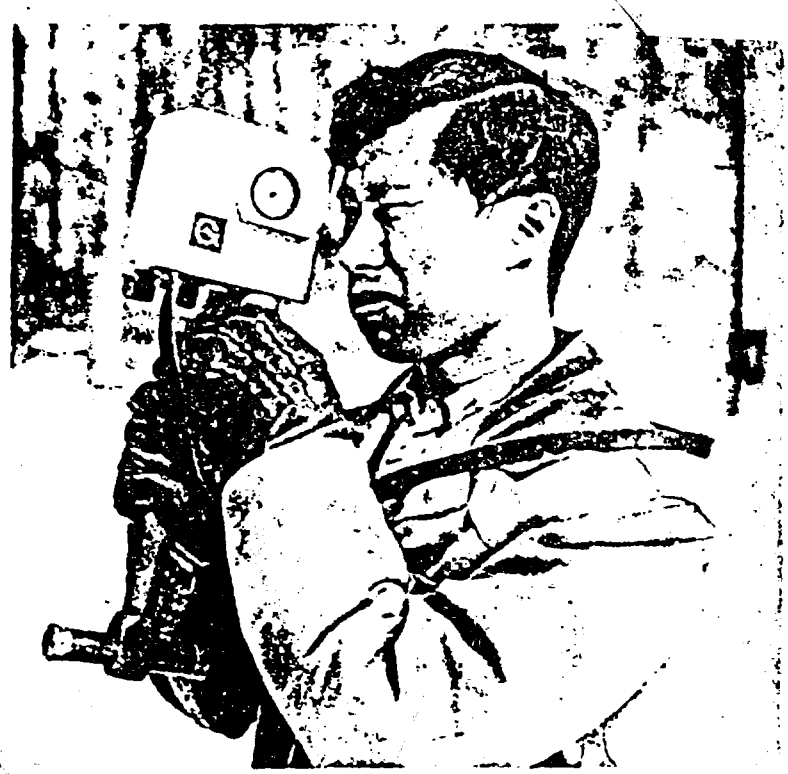
Since the beginning of 1965 a large number of mining companies have found the EM16 system to meet the need for a simple, light and effective exploration tool for mining geophysics.

The VLF method uses the military and time standard VLF transmissions as primary field. Only a receiver is then used to measure the secondary fields radiating from the local conductive targets. This allows a very light, one-man instrument to do the job. Because of the almost uniform primary field, good response from deeper targets is obtained.

The EM16 system provides the *in-phase* and *quadrature* components of the secondary field *with the polarities indicated*.

Interpretation technique has been highly developed particularly to differentiate deeper targets from the many surface indications.

Principle of Operation
The VLF transmitters have vertical antennas. The magnetic signal component is then horizontal and concentric around the transmitter location.



Specifications

Source of primary field	VLF transmitting stations.
Transmitting stations used	Any desired station frequency can be supplied with the instrument in the form of plug-in tuning units. Two tuning units can be plugged in at one time. A switch selects either station.
Operating frequency range	About 15-25 kHz.
Parameters measured	(1) The vertical in-phase component (tangent of the tilt angle of the polarization ellipsoid). (2) The vertical out-of-phase (quadrature) component (the short axis of the polarization ellipsoid compared to the long axis).
Method of reading	In-phase from a mechanical inclinometer and quadrature from a calibrated dial. Nulling by audio tone.
Scale range	In-phase ± 150%; quadrature ± 40%.
Readability	± 1%.
Reading time	10-40 seconds depending on signal strength.
Operating temperature range	—40 to 50° C.
Operating controls	ON-OFF switch, battery testing push button, station selector, switch, volume control, quadrature, dial ± 40%, inclinometer dial ± 150%.
Power Supply	6 size AA (penlight) alkaline cells. Life about 200 hours.
Dimensions	42 x 14 x 9 cm (16 x 5.5 x 3.5 in.)
Weight	1.6 kg (3.5 lbs.)
Instrument supplied with	Monotonic speaker, carrying case, manual of operation, 3 station selector plug-in tuning units (additional frequencies are optional), set of batteries.
Shipping weight	4.5 kg (10 lbs.)

GEONICS LIMITED Designers & manufacturers of geophysical instruments

2 Thorncliffe Park Drive
Toronto/Ontario/Canada
M4H 1H2
Tel: (416) 425-1821
Cables: Geonic's

Ministry of Northern Development and Mines

Ontario

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

DOCUMENT No. W8808·591

31M13NW0053 2.12175 CATHARINE

900

L.M. - 2.10756

Type of Survey(s): VLF EM 16

Township or Area: Catharine Township

Claim Holder(s): B. G. Cook

2.12175

Prospector's Licence No.: K 18972

Address: 6 Wright Hargreaves Ave. Kirkland Lake, Ont. P2N 1B2

Survey Company: S. A. Gamble & Self

Date of Survey (from & to): Day 27 Mo. 11 Yr. 88 | Day 27 Mo. 11 Yr. 88

Total Miles of line Cut:

Name and Address of Author (of Geo-Technical report): S. A. Gamble 70 First Street; Kirkland Lake, Ontario P2N 1N3

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	20
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

RECEIVED JAN 12 1989 MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	893844	~~20~~
	893845	~~20~~

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

LARDER LAKE MINING DIV. RECEIVED DEC 15 1988 AM 3:10 PM

ONTARIO GEOLOGICAL SURVEY ASSESSMENT FILES OFFICE FEB 17 1989

Total number of mining claims covered by this report of work: 2.

Expenditures (excludes power stripping)

Type of Work Performed:

Performed on Claim(s):

Calculation of Expenditure Days Credits

Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

RECEIVED

Total Days Cr. Recorded	Date Recorded	Mining Recorder
40	Dec 15, 1988	M.G. Wagman
	Date Approved as Recorded	Branch Director
	14 Feb 89	

Date: DEC 15 88

Recorded Holder or Agent (Signature): K. Gamble

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: S. A. Gamble, 70 First Street, Kirkland Lake, Ontario P2N 1N3

Date Certified: Dec 15/88

Certified by (Signature): S. A. Gamble

1362 (85/12)

Ministry of Northern Development and Mines

Ontario

Geophysical-Geological-Geochemical Technical Data Statement

File _____

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.

Type of Survey(s) VLF EM (EM-16)

Township or Area Catharine Township

Claim Holder(s) B. G. Cook

6 Wright Hargreaves, Kirkland Lk.Ont

Survey Company self

Author of Report S. A. Gamble

Address of Author 70 First Street

Covering Dates of Survey November 27, 1988 - Dec.12, 1988
(linecutting to office)

Total Miles of Line Cut 3½ miles (Pre- existing grid 987)

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	20
–Magnetometer	
–Radiometric	
–Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: _____ SIGNATURE: _____
Author of Report or Agent

Res. Geol. _____ Qualifications 2.10867

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

L 893844 (prefix) (number)

L 893845

If space insufficient, attach list

TOTAL CLAIMS _____

OFFICE USE ONLY

837 (85/12)

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

_____

Additional information (for understanding results) _____

_____

_____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

_____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

_____

_____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

_____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

_____

Drainage Development _____

Estimated Range of Overburden Thickness _____

_____

_____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

_____

_____

_____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ANALYTICAL METHODS

Values expressed in: per cent ☐
p. p. m. ☐
p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations 176 (accessible) Number of Readings 176

Station interval 100 feet Line spacing 200 feet

Profile scale 40

Contour interval

MAGNETIC

Instrument

Accuracy – Scale constant

Diurnal correction method

Base Station check-in interval (hours)

Base Station location and value

ELECTROMAGNETIC

Instrument Geonics VLF EM 16

Coil configuration orthogonal, Reference coil - horizontal Signal coil vertical

Coil separation ~~vertical and horizontal~~ Cutler, Maine - Catharine Twp.

Accuracy Inphase 150% Quad. Phase +40% Resolution ± 1%

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☒ Parallel line

Frequency Cutler Maine, (17.8 kHz)
(specify V.L.F. station)

Parameters measured Vertical In Phase, Vertical out of Phase Quadrature

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION
RESISTIVITY

Instrument

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time Frequency

– Off time Range

– Delay time

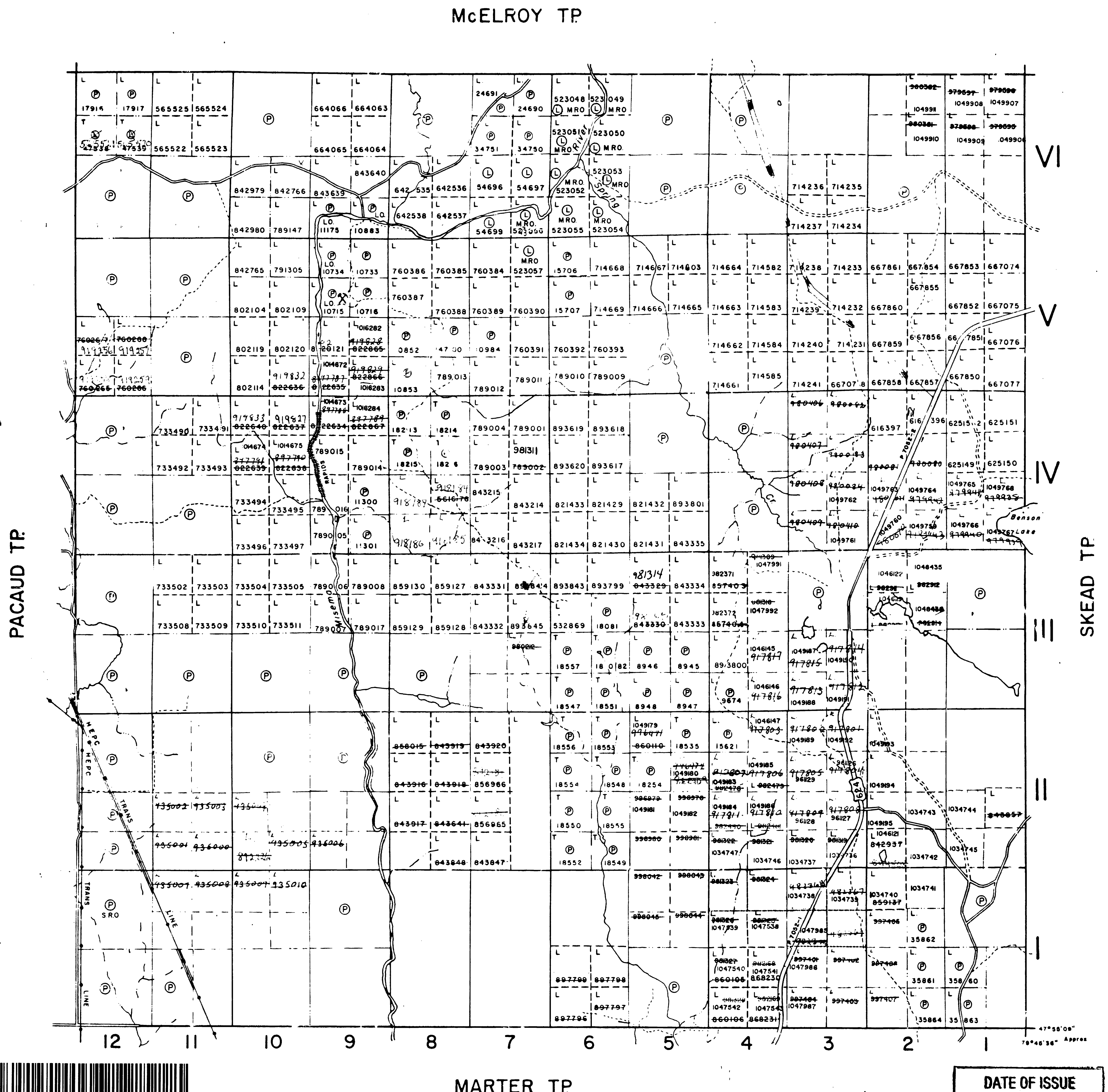
– Integration time

Power

Electrode array

Electrode spacing

Type of electrode



31M13NW0053 2.12175 CATHARINE

200

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File

NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE TIMISKAMING MANAGEMENT UNIT AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129 SWASTIKA, ONT. POK 1TO 705-642-3222

LEGEND

PATENTED LAND	Ⓟ or ◐*
PATENTED FOR SURFACE RIGHTS ONLY	
LEASE	Ⓛ
LICENSE OF OCCUPATION	L.O.
CROWN LAND SALES	C.S.
LOCATED LAND	Loc.
CANCELLED	C.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
HIGHWAY & ROUTE NO.	
ROADS	
TRAILS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	

*used only with summer resort locations or when space is limited

TOWNSHIP OF

CATHARINE

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1 INCH – 40 CHAINS (1/2 MILE)

7733

DR.		PLAN NO. G-3615
DATE	JULY 1986	

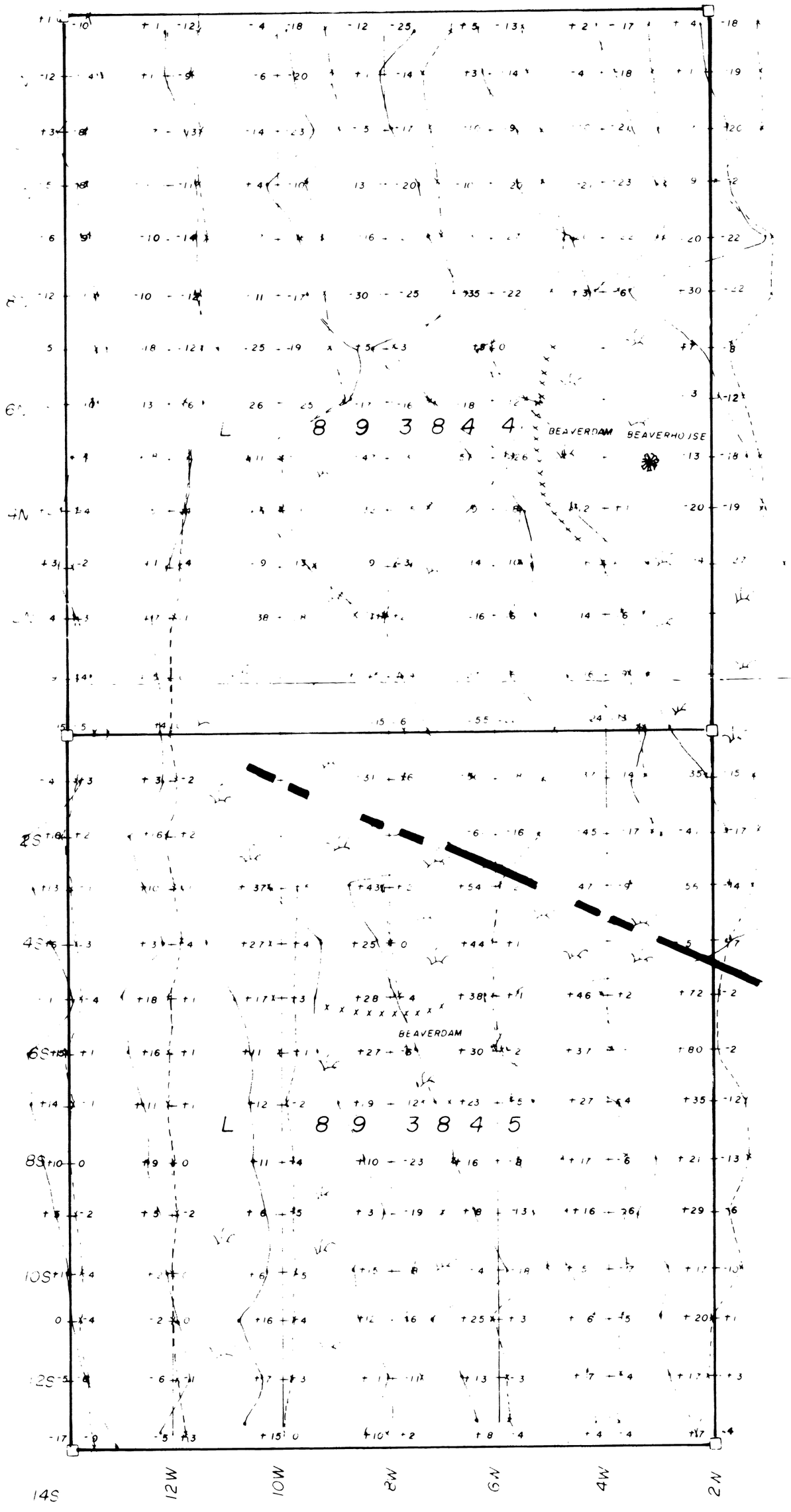
DATE OF ISSUE

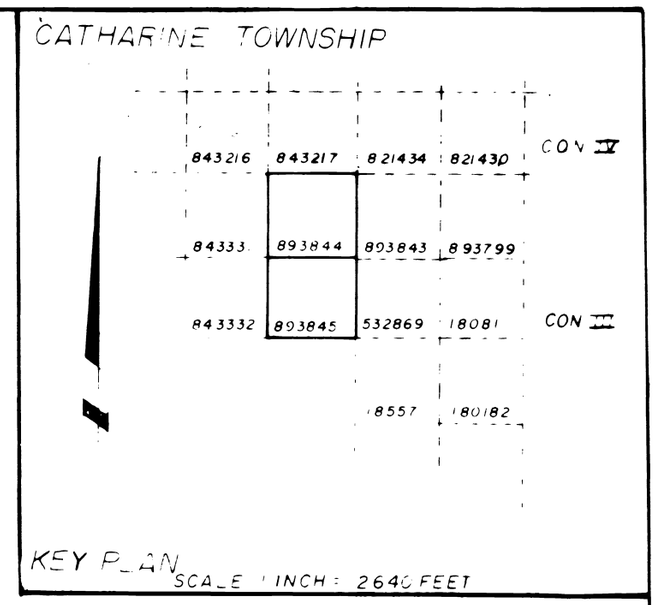
FEB 3 1989

Ministry of Natural Resources

Ministry of Northern Development and Mines

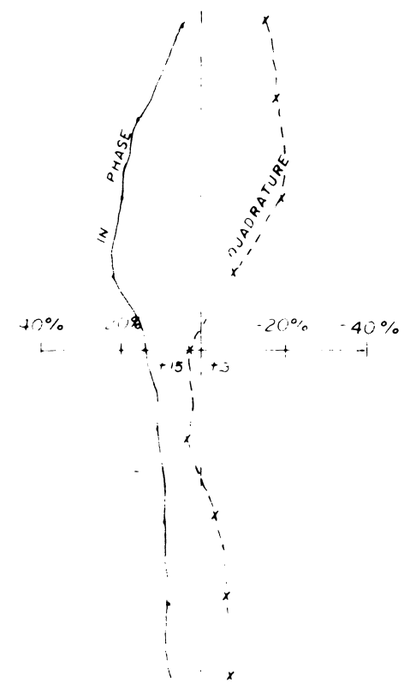
Ontario





SCALE 1" = 200 FEET

0 200 400 600



VLF STATION
TG CUTLER, MAINE
NAA 17.8 kHz

ALL READINGS TAKEN FACING NORTH

KIRKLAND LAKE, ONT S A GAMBLE
DECEMBER [illegible], 1945

VLF EM ANOMALY AXIS
ACTUAL
INFERRED

2.12175

1" = 200'

CATHARINE PROPERTY
COOK - GAMBLE CLAIMS
VLF L 893844 & L 893845

LOT 7