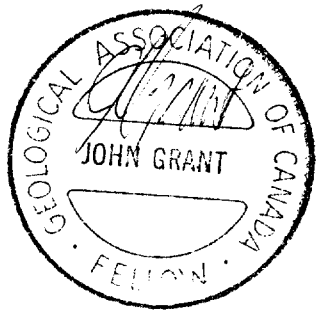
GEOPHYSICAL REPORT
FOR
OUTOKUMPU MINES LIMITED
ON THE
CARMAN BAY PROPERTY
CARMAN AND LANGMUIR TOWNSHIPS
PORCUPINE MINING DIVISION
NORTHEASTERN, ONTARIO



Prepared By: J.C.Grant, CET, FGAC
April, 1998

010C

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INTRODUCTION:

The services of Exsics Exploration Limited were retained by Outokumpu Mines Limited to complete a linecutting and ground geophysical program on a block of claims located in Carman and Lagmuir Townships of the Porcupine Mining Division in Northeastern Ontario.

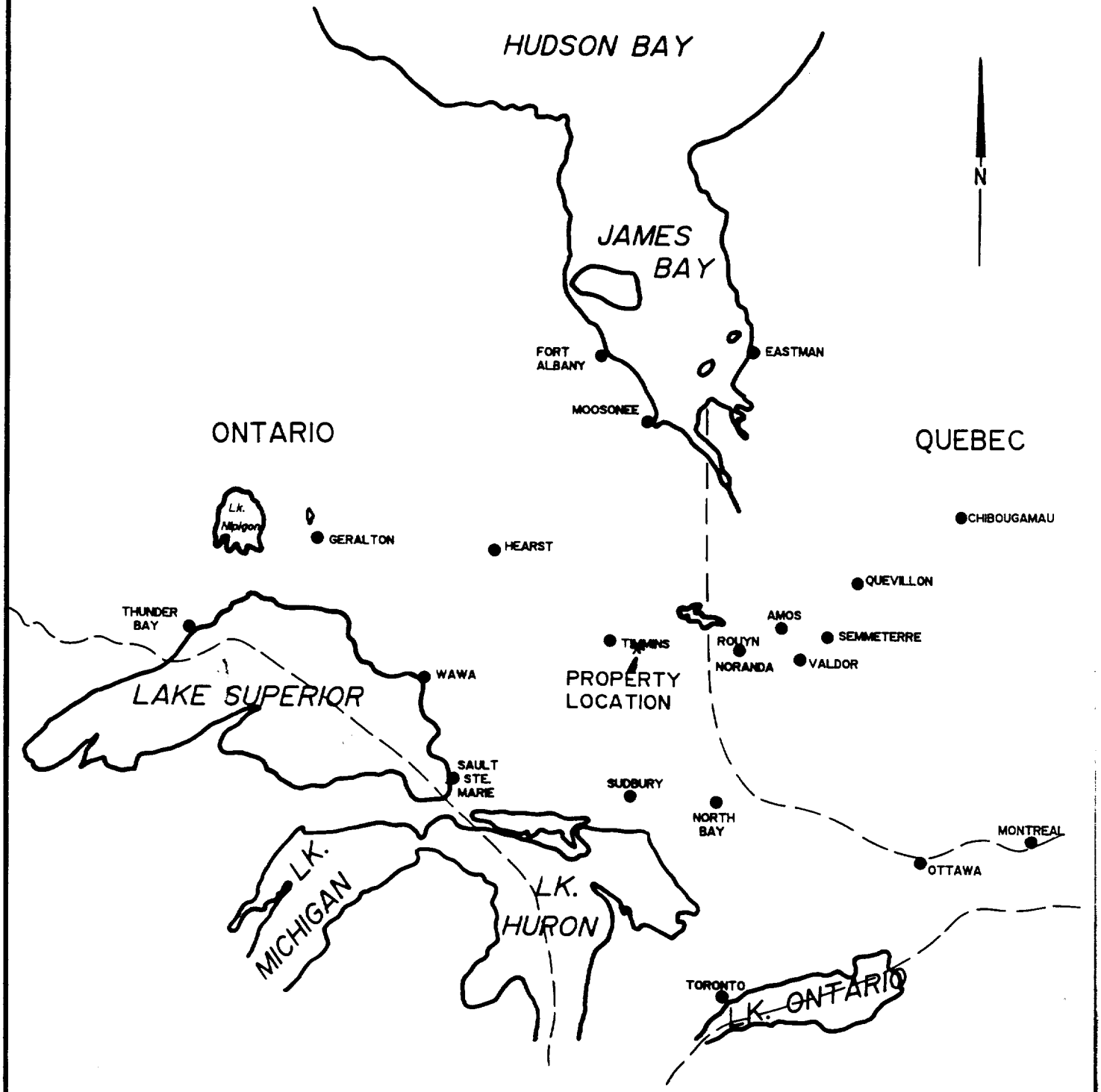
The purpose of this program was to continues a previously cut grid that had been done in the past on the shore of the Bay. This new grid was to be a continuance of the existing grid and the surveys were to enhance the conductors that had been previously outlined and to trace them to their limits out into the Bay.

The program commenced with the linecutting that began on the 12th of February, 1998 and ended with the completion of the geophysical surveys on the 25th of February, 1998. A total of 18.0 kilometers of grid lines were cut and read across the property.

PROPERTY LOCATION AND ACCESS:

The Carman Bay Property is located in the southeast section of Carman Township and the northeast section of Langmuir Township, both of which are located in the Porcupine Mining Division, District of Cochrane, of Northeastern Ontario. More specifically the property covered by this report is situated along the west shore of Carman Bay and extends 200 to 400 meters out into the Bay. Refer to figures 1 and 2. The entire property is situated approximately 34 kilometers southeast of the City of Timmins.

Access to the property during the survey period was relatively easy. A good gravel road, locally called the Langmuir Road, travels southeast from a paved road called the Back Road which links Timmins to South Porcupine. This Lanmuir road runs through the Townships of Whitney, Shaw and across the north portion of Langmuir Township and eventually leads to the southern tip of Carman Bay. A skidoo was used from this point, along the west shore of Carman Bay, to access the grid. Travelling time from Timmins to the area is approximately 60 minutes.



EXSICS EXPLORATION LTD.
P.O. Box 1888, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

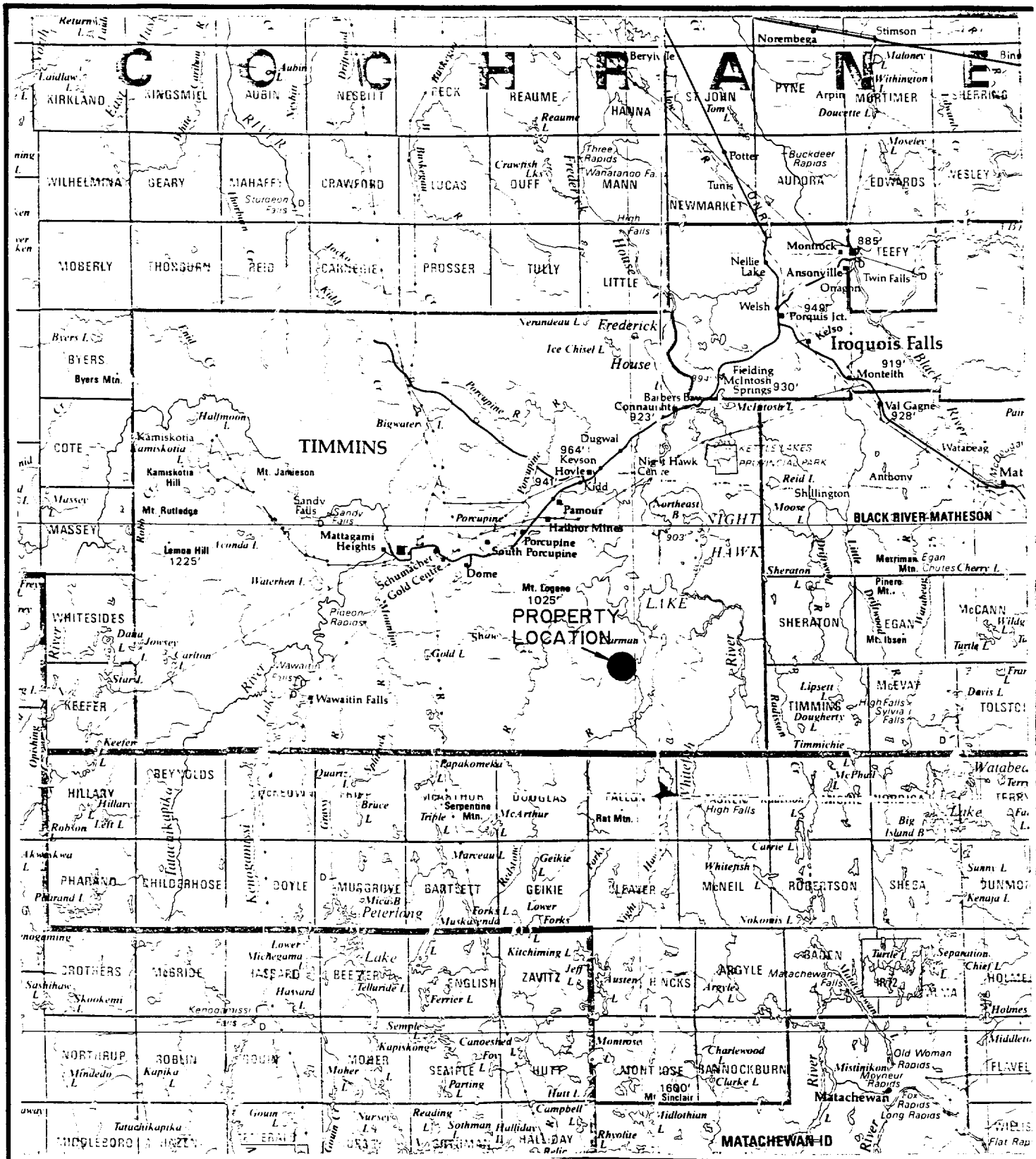
CLIENT: OUTOKUMPU MINES LIMITED

PROPERTY: CARMAN-LANGMUIR PROPERTY

TITLE: LOCATION MAP

Fig. 1

Date: March 1998	Scale: 1"=125miles	MNDM Plan#:
Drawn: P. Gauthier	Intera: J.C. Grant	Job No. E-303



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Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED

PROPERTY: CARMAN-LANGMUIR PROPERTY

TITLE: PROPERTY LOCATION Fig. 2

Date: March 1998	Scale: 1:600,000	MNDM Plan#: 22-6
Drawn:	Interp: J.C. Grant	Job No. E-303

CLAIM BLOCK:

The claim number that makes up a portion of Outokumpu's holdings in the area and was covered by the present survey is as follows.

P-1202432..... 6 units.
P-1202427..... 8 units.
P-1204402..... 4 units
P-1204403..... 4 units.
P-1204401..... 1 unit.
P-1189735..... 4 units.
P-1198905..... 4 units.
P-1198906..... 1 unit.

Refer to figure 3 copied from MNDM Plan Maps of Carman and Langmuir Townships.

PERSONNEL:

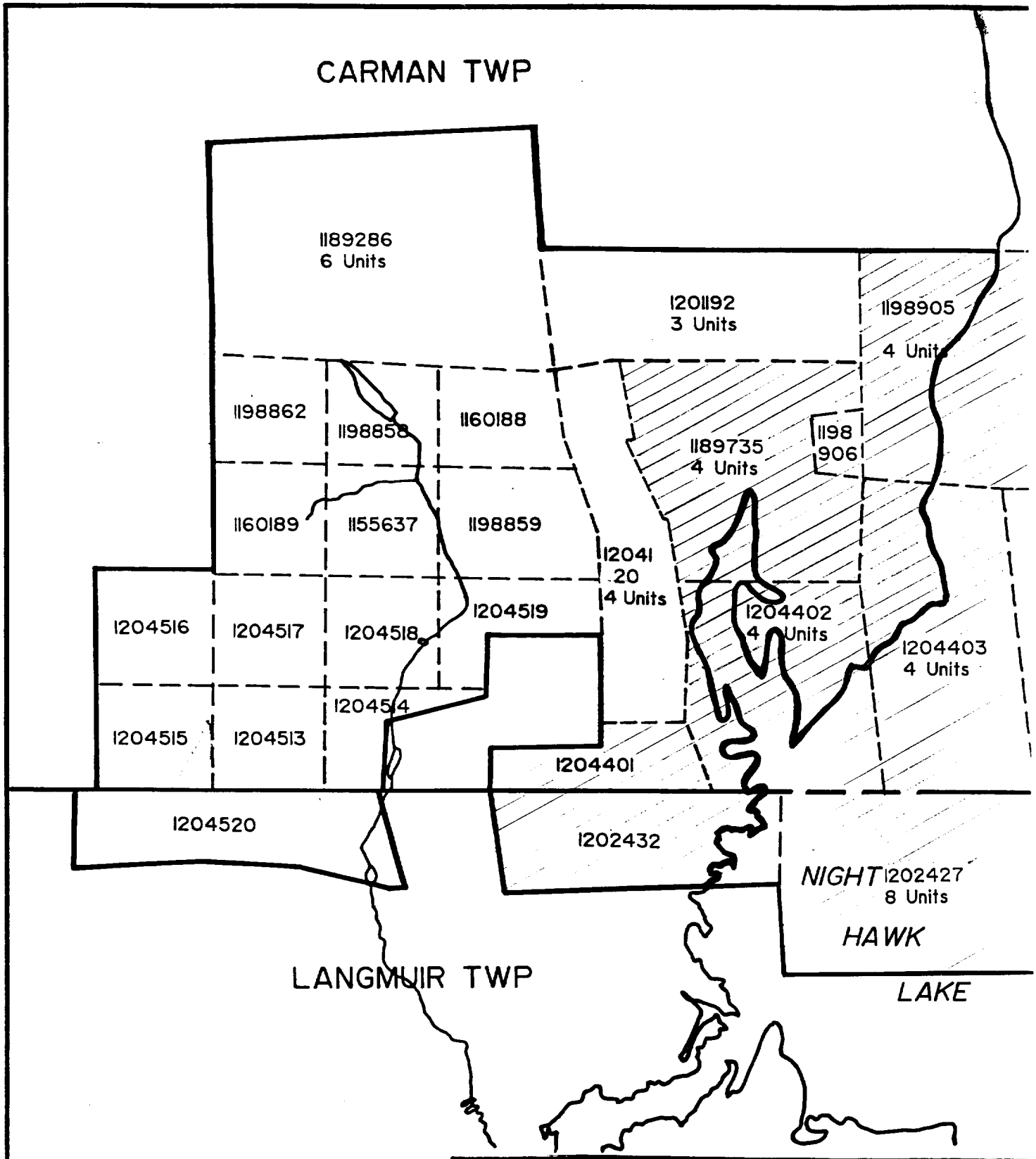
The field crew directly responsible for the collection of all raw field data were as follows.

J. DerWeduwen.....South Porcupine, Ontario
E. Jaakkola.....Timmins, Ontario

The program was completed under the direct supervision of J.C.Grant and all of the plotting and compilation was completed by P. Gauthier of Exsics.

GROUND PROGRAM:

The ground program consisted of establishing a detailed metric grid across the claim group which was to be an extension of a grid that had been cut previously to the west. The existing 4000ME tieline was recut and used to control the new grid lines. Baseline 4500ME was also established from 2200MN to 4200MN to control the direction of the cross lines. Crosslines 2200MN to 4200MN were then extended from the existing grid to the east boundary of the claim block. All of the new lines were chained with 20 meter station intervals that were metal tagged. A total of 18.0 kilometers of new grid were cut and chained.



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Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED

PROPERTY: CARMAN-LANGMUIR PROPERTY

TITLE:

CLAIM SKETCH

Fig. 3

Date: March 1998	Scale: 1:20,000	MNDM Plan#: G-3226 G-4000
Drawn: P. Gauthier	Interp: J.C. Grant	Job No. E-303

The next phase of the program was to complete a detailed total field magnetic survey which was done in conjunction with an HLEM survey. The magnetic survey was completed using the Scintrex, Envi Mag system and the BRGM, OMNI IV system. Specifications for these units can be found as Appendix A of this report. The following parameters were kept constant throughout the survey procedure.

Line spacing.....100 meters
Station spacing..... 20 meters
Reading interval..... 10 meters
Diurnal monitor.....Base station recorder,(OMNI IV)
Base station record interval..30 seconds
Reference field.....57,900 gammas
Datum subtract.....57,500 gammas
Unit accuracy.....+/- 0.1 gamma
Parameters measured.....Earth's total magnetic field

The collected corrected and levelled data was then plotted onto a base map at a scale of 1:5000 and then contoured at 100 gamma intervals where possible. A copy of this base map is included in the back pocket of this report.

The HLEM survey was completed using the Apex Parametrics MaxMin II system. Specifications for this system can be found as Appendix B of this report. The following parameters were kept constant throughout the survey procedure.

Line spacing.....100 meters
Station spacing..... 20 meters
Reading interval..... 20 meters
Coil separation.....100 meters
Theoretical search depth.....50 -65 meters
Frequencies recorded.....3555hz,1777hz,222hz
Parameters measured.....Inphase and quadrature components of the secondary field, in percent
Unit accuracy.....+/- 0.5 percent

The collected data was then plotted onto base maps at a scale of 1:5000, one base map for each frequency read, and all conductor axis were then placed on the map and interpreted for depth and conductivity. A copy of each frequency base map is included in the back pocket of this report.

SURVEY RESULTS:

The HLEM survey was successful in locating and outlining a group of conductors generally striking northeast across the grid between tielines 3600ME and 4500ME. These zones have been labelled A through to E. Zone A has been interpreted in an earlier report. Zone B will be discussed in detail below as this zone was traced to its southern limits, out into Carman Bay. Zones C, C' and D will also be discussed separately and in detail.

Zone B,C and C':

Conductive Zones B and C closely parallel one another and they strike northeast across lines 2400ME to 4300ME and both zones continue off of the grid to the northeast. The closeness of the two zones make the interpretation somewhat difficult but they appear to represent a good bedrock conductor situated at a depth to source of 20 meters to near surface and they have a conductivity range of 2 to 32 mhos. Zone C' also appears to relate to the same conductive horizon as that of Zones B and C.

This would suggest that the three conductors all relate to a series of narrow sulphide and or iron rich lenses that strike across the grid in a northeast direction. The zones have moderate to good magnetic correlation; zone B follows the contact between a magnetic high and low unit. Zone C follows along the east edge of the same magnetic high unit that hosts Zone B. Zone C' lies along the west edge of a broad magnetic high unit that lies just off shore in the Lake.

ZONE D:

This zone represents a moderate conductor generally paralleling zones B,C and C'. The zone lies entirely in the Lake except for a small portion which cuts across a point of land on line 3500ME. The zone ranges in depth from 11 meters to 32 meters and has a moderate conductivity of 2 to 4 mhos. The zone correlates to a magnetic high on it's north and south sections but has a broad low on it's central section.

ZONE E:

This zone is a short questionable zone at this writing and it will require further work to better define it's source.

MAGNETIC SURVEY RESULTS:

The magnetic survey was successful in outlining the geological structures of the grid. The most predominant feature is the narrow magnetic high - low unit striking northeast across lines 2600ME to 4400ME. The unit is interrupted by a cross structure in the vicinity of line 3700ME which probably relates to a fault structure striking southeast to northwest. There may be a second fault structure striking southeast to northwest along 2800ME which is evident in the magnetic contours. The fault appears as slumping in the contour lines.

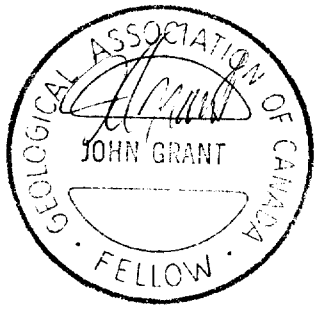
There are two other magnetic units outlined on the grid. These are broad magnetic highs that cover most of lines 3600ME to 4200ME between tielines 4000ME and 4500ME and lines 2200ME to 3400ME between tieline 4500ME and the east edge of the grid. Both units appear to have been offset by a cross structure striking southeast to northwest. These magnetic structures may relate to known mafic to intermediate metavolcanic flows.

CONCLUSIONS AND RECOMMENDATIONS:

The ground program was successful in extending the know zones A and B to their southern limits. It was also successful in outlining a new zone, Zone D which parallels the known zones and lies entirely in the lake. The zone is of moderate conductivity and generally relates to the broad magnetic unit discussed under the magnetic results heading.

A follow up program of drilling should be contemplated to test the source of Zone D. Zone C and C' should also be drill tested if it has not been done already. Zone E should be followed up further if the drilling returns encouraging results.

Respectfully submitted



J.C.Grant, CET, FGAC
April, 1998.

CERTIFICATE

I, John C. Grant, hereby certify that:

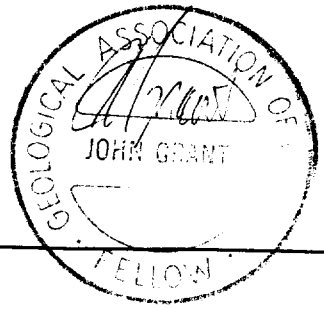
1) I am a graduate technologist, (1975) of the three year program in Geological Technology at Cambrian College of Applied Arts and Technology, Sudbury Campus. I have worked subsequently as an Exploration Geophysicist for Teck Exploration Limited, (5 years), North Bay office and currently as Exploration Manager and Geophysicist for Exsics Exploration Limited since 1980.

2) I am a member in good standing of the Certified Engineering Technologist Association,(CET), since 1984

3) I am a Fellow of the Geological Association of Canada, (FGAC), since 1986.

4) I have been actively engaged in my profession since May of 1975, including all aspects of exploration studies, surveys and interpretation.

5) I have no specific or special interest in the described property. I have been retained as a Consulting Geophysicist by the Property holders.



John Charles Grant, CET, FGAC.

APPENDIX A

SCINTREX

ENVI-MAG Environmental Magnetometer/Gradiometer

Locating Buried Drums and Tanks?

The ENVI-MAG is the solution to this environmental problem. ENVI-MAG is an inexpensive, lightweight, portable "WALKMAG" which enables you to survey large areas quickly and accurately.

ENVI-MAG is a portable, proton precession magnetometer and/or gradiometer, for geotechnical, archaeological and environmental applications where high production, fast count rate and high sensitivity are required. It may also be used for other applications, such as mineral exploration, and may be configured as a total-field magnetometer, a vertical gradiometer or as a base station.

The ENVI-MAG

- easily detects buried drums to depths of 10 feet or more
- more sensitive to the steel of a buried drum than EM or radar
- much less expensive than EM or radar
- survey productivity much higher than with EM or radar

Main features include:

- select sampling rates as fast as 2 times per second
- "WALKMAG" mode for rapid acquisition of data
- large internal, expandable memory
- easy to read, large LCD screen displays data both numerically and graphically
- ENVIMAP software for processing and mapping data

ENVI-MAG comprises several basic modules; a lightweight console with a large screen alphanumeric display and high capacity memory, a staff mounted sensor and sensor cable, rechargeable battery and battery charger, RS-232 cable and ENVIMAP processing and mapping software.

For gradiometry applications an upgrade kit is available, comprising an additional processor module for installation in the console, and a second sensor with a staff extender.

ENVI-MAG Proton Magnetometer in operation

For base station applications a Base Station Accessory Kit is available so that the sensor and staff may be converted into a base station sensor.

Features and Benefits

"WALKMAG" Magnetometer/Gradiometer

The "WALKMAG" mode of operation (sometimes known as "Walking Mag") is user-selectable from the keyboard. In this mode, data is acquired and recorded at the rate of 2 readings per second as the operator walks at a steady pace along a line. At desired intervals, the operator "triggers" an event marker by a single key stroke, assigning coordinates to the recorded data.

True Simultaneous Gradiometer

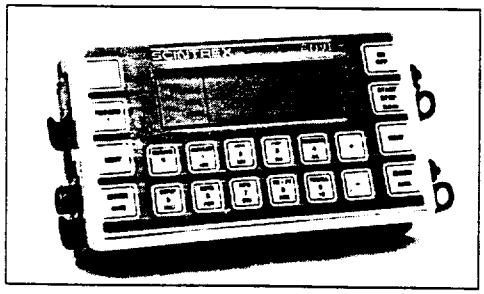
An optional upgrade kit is available to configure ENVI-MAG as a gradiometer to make true, simultaneous gradiometer measurements. Gradiometry is useful for geotechnical and archaeological surveys where small near surface magnetic targets are the object of the survey.

Selectable Sampling Rates

0.5 second, 1 second and 2 second reading rates user selectable from the keyboard.

Large-Key Keypad

The large-key keypad allows easy access for gloved-hands in cold-weather operations. Each key has a multi-purpose function.



Front panel of ENVI-MAG showing a graphic profile of data and large-key keypad

Large Capacity Memory

ENVI-MAG with standard memory stores up to 28,000 readings of total field measurements, 21,000 readings of gradiometry data or 151,000 readings as a base station. An expanded memory option is available which increases this standard capacity by a factor of 5.

Easy Review of Data

For quality of data and for a rapid analysis of the magnetic characteristics of the survey line, several modes of review are possible. These include the measurements at the last four stations, the ability to scroll through any or all previous readings in memory, and a graphic display of the previous data as profiles, line by line. This feature is very useful for environmental and archaeological surveys.

Highly Productive

The "WALKMAG" mode of operation acquires data rapidly at close station intervals, ensuring high-definition results. This increases survey productivity by a factor of 5 when compared to a conventional magnetometer survey.

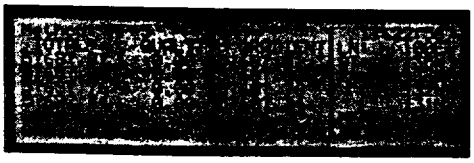
"Datacheck" Quality Control of Data

"Datacheck" provides a feature wherein at the end of each survey line, data may be reviewed as a profile on ENVI-MAG's screen. Datacheck confirms that the instrument is functioning correctly and

allows the user to note the magnetic relief (anomaly) on the line.

Large Screen Display

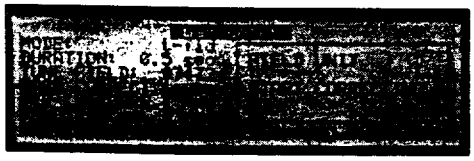
"Super-Twist" 64 x 240 dot (8 lines x 40 characters), LCD graphic screen provides good visibility in all light conditions. A display heater is optionally available for low-temperature operations below 0°C.



Close-up of the ENVI-MAG screen showing data presented after each reading

Interactive Menus

The set-up of ENVI-MAG is menu-driven, and minimizes the operator's learning time, and on-going tasks.



Close-up of display of ENVI-MAG showing interactive set-up menu

Rechargeable Battery and Battery Charger

An "off-the-shelf" lead-acid battery and charger are provided as standard. The low-cost "Camcorder" type battery is available from electronic parts distributors everywhere.

HELP-Line Available

Purchasers of ENVI-MAG are provided with a HELP-Line telephone number to call in the event assistance is needed with an application or instrumentation problem.

ENVIMAP Processing and Mapping Software

Supplied with ENVI-MAG, and custom designed for this purpose, is easy-to-use, very user-friendly, menu driven data processing and mapping software called ENVIMAP. This unique software appears to the user to be a single program, but is in fact a sequence of separate programs, each performing a specific task. Under the menu system, there are separate programs to do the following:

a) read the ENVI-MAG data and reformat it into a standard compatible with the ENVIMAP software
b) grid the data into a standard grid format
c) create a vector file of posted values with line and baseline identification that allows the user to add some title information and build a suitable surround
d) contour the gridded data
e) autoscale the combined results of the posting/surround step and the contouring step to fit on a standard 8.5 ins. wide dot-matrix printer
f) rasterize and output the results of step e) to the printer

ENVIMAP is designed to be as simple as possible. The user is required to answer a few basic questions asked by ENVIMAP, and then simply toggles "GO" to let ENVIMAP provide default parameters for the making of the contour map. The user can modify certain characteristics of the output plot. ENVIMAP'S menu system is both keyboard and mouse operable. HELP screens are integrated with the menu system so that HELP is displayed whenever the user requests it.

Options Available

- True simultaneous gradiometer upgrade
- Base station upgrade
- Display heater for low temperature operations
- External battery pouch

Specifications

Total Field Operating Range
20,000 to 100,000 nT (gammas)

Total Field Absolute Accuracy
+/- 1nT

Sensitivity
0.1 nT at 2 second sampling rate

Tuning
Fully solid state. Manual or automatic, keyboard selectable

Cycling (Reading) Rates
0.5, 1 or 2 seconds, up to 9999 seconds for base station applications, keyboard selectable

Gradiometer Option
Includes a second sensor, 20 inch (½m) staff extender and processor module

"WALKMAG" Mode
0.5 second for walking surveys, variable rates for hilly terrain

Digital Display
LCD "Super Twist", 240 x 64 dots graphics, 8 line x 40 characters alphanumerics

Display Heater
Thermostatically controlled, for cold weather operations

Keyboard Input
17 keys, dual function, membrane type

Notebook Function
32 characters, 5 user-defined MACRO's for quick entry

Standard Memory
Total Field Measurements: 28,000 readings
Gradiometer Measurements: 21,000 readings
Base Station Measurements: 151,000 readings

Expanded Memory
Total Field Measurements: 140,000 readings
Gradiometer Measurements: 109,000 readings
Base Station Measurements: 750,000 readings

Real-Time Clock
Records full date, hours, minutes and seconds with 1 second resolution, +/- 1 second stability over 12 hours

Digital Data Output
RS-232C interface, 600 to 57,600 Baud, 7 or 8 data bits, 1 start, 1 stop bit, no parity format. Selectable carriage return delay (0-999 ms) to accommodate slow peripherals. Handshaking is done by X-on/X-off

Analog Output
0 - 999 mV full scale output voltage with keyboard selectable range of 1, 10, 100, 1,000 or 10,000 nT full scale

Power Supply
Rechargeable "Camcorder" type, 2.3 Ah, Lead-acid battery.

12 Volts at 0.65 Amp for magnetometer, 1.2 Amp for gradiometer,

External 12 Volt input for base station operations

Optional external battery pouch for cold weather operations

Battery Charger
110 Volt - 230 Volt, 50/60 Hz

Operating Temperature Range
Standard 0° to 60°C
Optional -40°C to 60°C

Dimensions
Console - 10 x 6 x 2.25 inches (250 mm x 152 mm x 55 mm)
T.F. sensor - 2.75 inches dia. x 7 inches (70 mm x 175 mm)
Grad. sensor and staff extender - 2.75 inches dia. x 26.5 inches (70 mm x 675 mm)
T.F. staff - 1 inch dia. x 76 inches (25 mm x 2 m)

Weight
Console - 5.4 lbs (2.45 kg) with rechargeable battery
T. F. sensor - 2.2 lbs (1.15 kg)
Grad. sensor - 2.5 lbs (1.15 kg)
Staff - 1.75 lbs (0.8 kg)

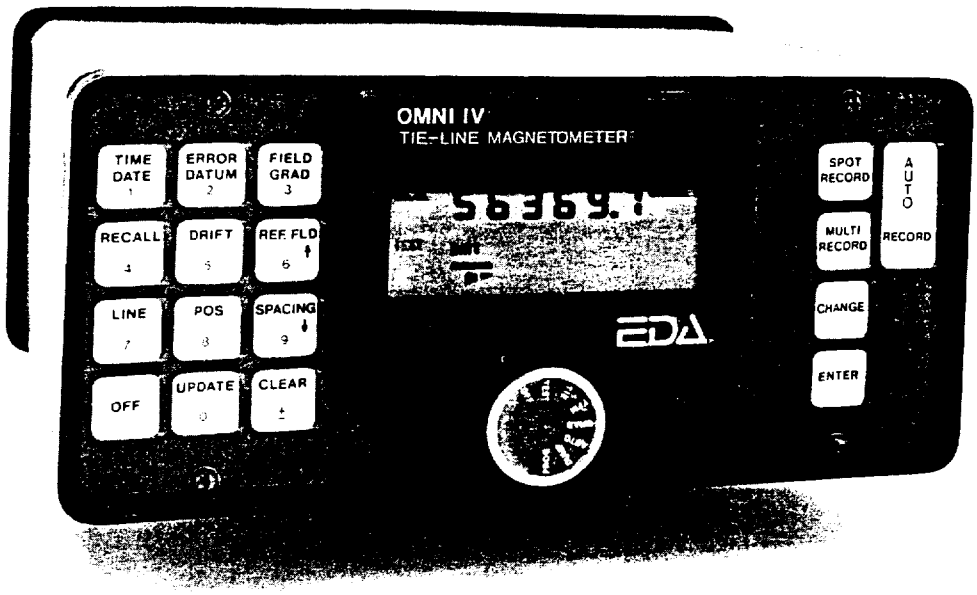
SCINTREX

Head Office
222 Snidercroft Road
Concord, Ontario, Canada L4K 1B5
Telephone: (905) 669-2280
Fax: (905) 669-6403 or 669-5132
Telex: 06-964570

In the USA:
Scintrex Inc.
85 River Rock Drive
Unit 202
Buffalo, NY 14207
Telephone: (716) 298-1219
Fax: (716) 298-1317

OMNI IV
"Tie-Line" Magnetometer

EDA



Four Magnetometers in One

Self Correcting for Diurnal Variations

Reduced Instrumentation Requirements

25% Weight Reduction

User Friendly Keypad Operation

Universal Computer Interface

Comprehensive Software Packages

Specifications

Dynamic Range	18,000 to 110,000 gammas. Roll-over display feature suppresses first significant digit upon exceeding 100,000 gammas.
Tuning Method	Tuning value is calculated accurately utilizing a specially developed tuning algorithm
Automatic Fine Tuning	± 15% relative to ambient field strength of last stored value
Display Resolution	0.1 gamma
Processing Sensitivity	± 0.02 gamma
Statistical Error Resolution	0.01 gamma
Absolute Accuracy	± 1 gamma at 50,000 gammas at 23°C ± 2 gamma over total temperature range
Standard Memory Capacity	
Total Field or Gradient	1,200 data blocks or sets of readings
Tie-Line Points	100 data blocks or sets of readings
Base Station	5,000 data blocks or sets of readings
Display	Custom-designed, ruggedized liquid crystal display with an operating temperature range from −40°C to +55°C. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors.
RS 232 Serial I/O Interface	2400 baud, 8 data bits, 2 stop bits, no parity
Gradient Tolerance	6,000 gammas per meter (field proven)
Test Mode	A. Diagnostic testing (data and programmable memory) B. Self Test (hardware)
Sensor	Optimized miniature design. Magnetic cleanliness is consistent with the specified absolute accuracy.
Gradient Sensors	0.5 meter sensor separation (standard), normalized to gammas/meter. Optional 1.0 meter sensor separation available. Horizontal sensors optional.
Sensor Cable	Remains flexible in temperature range specified, includes strain-relief connector
Cycling Time (Base Station Mode)	Programmable from 5 seconds up to 60 minutes in 1 second increments
Operating Environmental Range	−40°C to +55°C; 0–100% relative humidity; weatherproof
Power Supply	Non-magnetic rechargeable sealed lead-acid battery cartridge or belt; rechargeable NiCad or Disposable battery cartridge or belt; or 12V DC power source option for base station operation.
Battery Cartridge/Belt Life	2,000 to 5,000 readings, for sealed lead acid power supply, depending upon ambient temperature and rate of readings
Weights and Dimensions	
Instrument Console Only	2.8 kg, 238 x 150 x 250mm
NiCad or Alkaline Battery Cartridge	1.2 kg, 235 x 105 x 90mm
NiCad or Alkaline Battery Belt	1.2 kg, 540 x 100 x 40mm
Lead-Acid Battery Cartridge	1.8 kg, 235 x 105 x 90mm
Lead-Acid Battery Belt	1.8 kg, 540 x 100 x 40mm
Sensor	1.2 kg, 56mm diameter x 200mm
Gradient Sensor (0.5 m separation - standard)	2.1 kg, 56mm diameter x 790mm
Gradient Sensor (1.0 m separation - optional)	2.2 kg, 56mm diameter x 1300mm
Standard System Complement	Instrument console; sensor; 3-meter cable, aluminum sectional sensor staff, power supply, harness assembly, operations manual.
Base Station Option	Standard system plus 30 meter cable
Gradiometer Option	Standard system plus 0.5 meter sensor

E D A Instruments Inc.
4 Thorncliffe Park Drive
Toronto, Ontario
Canada M4H 1H1
Telex: 06 23222 EDA TOR
Cable: Instruments Toronto
(416) 425 7800

In U.S.A.
E D A Instruments Inc.
5151 Ward Road
Wheat Ridge, Colorado
U.S.A. 80033
(303) 422 9112

Printed in Canada

Ontario Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use): W9860.00491

Assessment Files Research Imaging

[redacted]

sections 65(2) and 66(3) of the Mining Act. Under section 8 of the
the assessment work and correspond with the mining land holder.
rder, Ministry of Northern Development and Mines

RECEIVED
MAY 7 1998
2:00 pm
PORCUPINE MINING DIVISION

42A07NW2002 2.18448 CARMAN 900

Instructions: - For work performed on Crown Lands before recording a claim, use form 0240.
- Please type or print in ink.

Recorded holder(s) (Attach a list if necessary)

Name: Outokumpu Mines Ltd	Client Number: 178525
Address: P.O. Box 1123	Telephone Number: (705) 264-5024
Timmins, ON P4N 7H9	Fax Number: (705) 264-5067
Name	Client Number
Address	Telephone Number
	Fax Number

2.18448

1. **Type of work performed:** Check (✓) and report on only ONE of the following groups for this declaration.

☒ Geotechnical: prospecting, surveys, assays and work under section 18 (regs) ☐ Physical: drilling, stripping, trenching and associated assays ☐ Rehabilitation

	Office Use
Work Type: Line Cutting, Magnetic and HLEM Surveys	Commodity
	Total $ Value of Work Claimed
Dates Work Performed: From 12 Day 03 Month 98 Year To 25 Day 02 Month 98 Year ✓	NTS Reference
Global Positioning System Data (if available) — Township/Area: Carmen + Langmuir Twps	Mining Division
	Resident Geologist District
	M or G-Plan Number: G-4000, G-3226

RECEIVED
MAY - 7 1998
4.25
GEOSCIENCE ASSESSMENT OFFICE

Please remember to: - obtain a work permit from the Ministry of Natural Resources as required;
- provide proper notice to surface rights holders before starting work;
- complete and attach a Statement of Costs, form 0212;
- provide a map showing contiguous mining lands that are linked for assigning work;
- include two copies of your technical report.

3. **Person or companies who prepared the technical report** (Attach a list if necessary)

Name: John Grant, Exsics Exploration Limited	Telephone Number: (705) 267-4151
Address: P.O. Box 1880, Timmins, ON, P4N 7X1	Fax Number: (705) 264-5790
Name	Telephone Number
Address	Fax Number
Name	Telephone Number
Address	Fax Number

MAY 07 '98 16:20 Deemed August 05/1998 PAGE.02

4. **Certification by Recorded Holder or Agent**

I, Paul Davis (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent: Paul		Date: May 7/98
Agent's Address: P.O. Box 1123, Timmins, ON, P4N 7H9	Telephone Number: (705) 264-5024	Fax Number: (705) 264-5067

be recorded and distributed. Work can only be assigned to claims that are contiguous (adjoining) to and where work was performed, at the time work was performed. A map showing the contiguous link many this form. W9860.00491

ing Claim Number. Or if rk was done on other eligible ing land, show in this umn the location number icated on the claim map.		Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
)g	TB 7827	16 ha	$28, 825	N/A	$24,000	$2,825
)g	1234567	12	0	$24,000	0	0
)g	1234568	2	$ 8, 892	$ 4,000	0	$4,892
1	1198905	4	$1387	0	$1,387 ✓	0
2	1202427	8	$1,713	0	$1,713 ✓	0
3	1202432	3	$245		$86	$159 ✓
4	1204402	4	$1,958	$1600	$358 ✓	0
5	1204403	4	$2,856	$1,600	$1,256 ✓	
6	1218697	2	0	$1,600 ✓		
7	1218698	2	0	$1,600 ✓		
8	1218699	2	0	$1,600 ✓		
9						
10						
11						
12						
13						
14						
15						
		Column Totals	$8159	$8000	$4800	$159

2.18448

Paul Davis (Print Full Name), do hereby certify that the above work credits are eligible under subsection 7 (1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to claim where the work was done.

Signature of Recorded Holder or Agent Authorized in Writing Paul Date May 7/98

Instructions for cutting back credits that are not approved.

me of the credits claimed in this declaration may be cut back. Please check (✓) in the box below to show how wish to prioritize the deletion of credits:

- ☒ 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- ☒ 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- ☐ 3. Credits are to be cut back equally over all claims listed in this declaration; or
- ☐ 4. Credits are to be cut back as prioritized on the attached appendix or as follows (describe):

RECEIVED MAY - 7 1998 4:25 GEOSCIENCE ASSESSMENT OFFICE

Ontario Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use): W9860.00491

Personal information collected on this form is obtained under the authority of subsection 6(1) of the Assessment Work Regulation 6/96. Under section 9 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

Work Type	Units of Work Depending on the type of work, list the number of hours/days worked, metres of drilling, kilometres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
Line Cutting	17.86 km	$155.00 /km	$2,775.00
Magnetic Survey	20.04 Km	$100.00 /km	$2,004.00
HLEM Survey	18.00 Km	$160.00 /km	$2,880.00
Associated Costs (e.g. supplies, mobilization and demobilization).			
4 Plots and 4 Reports		$125.00 ea	$500.00
	2.18448		
Transportation Costs			
Food and Lodging Costs			
		Total Value of Assessment Work	$8,159.00

RECEIVED
MAY - 7 1998
GEOSCIENCE ASSESSMENT OFFICE

Calculations of Filing Discounts:

- Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
- If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

TOTAL VALUE OF ASSESSMENT WORK × 0.50 = Total $ value of worked claimed.

Note:
Work older than 5 years is not eligible for credit.
A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification. If verification and/or correction/clarification is not made, the Minister may reject all or part of the assessment work submitted.

RECEIVED
MAY 7 1998

MAY 07 '98 16:22 PAGE.06

Certification verifying costs:

I, Paul Davis (please print full name), do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying Declaration of Work form as Project Geologist (recorded holder, agent, or state company position with signing authority). I am authorized to make this certification.

2:00 pm
RECORDING MINING DIVISION

Signature: Paul Date: May 7/98

** TOTAL PAGE.03 **

W9860.00491

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

Ontario

Geoscience Assessment Office
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (888) 415-9846
Fax: (705) 670-5881

Visit our website at:
www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm

July 23, 1998

Paul Davis
OUTOKUMPU MINES LTD.
P.O. BOX 1123
Timimins, Ontario
P4N 7H9

Dear Sir or Madam:

Submission Number: 2.18448

Status

Subject: Transaction Number(s): W9860.00491 Deemed Approval

We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice. Allowable changes to your credit distribution can be made by contacting the Geoscience Assessment Office within this 45 Day period, otherwise assessment credit will be cut back and distributed as outlined in Section #6 of the Declaration of Assessment work form.

Please note any revisions must be submitted in DUPLICATE to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact Lucille Jerome by e-mail at jeromel2@epo.gov.on.ca or by telephone at (705) 670-5858.

Yours sincerely,

ORIGINAL SIGNED BY
Blair Kite
Supervisor, Geoscience Assessment Office
Mining Lands Section

Correspondence ID: 12575

Copy for: Assessment Library

Work Report Assessment Results

Submission Number: 2.18448

Date Correspondence Sent: July 23, 1998 **Assessor:** Lucille Jerome

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W9860.00491	1198905	CARMAN, LANGMUIR	Deemed Approval	July 22, 1998

Section:
14 Geophysical MAG
14 Geophysical EM

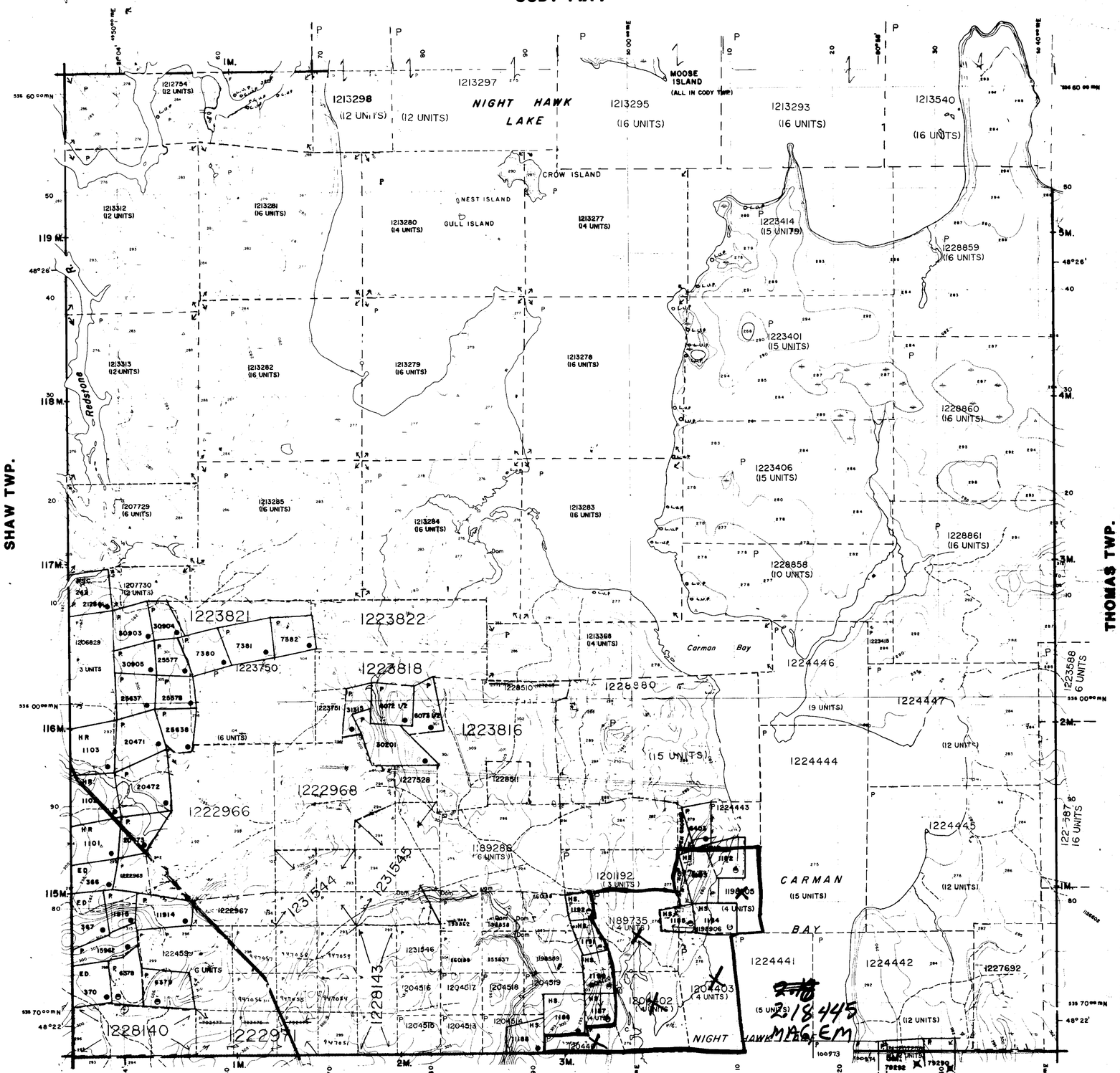
Correspondence to:
Resident Geologist
South Porcupine, ON

Assessment Files Library
Sudbury, ON

Recorded Holder(s) and/or Agent(s):
Paul Davis
OUTOKUMPU MINES LTD.
Timimins, Ontario

G-4000

CODY TWP.



MAP SYMBOLOGY

- Aerial Cableway
- Boundary
  - International
  - Interprovincial
  - District, Township, Indian Reserve
  - Access-gate
  - Lot, Concession
  - Approximate
  - Park Boundary
- Bridge
  - Road, Railroad
- Building
- Chimney
- Cliff, Pit, Pile
- Contours
  - Interpolated
  - Approximate
- Depression
- Control Points
  - Horizontal
  - Vertical
- Culvert
- Falls
  - Double line river
- Fence, Hedge, Wall
- Feature Outline (Construction features, etc.)
- Flooded Land
- Lock
- Marsh or Swamp
- Mast
- Mine Head Frame
- Outcrop
- Railway
  - Single Track
  - Double Track
  - Abandoned
  - Turntable
- Road
  - Highway, County, Township
  - Access (used at draughtsman's discretion; at significant driveway)
  - Trail, Bush Road (portage, etc.)
- Rapids
  - Double line river with multiple rapids
  - Double line river with multiple rapids
- Reservoir
- River, Stream, Canal
  - Approximate boundary
  - Direction of flow
- Rock
  - Insignificant
  - Small
- Spot Elevation (lake elevations)
- Tower
- Transmission Line
  - Poles
  - Pylons
- Tunnel
- Utility Poles
- Wharf, Dock, Pier
- Wooded Area

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

42A07NW2002 2.18448 CARMAN 200

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

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	OC
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.

Metres 500 0 1000 Metres
Chains 10 0 10 20 30 40 50 60 70 Chains
Feet 500 0 1000 2000 3000 4000 5000 Feet

SCALE 1:20 000
GRID ZONE: 17

THIS TWP. SUBJECT TO FOREST ACTIVITY IN 1990/93 FURTHER INFORMATION ON FILE.

DATE OF ISSUE
JUL 0 6 1998
PROVINCIAL RECORDING OFFICE - SUDBURY

Rec'd Jan. 23/85

TOWNSHIP
CARMAN
M.N.R. ADMINISTRATIVE DISTRICT
TIMMINS
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
COCHRANE

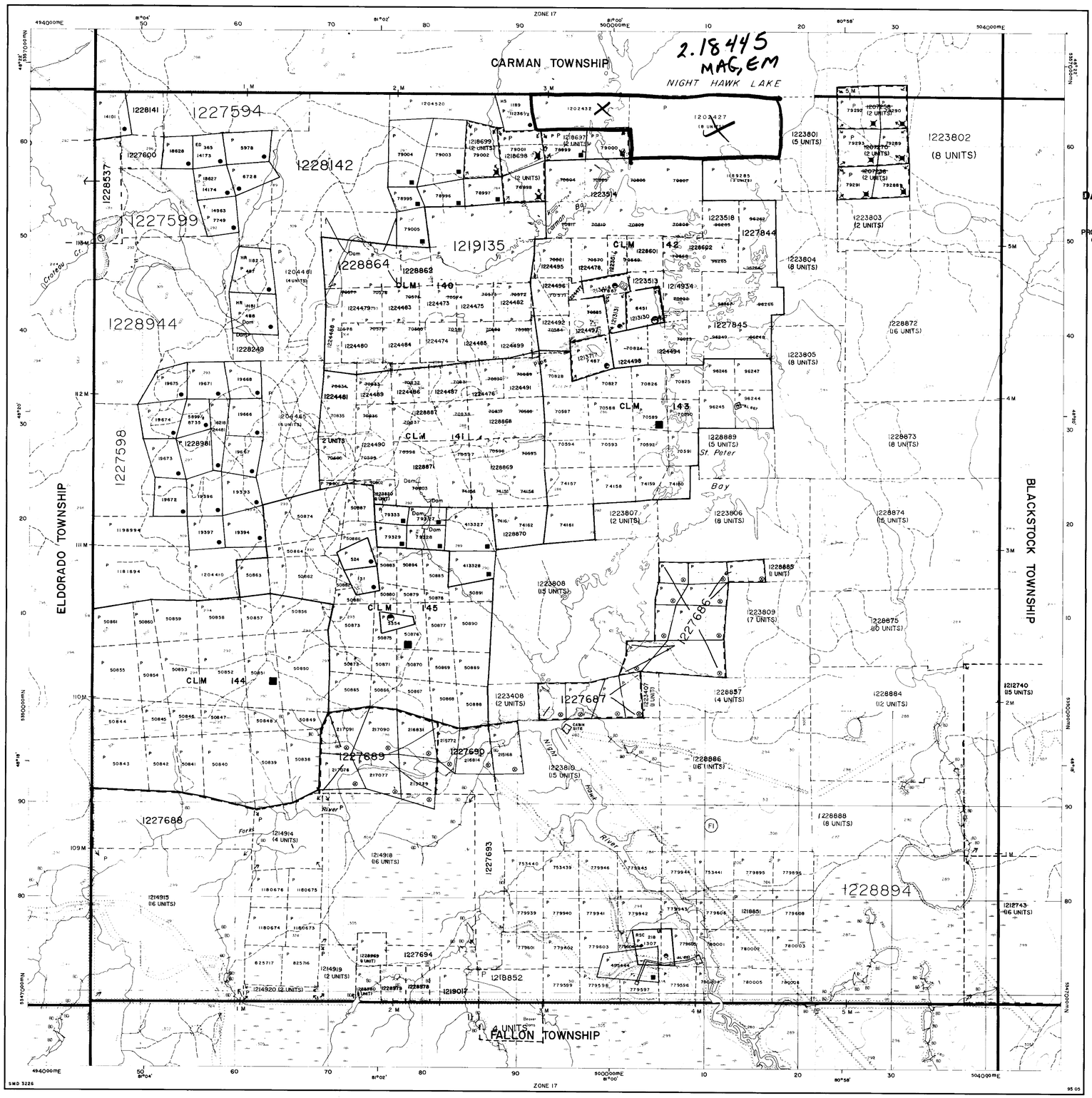
Ontario Ministry of Natural Resources — Land Management Branch

ORIGINAL COMPILATION	JULY 1984	Number
REVISED:		G-4000

23M445 MAG EM

Rec'd June 28/85
SD July 13/85

G-4000



THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

Ministry of Natural Resources — Ontario

Ministry of Northern Development and Mines

INDEX TO LAND DISPOSITION

PLAN
G-3226

TOWNSHIP
LANGMUIR

M.N.R. ADMINISTRATIVE DISTRICT
TIMMINS

MINING DIVISION
PORCUPINE

LAND TITLES/REGISTRY DIVISION
COCHRANE

DATE OF ISSUE
JUL 0 6 1998

PROVINCIAL RECORDING OFFICE - SUDBURY

Scale 1:20 000

Metres 1000 0 1000 2000

Feet 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

Contour Interval 10 Metres

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

Description	Order No.	Date	Disposition	File
(S) APPLICATION PENDING UNDER P.L.A. - SURFACE RIGHT WITHDRAWN				

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed
- shoreline
- Lot/Concession; surveyed
- unsurveyed
- Parcel; surveyed
- unsurveyed
- Right-of-way; road
- railway
- utility
- Reservation
- Cliff, Pit, Pile
- Contour
- Interpolated
- Approximate
- Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track
- double track
- abandoned
- Road; highway, county, township
- access
- trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

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 — OC
- Cancelled
- Reservation
- Sand & Gravel

NOTES

THIS TOWNSHIP LIES WITHIN THE MUNICIPALITY OF THE CITY OF TIMMINS

FLOODING RIGHTS ON NIGHT HAWK LAKE TO THE CONTOUR ELEVATION 903.* RESERVED TO ONT HYDRO.

ACTIVATED JULY 18, 1995 BY:

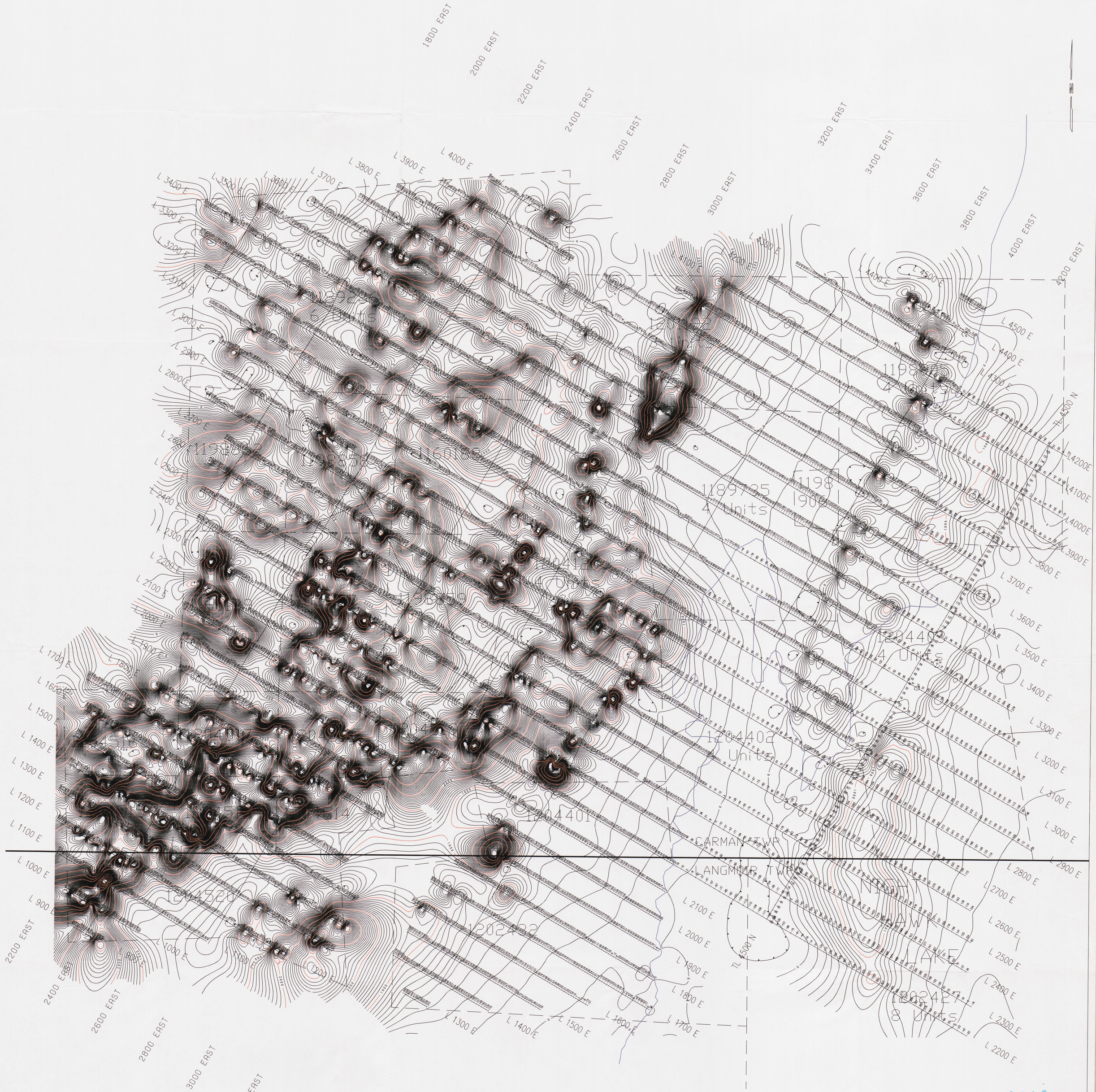
Map base and land disposition drafting by Surveys and Mapping Branch, Ministry of Natural Resources.

The disposition of land, location of lot fabric and parcel boundaries on this index was compiled for administrative purposes only.

G-3226

LANGMUIR TWP.

G-3226



2.18448

0 100 200 300 400
SCALE (m)

42A07NW2002 2.18448 CARMAN 220

LEGEND
Instrument: SCINTREX ENVI MAG, BRGM OMNI-IV
Parameters Measured: Earth's total magnetic field
Accuracy: +/- 0.1 nano-teslas
Diurnals: Corrected by base station recorder
Contour Interval: 0,100,200,300,400,500,.....
Reference Field: 57,900 gammas
Datum Subtracted: 57,500 gammas

EXSICS EXPLORATION LTD.
P.O. Box 1880, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED
PROPERTY: CARMAN - LANGMUIR PROPERTY
TITLE:

MAGNETOMETER SURVEY

Date: Feb. 1998	Scale: 1:5000	NTS:
Drawn: P.Gauthier	Interp: J.C.Grant	Job No.: E-303

1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
2800 EAST
3000 EAST
3200 EAST
3400 EAST
3600 EAST
3800 EAST
4000 EAST
4200 EAST

L 3400 E
L 3500 E
L 3600 E
L 3700 E
L 3800 E
L 3900 E
L 4000 E
L 4100 E
L 4200 E
L 4300 E
L 4400 E

L 3300 E
L 3200 E
L 3100 E
L 3000 E
L 2900 E
L 2800 E
L 2700 E
L 2600 E
L 2500 E
L 2400 E
L 2300 E
L 2200 E
L 2100 E
L 2000 E
L 1900 E
L 1800 E
L 1700 E
L 1600 E
L 1500 E
L 1400 E
L 1300 E
L 1200 E
L 1100 E
L 1000 E

1189286
6 Units

1201192
3 Units

1198905
4 Units

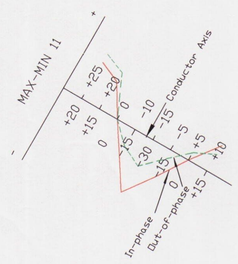
1198862
1198858
1160188
1189735
4 Units
1198906
1204120
4 Units
1160189
1155637
1198859
1204402
4 Units
1204516
1204517
1204518
1204519
1204515
1204513
1204514
1204401
1204520
1202432
1202427
8 Units

CARMAN TWP
LANGMUIR TWP
NICHOL
LAKE

N

2.18448

0 100 200 300 400
SCALE (m)



LEGEND

Instrument: Apex Parametrics Max-Min II
Mode: Maximum Coupled, Horizontal Loop Survey
Parameters Measured: Inphase (%)
Out of phase (%)
Frequency: 3555 Hz
Coil Seperation: 100m
Operator: J. DerWeduwen
Profile Scale: 1cm=+/-20%

EXSICS EXPLORATION LTD.
P.O. Box 1880, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED
PROPERTY: CARMAN - LANGMUIR PROPERTY
TITLE:

MAX-MIN II 3555Hz

Date: Feb. 1998	Scale: 1:5000	NTS:
Drawn: P.Gauthier	Interp: J.C.Grant	Job No.: E-303

1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
2800 EAST
3000 EAST
3200 EAST
3400 EAST
3600 EAST
3800 EAST
4000 EAST
4200 EAST

L 3400 E
L 3500 E
L 3600 E
L 3700 E
L 3800 E
L 3900 E
L 4000 E
L 4100 E
L 4200 E
L 4300 E
L 4400 E

L 3300 E
L 3200 E
L 3100 E
L 3000 E
L 2900 E
L 2800 E
L 2700 E
L 2600 E
L 2500 E
L 2400 E
L 2300 E
L 2200 E
L 2100 E
L 2000 E
L 1900 E
L 1800 E
L 1700 E
L 1600 E
L 1500 E
L 1400 E
L 1300 E
L 1200 E
L 1100 E
L 1000 E

1189286
6 Units

1201192
3 Units

1198405
4 Units

1198862
1198858
1160188
1160189
1155637
1198859
1189435
4 Units
1204120
4 Units
1204403
4 Units
1204516
1204517
1204518
1204519
1204402
4 Units
1204515
1204513
1204514
1204401
1204520
1202432
1202421
8 Units

A
B
C
C'
D
E

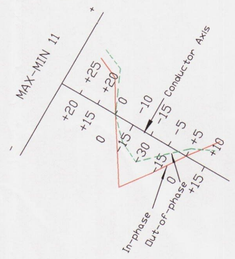
14MHO
-10m
7MHO
-12m
4MHO
-33m
2MHO
-22m
11MHO
< 10m
32MHO
< 10m
3MHO
-20m
2MHO
-16m
3MHO
-31m
2MHO
-11m

CARMAN TWP
LANGMUIR TWP
NIGHT HAWK LAKE

N

2.18448

0 100 200 300 400
SCALE (m)



42A07NW2002 2.18448 CARMAN 240

LEGEND

Instrument: Apex Parametrics Max-Min 11
Mode: Maximum Coupled, Horizontal Loop Survey
Parameters Measured: Inphase (%)
Out of phase (%)
Frequency: 1777 Hz
Coil Seperation: 100m
Operator: J. DerWeduwen
Profile Scale: 1cm=+/-20%

EXSICS EXPLORATION LTD.
P.O. Box 1880, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED
PROPERTY: CARMAN – LANGMUIR PROPERTY
TITLE:

MAX-MIN II 1777Hz

Date: Feb. 1998	Scale: 1:5000	NTS:
Drawn: P.Gauthier	Interp: J.C.Grant	Job No.: E-303

1189286
6 Units

1201192
3 Units

1198905
4 Units

1198862

1198858

1160188

1189735
4 Units

1198
906

1204120
4 Units

1160189

1155637

1198859

1204403
4 Units

1204516

1204517

1204518

1204519

1204402
4 Units

1204515

1204513

1204514

1204401

1204520

1202432

1202427
8 Units

HILL

CARMAN TWP

LANGMUIR TWP

NIGHT HAWK LAKE

TL 4500 N

1800 EAST
2000 EAST
2200 EAST
2400 EAST
2600 EAST
2800 EAST
3000 EAST
3200 EAST
3400 EAST
3600 EAST
3800 EAST
4000 EAST
4200 EAST

L 3400 E
L 3500 E
L 3600 E
L 3700 E
L 3800 E
L 3900 E
L 4000 E
L 4100 E
L 4200 E
L 4300 E
L 4400 E

L 3300 E
L 3200 E
L 3100 E
L 3000 E
L 2900 E
L 2800 E
L 2700 E
L 2600 E
L 2500 E
L 2400 E
L 2300 E
L 2200 E
L 2100 E
L 2000 E
L 1900 E
L 1800 E
L 1700 E
L 1600 E
L 1500 E
L 1400 E
L 1300 E
L 1200 E
L 1100 E
L 1000 E

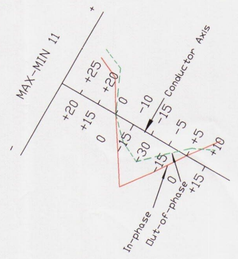
2.18448

0 100 200 300 400
SCALE (m)

42A07NW2002 2.18448 CARMAN 250

LEGEND

Instrument: Apex Parametrics Max-Min 11
Mode: Maximum Coupled, Horizontal Loop Survey
Parameters Measured: Inphase (%)
Out of phase (%)
Frequency: 222 Hz
Coil Seperation: 100m
Operator: J. DerWeduwen
Profile Scale: 1cm=+/-20%



EXSICS EXPLORATION LTD.
P.O. Box 1880, P4N-7X1
Suite 13, Hollinger Bldg, Timmins Ont.
Telephone: 705-267-4151

CLIENT: OUTOKUMPU MINES LIMITED
PROPERTY: CARMAN - LANGMUIR PROPERTY
TITLE:

MAX-MIN II 222Hz

Date:Feb. 1998	Scale: 1:5000	NTS:
Drawn:P.Gauthier	Interp: J.C.Grant	Job No.:E-303