



42B01SE0047 2.9685 HORWOOD

010

VLF ELECTROMAGNETIC SURVEY REPORT

ON THE

HORWOOD PROPERTY

HORWOOD TOWNSHIP

PORCUPINE MINING DIVISION

RECEIVED

JAN 29 1987

MINING LANDS SECTION

January 5, 1987

H.P. Hutteri, H.B.Sc.



42B01SE0047 2.9685 HORWOOD

010C

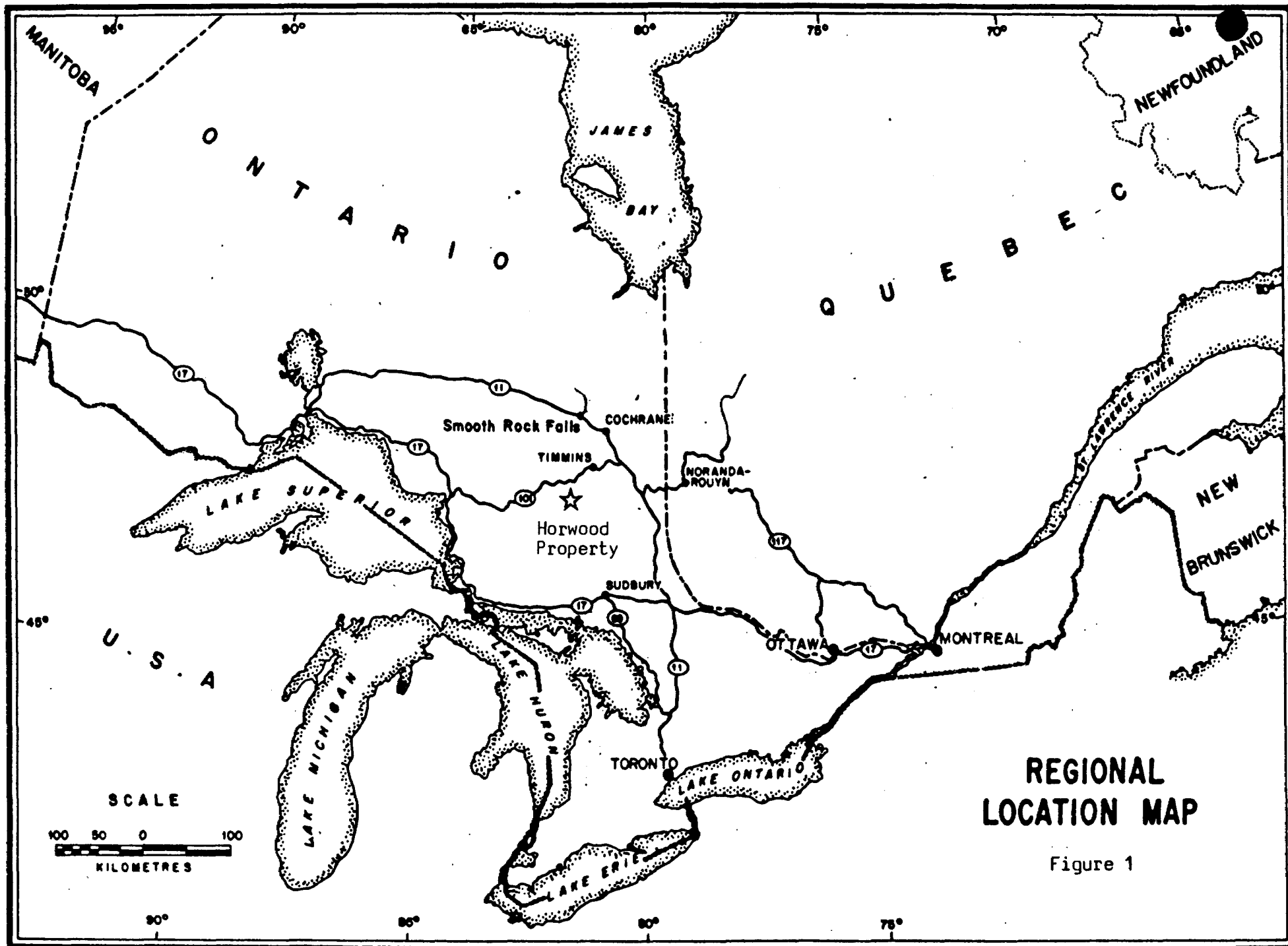
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VLF Profile Map in back pocket



REGIONAL LOCATION MAP

Figure 1

INTRODUCTION

A VLF electromagnetic survey was conducted over a 5-claim property, located within Horwood Township, on behalf of Pelangio-Larder Mines Limited. Work on the property was completed in the fall of 1986 by Ingamar Explorations Limited. The survey was completed in order to verify previously outlined electromagnetic conductors.

The evaluation is based on the author's experience within the area, field work conducted on the property and a search of the assessment files available in Timmins, Ontario.

PROPERTY DESCRIPTION

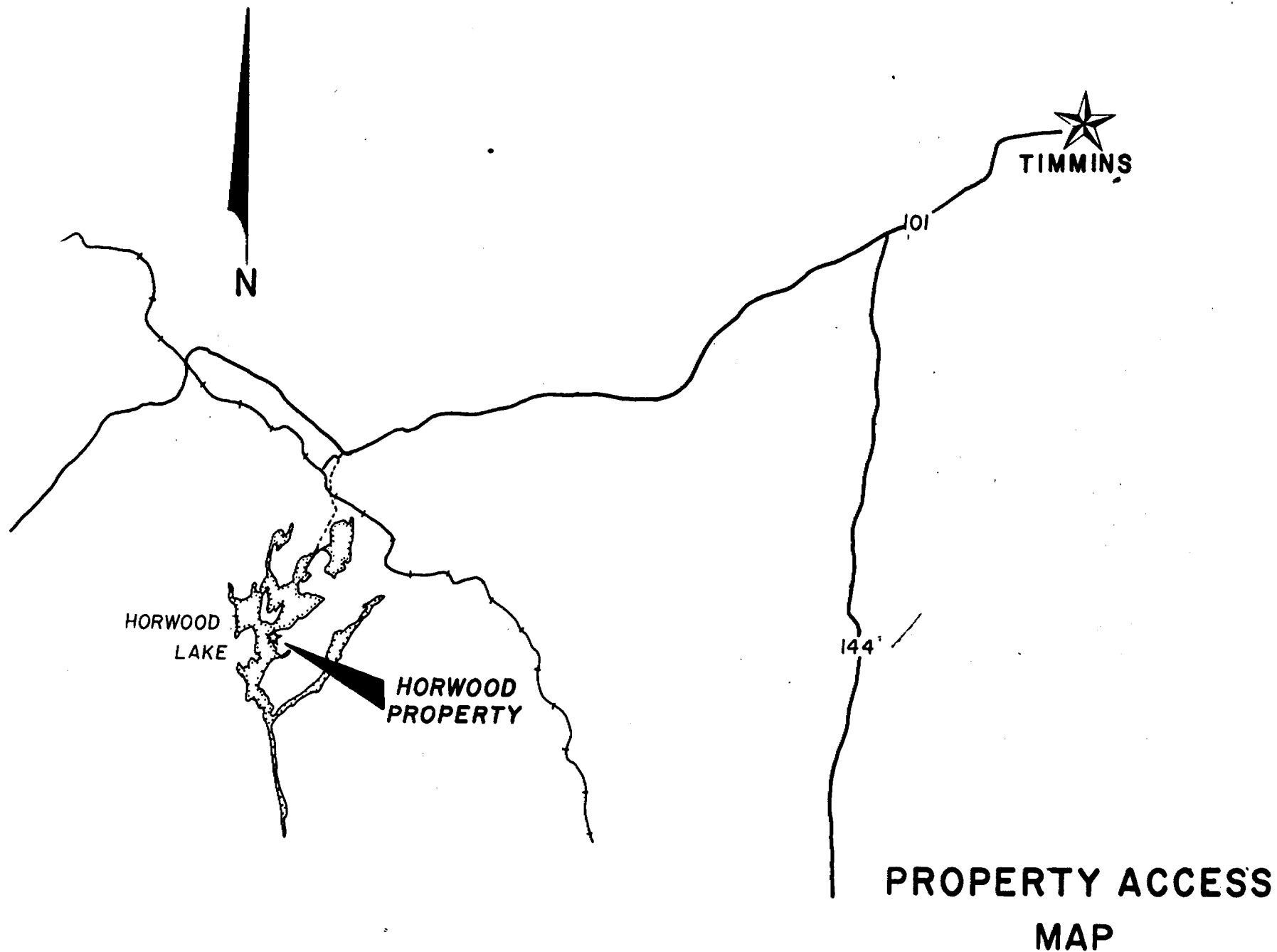
The property described in this report consists of five contiguous unpatented mining claims located in Horwood Township, Ontario. The claim numbers are listed below:

P-798703
P-798704
P-798705
P-798708
P-798709

The claims are currently being transferred to Pelangio-Lareder Mines Limited, P.O. Box 1456, Timmins, Ontario P4N 7N2.

LOCATION & ACCESS

The property consists of five contiguous mining claims located within central Horwood Township, Porcupine Mining Division. The Horwood Property lies approximately 70 miles southwest of Timmins, Ontario. Access to the northeast shore of Horwood Lake from Highway 101 can be gained by travelling down the secondary highway 616 for approximately 10 miles to an access road which leads to the lake. A boat is then required to



**PROPERTY ACCESS
MAP**

Figure 2

Scale: 1:500 000

LOCATION & ACCESS cont'd

reach the claim group (figure 2). Access to the property is also readily gained by fixed-wing-aircraft or by helicopter from Timmins.

PREVIOUS WORK

From 1949 to 1959 J.E. Lefever held a group of claims covering the Horwood Property. A diamond drilling program (xray) was carried out totalling 1905 feet. It consisted of 24 holes in the area of the "main gold showing" located along the southern boundary of the most westerly claim, and two holes located within the two central claims of the subject group. The best assays obtained was 0.56 oz/ton Au over 10' and 7.8 oz/ton Au in a sludge sample.

In 1960, Kerr Addison Mines Ltd. completed a magnetometer survey and a diamond drilling program over the main showing while under option from J.E. Lefever. The program was carried out after grab samples collected by the aforementioned company in 1958 yielded gold values up to 5.46 oz/ton. The drill program consisted of 7 holes totalling 3026 feet over a 500 foot strike length. A narrow

PREVIOUS WORK cont'd

gold-bearing zone was outlined which consisted of mineralized quartz-carbonate stringers and veins within sheared diorite. A small magnetic anomaly located southwest of the main showing was also drilled (347') and found to be the result of magnetite bearing diorite.

In 1972 Noranda Exploration Company Ltd. completed Vertical Loop electromagnetic, and Fluxgate magnetometer surveys over the Horwood Property. Two weak EM conductors were located west of the property near Blueberry Island. The magnetometer survey delineated the general east-west structural trend of the area and uncovered several north-south striking diabase dikes.

In 1980 MPH Consulting Ltd. completed VLF-EM and Proton and magnetometer surveys on behalf of Ingamar Explorations Limited. First derivative maps were produced from the VLF data and several conductors were outlined; a few of which lie within the subject claim group. A magnetic low was detected near the main showing as well.

In 1982 Raise Contracting Ltd. completed a detailed geological survey, stripping and trenching, covering the southeastern claim of the

PREVIOUS WORK cont'd

Horwood Property, which encompasses the "inlet showing". Some stripping and trenching was also completed over the main showing located on the northern tip of the small island further to the west. Encouraging gold values were encountered within quartz-carbonate veins.

GEOLOGY

The Horwood Property lies within the northeast portion of the Swayze greenstone belt. The Swayze belt is underlain predominantly by mafic to intermediate metavolcanic rocks of Archean age with lesser felsic flows, tuffs and clastic and chemical sediments. Mafic to ultramafic plutons of variable size intrude the metavolcanic sequence. All of the above rock types are cut by Late Precambrian diabase dikes.

The Horwood Property is underlain predominantly by massive and pillowed mafic to intermediate metavolcanic rocks with lesser diorite, rhyolite and sediments. These units are cut by feldspar porphyry and north trending diabase dikes.

GEOLOGY cont'd

Two gold showings lie within the claim group and are referred to as the "main showing" and the "inlet showing". The main showing lies on the north edge of a small island located just below claim 798703 in the western end of the property. It consists of a series of east to northeast striking, steeply dipping, quartz-carbonate veins and stringers varying in width from 4 to 18 inches. The veins contain disseminated and massive pyrite, pyrrhotite and chalcopyrite and lie within carbonatized volcanic and dioritic rocks. Significant gold assays have been obtained from these veins in previous drilling.

The inlet showing is located approximately 400 feet east of an inlet which cuts the east half of the property. It consists of a narrow vein up to 4 inches wide and 300 feet long. The vein has been reported to contain pyrite, chalcopyrite, bornite, malachite and significant gold values.

GEOPHYSICAL SURVEY

Introduction

A VLF electromagnetic survey was completed on 5.53 miles of flagged grid lines using the Geonics EM-16 unit. The transmitting station used for the survey was Cutler, Maine, which has a transmitting frequency of 24.0 Kilohertz. The instrument's specifications are located in Appendix I. A total of 305 readings were taken at 100 foot intervals along flagged grid lines, spaced 300 feet apart, trending north. The survey was conducted by the author of this report and by David Jones of Timmins, Ontario.

Procedures

Grid lines trending 000° were surveyed facing north at 100 foot intervals. The in-phase and quadrature values were recorded and plotted on the profile map. The values on the left side of the survey line represent the in-phase values and those on the right side represent the quadrature values.

INTERPRETATION

Three conductors were located by the electromagnetic survey and are hereby referred to as Conductors "A", "B" and "C".

Conductor "A"

Conductor "A" is located in the west end of the property, just north of the "main showing". It has a relatively strong conductivity and it strikes roughly eastward for at least 1000 feet. The probable source of this conductor is the contact between felsic to intermediate volcanics and diorite, which Kerr Addison Mines Ltd. encountered in their diamond drill hole #8.

Conductor "B"

Conductor "B" is located in the central portion of the property, approximately 200 feet south of the baseline. It is a relatively weak and discontinuous conductor, which strikes easterly. It may represent the eastward extension of Conductor "A" because of its proximity, similar strike direction and because Conductor "A" seems to have poorer conductivity in its eastern end.

INTERPRETATION cont'd

Conductor "C"

This is a relatively well defined conductor located in the northeast corner of the property. It has a relatively poor conductivity and it strikes northeast for approximately 700 feet on the property. Although it is relatively weak, the shape of the crossovers indicate a bedrock source, possibly a geological contact.

CONCLUSIONS & RECOMMENDATIONS

Three conductors were delineated by the VLF-EM survey. All three conductors have been interpreted to be caused by a bedrock source, probably geological contact zones.

No direct correlation was found between these conductors and the two gold bearing zones within the claim group; however, the "main showing" was found to lie just south of Conductor "A". Since Conductor "A" has a fair strike length, the area just south of it along its length may contain similar gold-bearing zones as in the "main showing".

It is recommended that a geological survey be carried out in order to aid in identifying the conductors, and that an induced polarization survey be carried out over the entire property in order to fully outline the known gold-bearing zones and to possibly locate new ones. Diamond drilling would then follow depending upon the results of the surveys.

CERTIFICATE

I, Henry Hutteri, of Timmins, Ontario hereby certify
that:

- 1) I hold an Honours Bachelor of Science Degree
in Geology from Laurentian University,
Sudbury, Ontario having graduated in
June 1985.
- 2) I have based my conclusions and recommendations
contained in this report on knowledge of the
area, on the results of field work conducted on
the property and on assessment files research.
- 3) I hold no interest directly or indirectly in
this property other than professional fees nor
do I expect to receive any interest in the
property.

2nd
2.8385

Henry P. Hutteri
Henry P. Hutteri, H.B.Sc.

APPENDIX

EM16

VLF Electromagnetic Unit

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.	Reading time	10-40 seconds depending on signal strength.
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 temperature range	-40 to 50° C.
Operating frequency range	About 15-25 kHz.	Operating controls	ON-OFF switch, battery testing push button, station selector, switch, volume control, quadrature, dial $\pm 40\%$, inclinometer dial $\pm 150\%$.
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).	Power Supply	6 size AA (penlight) alkaline cells. Life about 200 hours.
Method of reading	In-phase from a mechanical inclinometer and quadrature from a calibrated dial. Nulling by audio tone.	Dimensions	42 x 14 x 9 cm (16 x 5.5 x 3.5 in.)
Scale range	In-phase $\pm 150\%$; quadrature $\pm 40\%$.	Weight	1.6 kg (3.5 lbs.)
Readability	$\pm 1\%$.	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.)

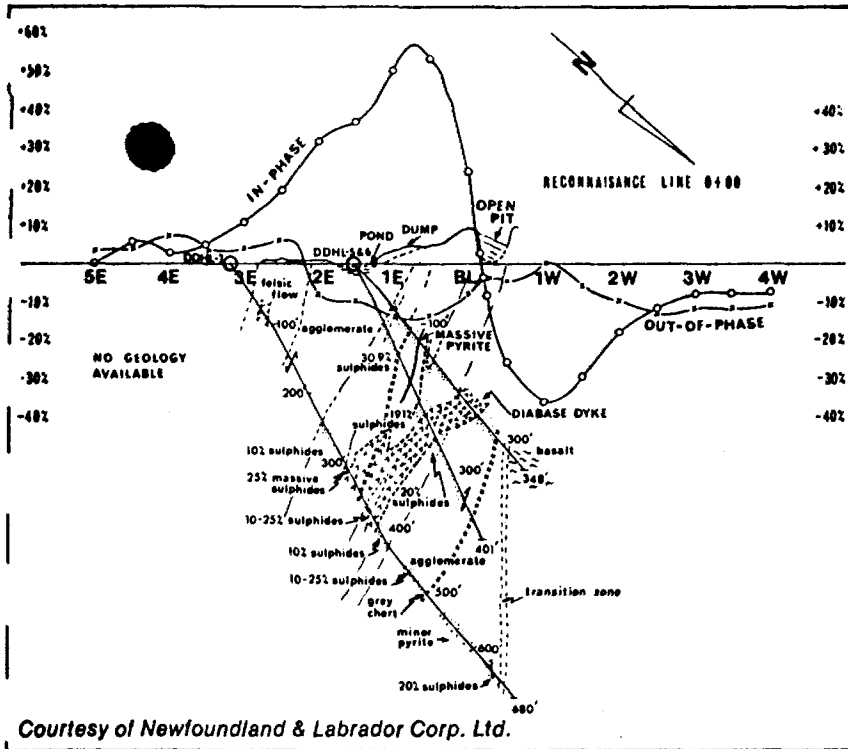


GEONICS LIMITED

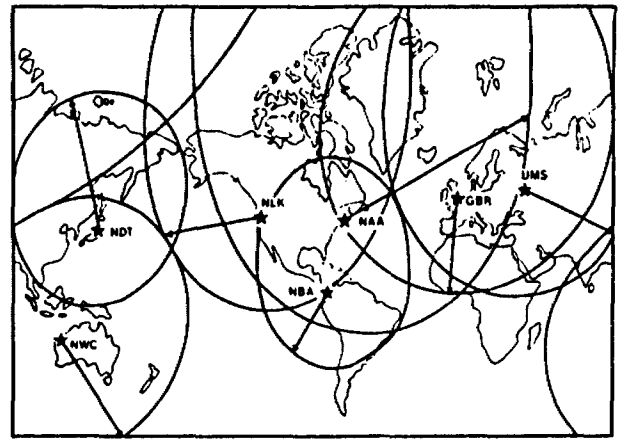
Designers & manufacturers
of geophysical instruments

subsidiary of
Deering Milliken Inc.

2 Thorncliffe Park Drive,
Toronto/Ontario/Canada
M4H 1H2
Tel: 425-1824
Cables: Geonics



Courtesy of Newfoundland & Labrador Corp. Ltd.

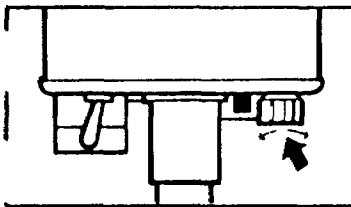


Areas of VLF Signals

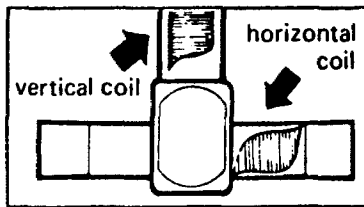
Coverage shown only for well-known stations. Other reliable, fully operational stations exist. For full information regarding VLF signals in your area consult Geonics Limited. Extensive field experience has proved that the circles of coverage shown are very conservative and are actually much larger in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

EM 16 Profile over Lockport Mine Property, Newfoundland

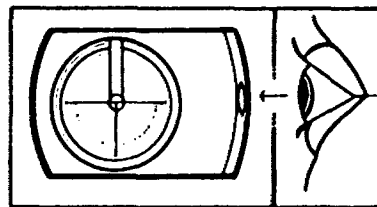
Additional case histories on request.



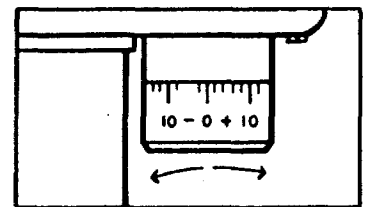
Station Selector
Two tuning units can be plugged at one time. A switch selects either station.



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.

By selecting a suitable transmitter station as a source, the EM 16 user can survey with the most suitable primary field azimuth.

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

The actual measurement is done by first tilting the coil assembly to minimize the signal in the vertical (signal) coil and then further sharpening the null by using the reference signal to 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.



Report of Work
(Geophysical, Geological,
Geochemical and Expenditures)

313



42B01SE0047 2.9685 HORWOOD

900

Mining A... - Do not use shaded areas below.

Type of Survey(s) GEOLOGICAL & VLF SURVEY		Township or Area HORWOOD TOWNSHIP	
Claim Holder(s) IRENE OWEN		Prospector's Licence No. A46440	
Address 633 BAY STREET, SUITE 517, TORONTO, ONTARIO M5G 1G7			
Survey Company INGAMAR EXPLORATIONS LIMITED		Date of Survey (from & to) 20 09 86 29 09 86 Day Mo. Yr. Day Mo. Yr.	
Name and Address of Author (of Geo-Technical report) H.P. Hutteri, Box 1256, South Porcupine, Ont. P0N 1H0 Mike Tremblay, P.O. Box 354, Chapleau, Ont. P0M 1K0			

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

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

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

Mining Claims Traversed (List in numerical sequence)			Mining Claims Traversed (List in numerical sequence)		
Prefix	Mining Claim Number	Expend. Days Cr.	Prefix	Mining Claim Number	Expend. Days Cr.
P	798703				
	798704				
	798705				
	798708				
	798709				

RECORDED
SEP 30 1986

RECEIVED

OCT 06 1986

MINING LANDS SECTION

See attached work statement

Expenditures (excludes power stripping)

Type of Work Performed

Performed on **SEP 30 1986**

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.

Total number of mining claims covered by this report of work. **5**

For Office Use Only			
Total Days Cr. Recorded	Date Recorded	Mining Recorder	
200	Sept. 30/86	<i>[Signature]</i>	
	Date Approved as Recorded	Branch Director	

Date **September 28/86** Recorded Holder or Agent (Signature) *[Signature]* Agent

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
MAURICE HIBBARD

CFDAR HTLL, CONNAUGHT, ONT. P0N 1A0 Date Certified **Sept. 28/86** Certified by (Signature) *[Signature]*



2-7685

Jan 1.

In the matter of mining claims:

P 798703, et al,
in Horwood Township
as listed on Report of Work
No.313.

On consideration of an application from the recorded holder, Irene Owen
under Section 77 Subsection 22 of the Mining Act, I hereby order that the time for filing reports and plans in support of
Geophysical (Electromagnetic) & Geological assessment work recorded on September 30, 19 86
be extended until and including January 9, 19 87.

1986 12 01
Date

[Signature]
Signature of Director, Land Management Branch

Copies: Irene Owen
Suite 517
533 Bay Street
Toronto, Ontario
M5G 1G7

Maurcie Hibbard
Cedar Hill
Connaught, Ontario
P0N 1A0

Mike Tremblay
P.O. Box 354
Chapleau, Ontario
P0M 1K0

H.P. Hutteri
Box 1256
South Porcupine, On
P0N 1H0

Mining Recorder
Timmins, Ontario

291685

File	2.9685
Date	January 23, 1987
Mining Recorder's Report of Work No.	313/86

Recorded Holder	IRENE OWEN
Township or Area	HORWOOD TOWNSHIP

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ 20 _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	P 798703 to 05 inclusive 798708-09

Special credits under section 77 (16) for the following mining claims

--

No credits have been allowed for the following mining claims

<input type="checkbox"/> not sufficiently covered by the survey	<input type="checkbox"/> insufficient technical data filed
<p>- NO GEOLOGICAL CREDITS, AS REPORTS AND MAPS NOT SUBMITTED</p>	

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.

29685

February 16, 1987

Your File: 313/86
Our File: 2.9685

Mining Recorder
Ministry of Northern Development and Mines
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

RE: Notice of Intent dated January 23, 1987
Geophysical (Electromagnetic) and Geological
Surveys on Mining Claims P 797803, et al,
in Horwood Township

The assessment work credits, as listed with the above-mentioned
Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and
so indicate on your records.

Yours sincerely,

J.C. Smith, A/Manager
Mining Lands Section
Mineral Development and Lands Branch
Mines and Minerals Division

Whitney Block, Room 6610
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

DK/mc

cc: Irene Owen
Suite 517
633 Bay Street
Toronto, Ontario
M5G 1G7

Mr. G.H. Ferguson Resident Geologist
Mining & Lands Commissioner Timmins, Ontario
Toronto, Ontario

Encl.

REFERENCES

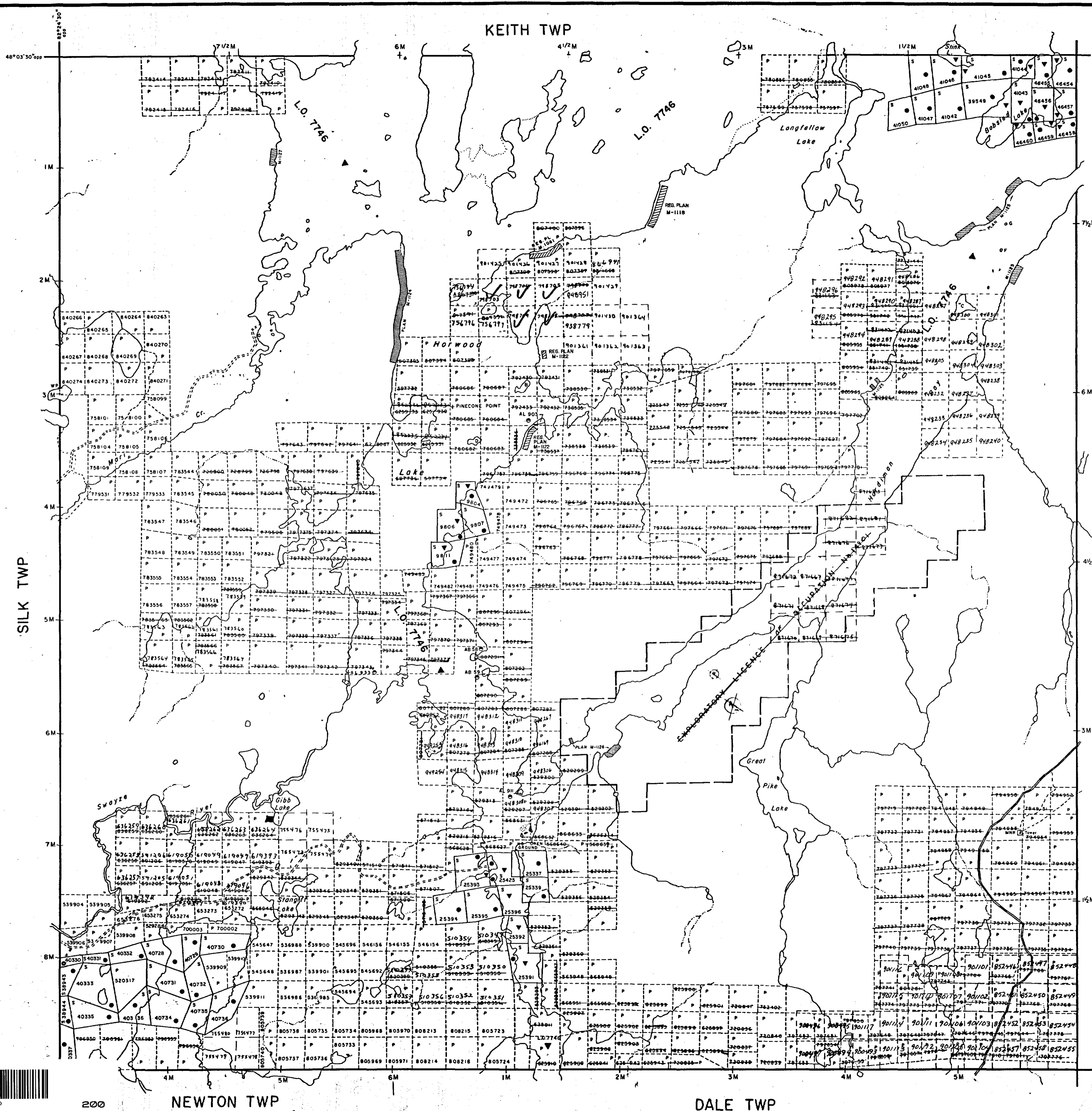
AREAS WITHDRAWN FROM DISPOSITION

M.R.O. - MINING RIGHTS ONLY				
S.R.O. - SURFACE RIGHTS ONLY				
M.+S. - MINING AND SURFACE RIGHTS				
Description	Order No.	Date	Disposition	File
SEC. 36/80	W. 2/82	re-opened N.A.O. 3/82		
B.L.O. 14901	NRD 22/85	JULY 7/85	NR = SA, RE-OPENED	JULY 17/85 7:30 A.M.

S.U.P.

FLOODING

FLOODING RIGHTS ON HORWOOD LAKE & HARDIMAN BAY TO CONTOUR ELEV. 1117 FEET ARE RESERVED TO THE SPRUCE FALLS POWER AND PAPER CO. LTD. File: 75166 L.O. 7746



LEGEND

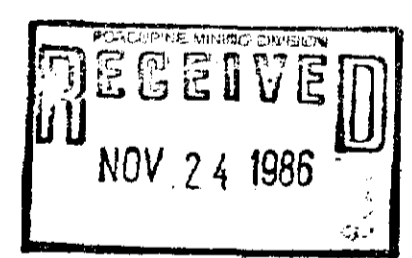
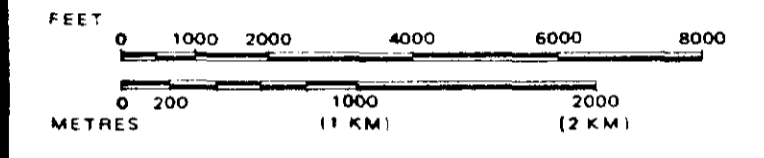
HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES:	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON-PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKEG	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

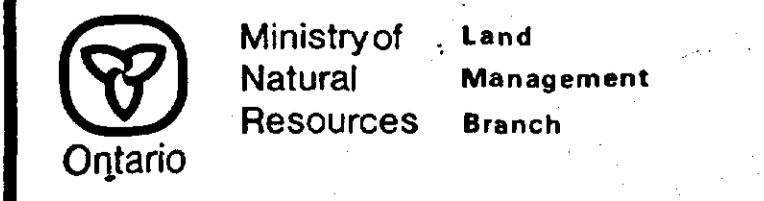
TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

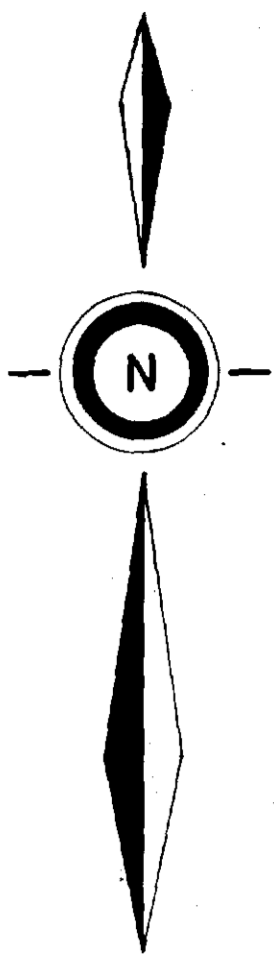
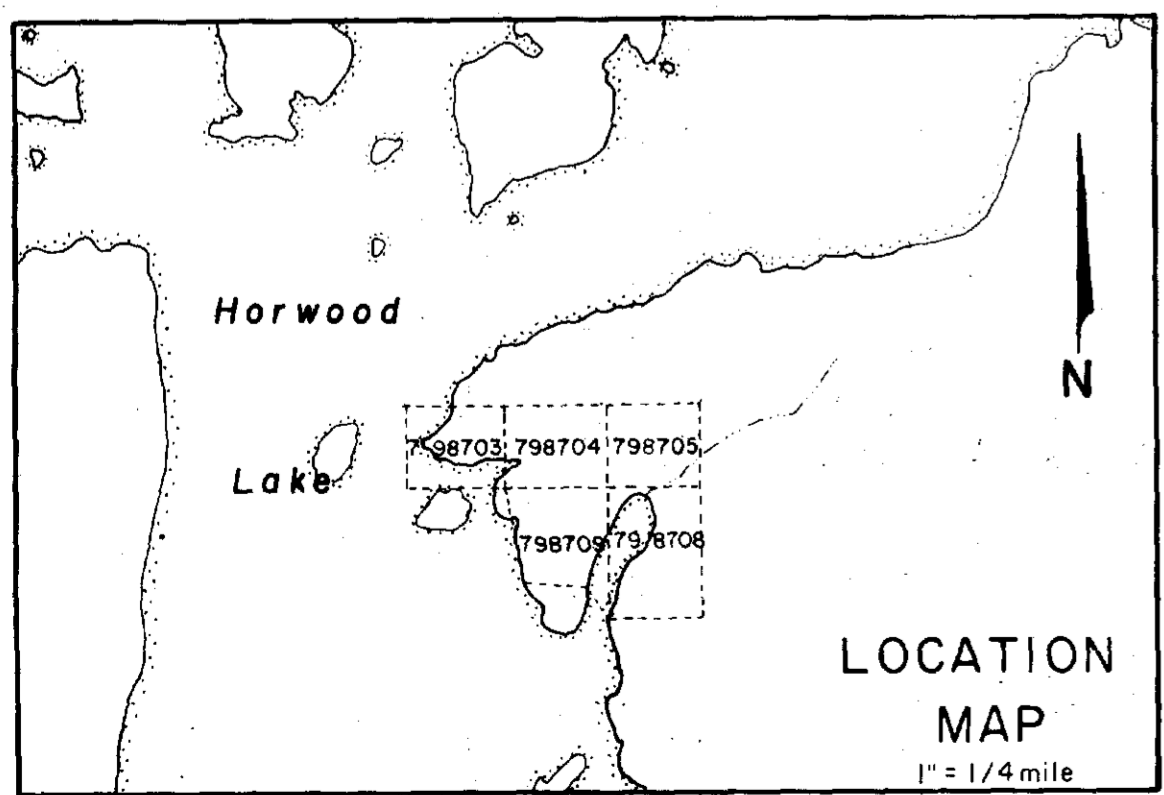
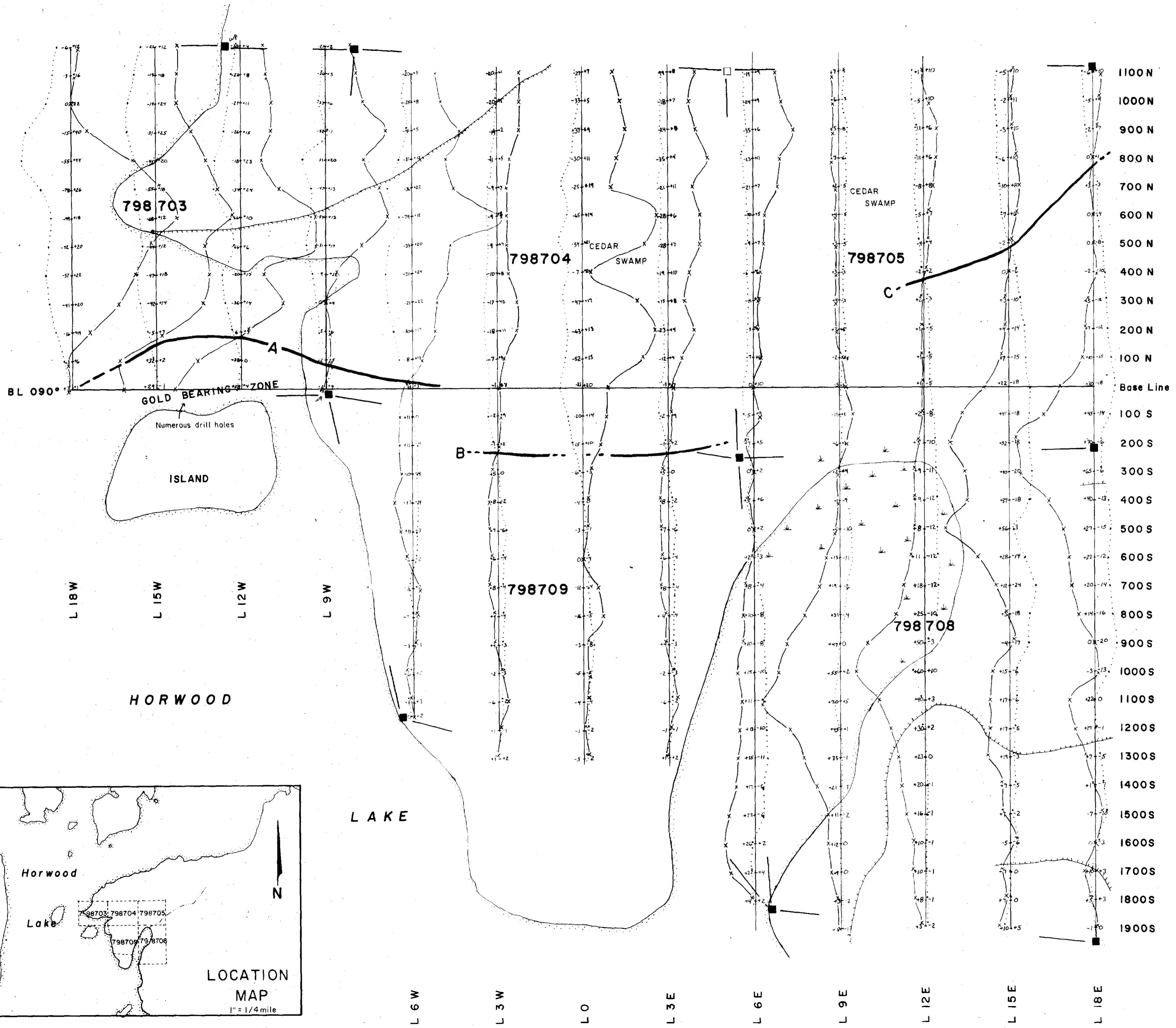
SCALE: 1 INCH = 40 CHAINS



TOWNSHIP
HORWOOD
 M.N.R. ADMINISTRATIVE DISTRICT
 CHAPLEAU
 MINING DIVISION
 PORCUPINE
 LAND TITLES / REGISTRY DIVISION
 SUDBURY

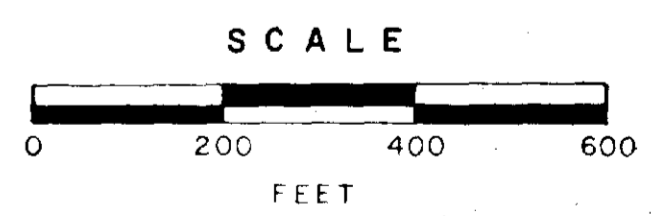


Date: MARCH 1985
 Number: **G-3228**



LEGEND

- INSTRUMENT: GEONICS EM-16
- STATION: CUTLER, MAINE 24.0 KHz
- X — INPHASE
- QUADRATURE
- SCALE FOR READINGS
- CLAIM POST
- WITNESS POST
- SWAMP
- HILLSIDE
- CONDUCTOR



29685

INGAMAR EXPLORATIONS LIMITED

HORWOOD PROPERTY
HORWOOD TOWNSHIP
VLF-EM SURVEY

Project No:	By: H.P.Hutteri
Scale: 1 inch = 200 feet	Drawn: H.P.Hutteri
Drawing No: 1	Date: 05/01/1987

Henry P. Hutteri

