

GEOPHYSICAL REPORT
FOR
LIBERTY MINES INC
ON THE
GROVES NICKEL/GOLD PROPERTY
GROVES AND BRUNSWICK TOWNSHIPS
DISTRICT OF SUDBURY AND TIMISKAMING
PORCUPINE MINING DIVISION
NORTHEASTERN, ONTARIO



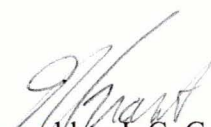

Prepared by: J. C. Grant,
April 2013

TABLE OF CONTENTS

ABSTRACT

INTRODUCTION.....	1
PROPERTY LOCATION AND ACCESS.....	1
CLAIM BLOCK.....	1
PERSONNEL.....	2
GROUND PROGRAM.....	2
MAGNETIC SURVEY.....	3
VLF-EM SURVEY.....	3
PROPERTY GEOLOGY.....	3
MAGNETIC & VLF-EM SURVEY RESULTS.....	4,5,6
CONCLUSIONS AND RECOMMENDATIONS.....	6

CERTIFICATE

LIST OF FIGURES:	FIGURE 1, LOCATION MAP
	FIGURE 2, PROPERTY LOCATION MAP
	FIGURE 3, GOOGLE EARTH LOCATION MAP
	FIGURE 4, GOOGLE EARTH, ACTUAL CLAIM MAP
	FIGURE 5, CLAIM MAP
	FIGURE 6, PROPERTY GEOLOGY MAP

APPENDICES:	A: SCINTREX ENVI MAG SYSTEM
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POCKET MAPS:	TOTAL FIELD MAGNETIC SURVEY	1:5000
	VLF-EM PROFILE MAP	1:5000

ABSTRACT

There is a historical Nickel-copper showing located on the eastern shore of a narrow lake that lies between Geoffrion and Shuller Lakes. The showing, consisting of pyrrhotite, pentlandite, millerite and chalcopyrite is concentrated along part of the sheared footwall of a quartz diorite to gabbro sill 1975 meters long that is intruded into Archean volcanics and altered sediments. 2750 meters of drilling in 1956 indicated about 500,000 tons grading 1.5 to 2 % combined Ni and Cu above the 45.7 meter level in two separate zones. The Ni/Cu ratio was reported to be approximately 0.94 which gives an estimate of 0.77% Cu and 0.73% Ni in the resource. This resource has not been verified with the NI43-101 work required to verify the classification of the historical resource.

Within the gabbroic/dioritic core, the southern portion of the two zones is continuous over a 69 meter strike length with an average historic grade of 0.975% Ni and 1.18% Cu over a 5.85 meter depth. The northern zone can be traced eastward for 123 meters at an average grade of 1.56 Ni and 1.6 Cu with a 3 meter depth, also above the 45.7 meter level. Both of these zones are open at depth. Values of 3.41 g/t of platinum and 4.96 g/t iridium have also been historically reported over 2.68 meters.

A gold occurrence at the southeast tip of Pensyl Lake occurs in a band of cherty iron formation that is in contact with sediments strikes north 85 degrees east and dips steeply north. The sulphide mineralization consists of pyrite, pyrrhotite, chalcopyrite, arsenopyrite and sphalerite. Selected samples reportedly assayed up to 0.50 oz. Au/ ton. Historically the showing has had some trenching and limited diamond drilling in 1933.

Grab samples up to 4.6 oz. per ton Gold have also been historically reported on the property.

INTRODUCTION:

The services of Exsics Exploration Limited were retained by Mr. Todd Mathieu on behalf of the company, Liberty Mine Inc., to complete a ground program of line cutting, magnetics and VLF-EM surveys across a portion of Liberty's claim holdings within the townships with the intent of locating and outlining the original showings and the two parallel ore zones as well as to locate and outline additional zones across the selected area.

PROPERTY LOCATION AND ACCESS:

The Groves Property is situated in the central and northeast section of Groves Township, the southwest corner of Togo Township and the northwest corner of Brunswick Township about 97 kilometers southwest of Timmins and about 10 kilometers southeast of the Village of Gogama. Highway 560 extends east from Highway 144, that runs south from Timmins to Sudbury, and runs through to Gowganda and on to Elk Lake. This highway provided access to the Little Londondary road that lies about 24 kilometers east of the 144 and 560 junction. The Little Londondary road is a good gravel road that runs north to northwest off of Highway 560 for about 20 kilometers to the southern end of a drill road that was cut into the grid area for a drill program completed by Liberty in 2011. This drill road extends for 9 kilometers into the northeast section of the grid area and allowed for skidoo access to the grid area. The Town of Shining Tree is about 29 kilometers to the east-southeast of the grid.

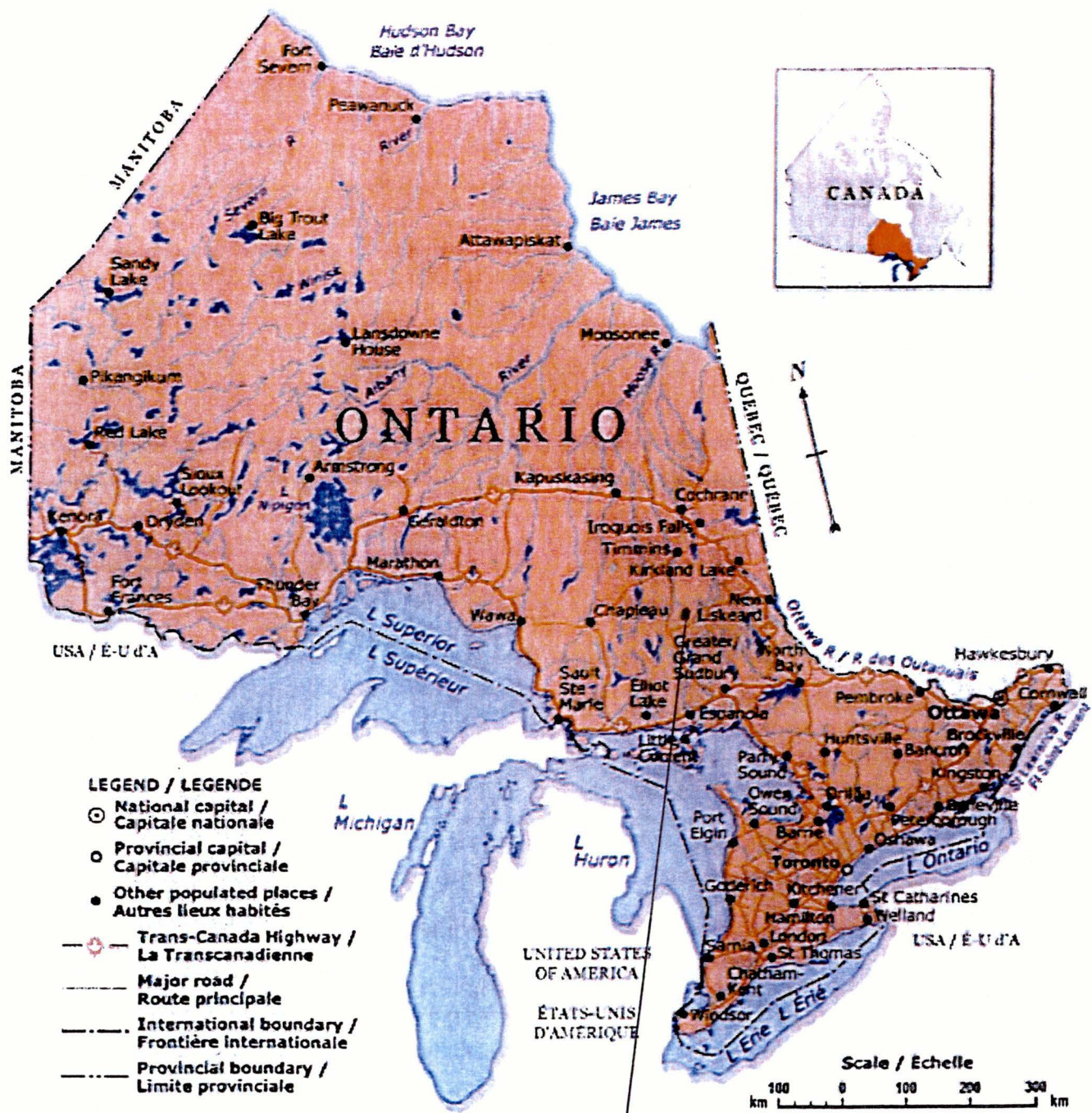
Travelling time to the grid from Timmins is about 2.5 hours. Figures 1, 2, 3 and 4.

CLAIM BLOCK:


The claim numbers that represent the holdings of Liberty Mines in Groves, Brunswick and Togo Townships are as follows;

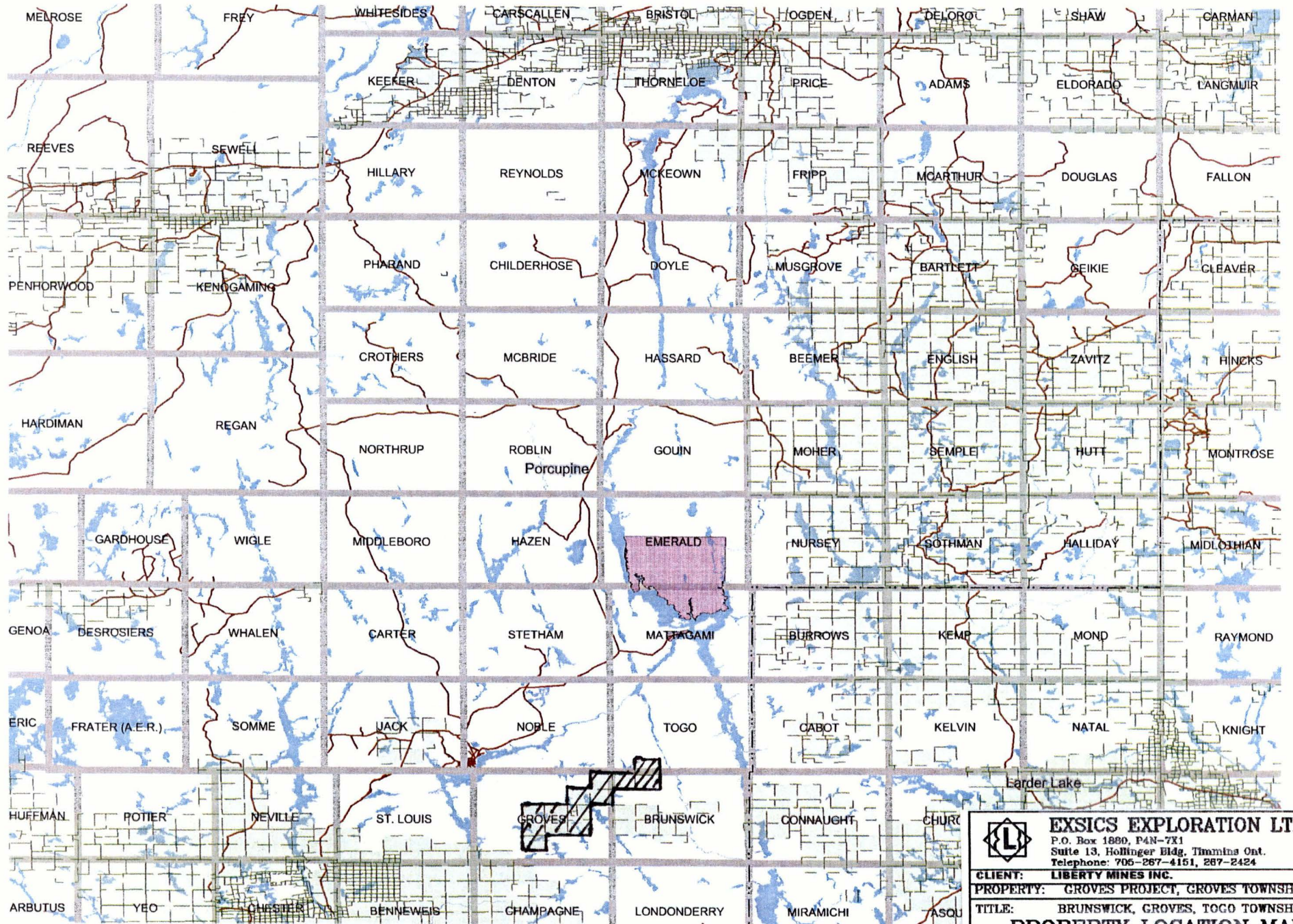
<u>Groves:</u>	4214921	16 units	4217826	16 units
	4217809	16 units	4217810	16 units
	4217817	16 units	4217816	16 units
	4217800	16 units	4217799	16 units
	4217818	16 units	4217813	10 units
	4217815	3 units	4217814	2 units
	1228922	1 unit		
<u>Brunswick:</u>	4217825	16 units	4217824	16 units
<u>Togo:</u>	4217821	16 units		

Refer to Figure 5 copied from MNDM Plan Map, G-3236, of Groves, G-0958 of Brunswick and M-1158 of Togo Townships for the positioning of the claim numbers within the Township.



- LEGEND / LEGENDE**
- ⊙ National capital / Capitale nationale
 - Provincial capital / Capitale provinciale
 - Other populated places / Autres lieux habités
 - Trans-Canada Highway / La Transcanadienne
 - Major road / Route principale
 - International boundary / Frontière internationale
 - Provincial boundary / Limite provinciale

 EXSICS EXPLORATION LTD. P.O. Box 1880, P4N-7X1 Suite 13, Hollinger Bldg, Timmins Ont. Telephone: 705-267-4151, 267-2424		
CLIENT: LIBERTY MINES INC.		
PROPERTY: GROVES PROJECT, GROVES TOWNSHIP		
TITLE: BRUNSWICK, GROVES, TOGO TOWNSHIPS		
LOCATION MAP		
Fig. 1		
Date: APR. 2013	Scale: 1:600,000	INTS:
Drawn: J.C. Grant	Interp: J.C. Grant	Job No.: E-853



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 Telephone: 706-267-4151, 267-2424

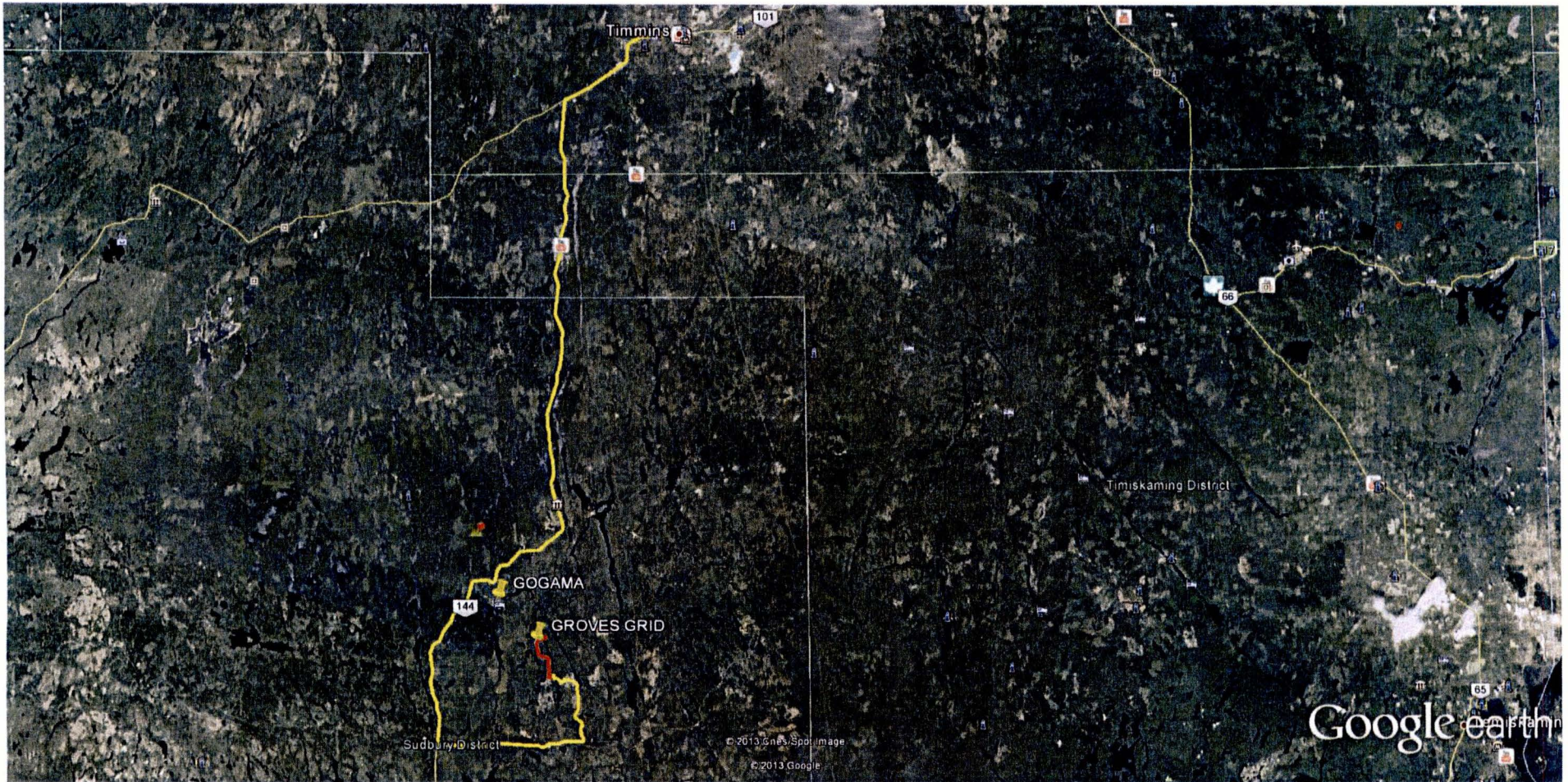
CLIENT: LIBERTY MINES INC.
PROPERTY: GROVES PROJECT, GROVES TOWNSHIP

TITLE: BRUNSWICK, GROVES, TOGO TOWNSHIPS

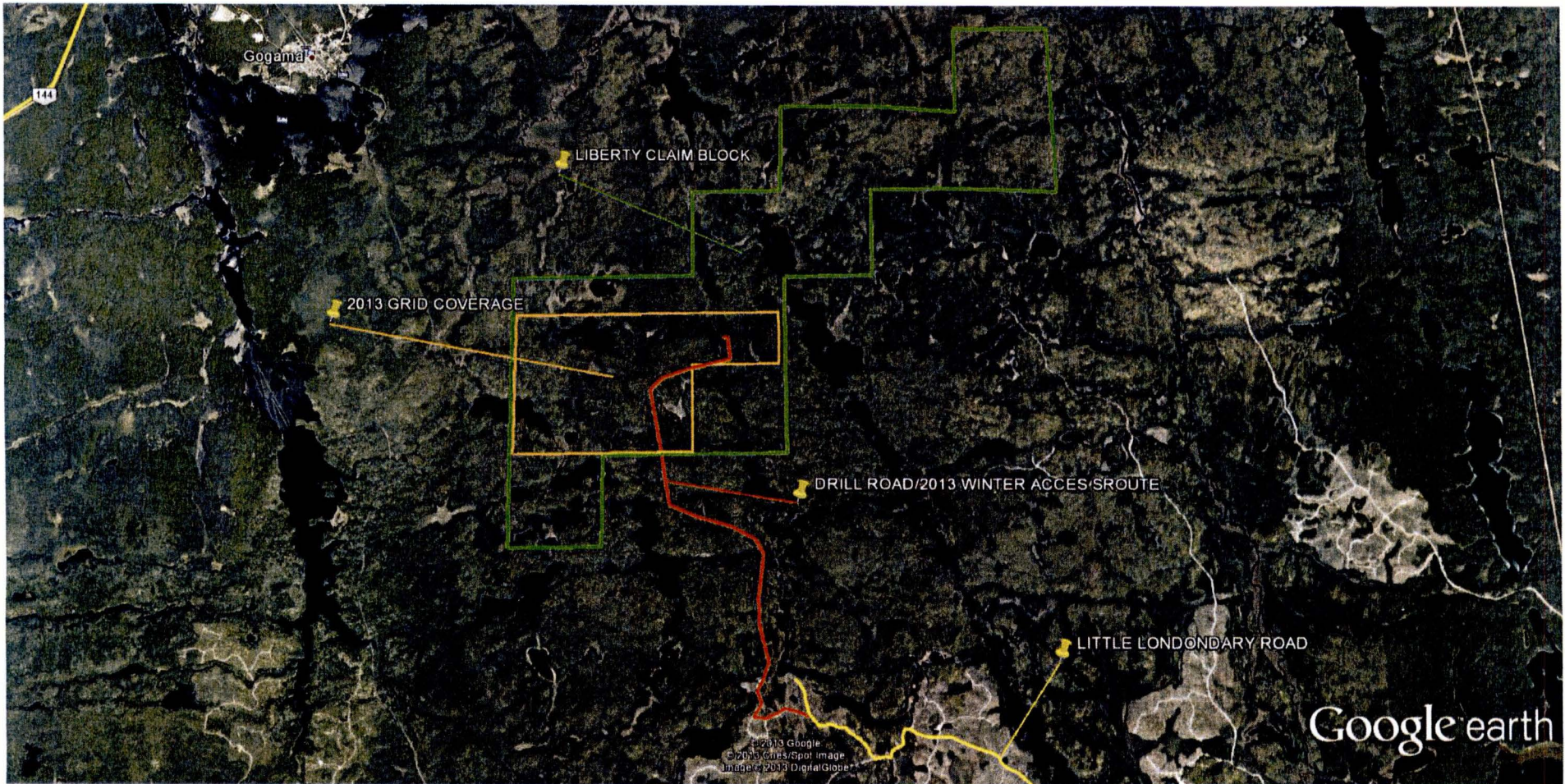
PROPERTY LOCATION MAP


Fig. 2

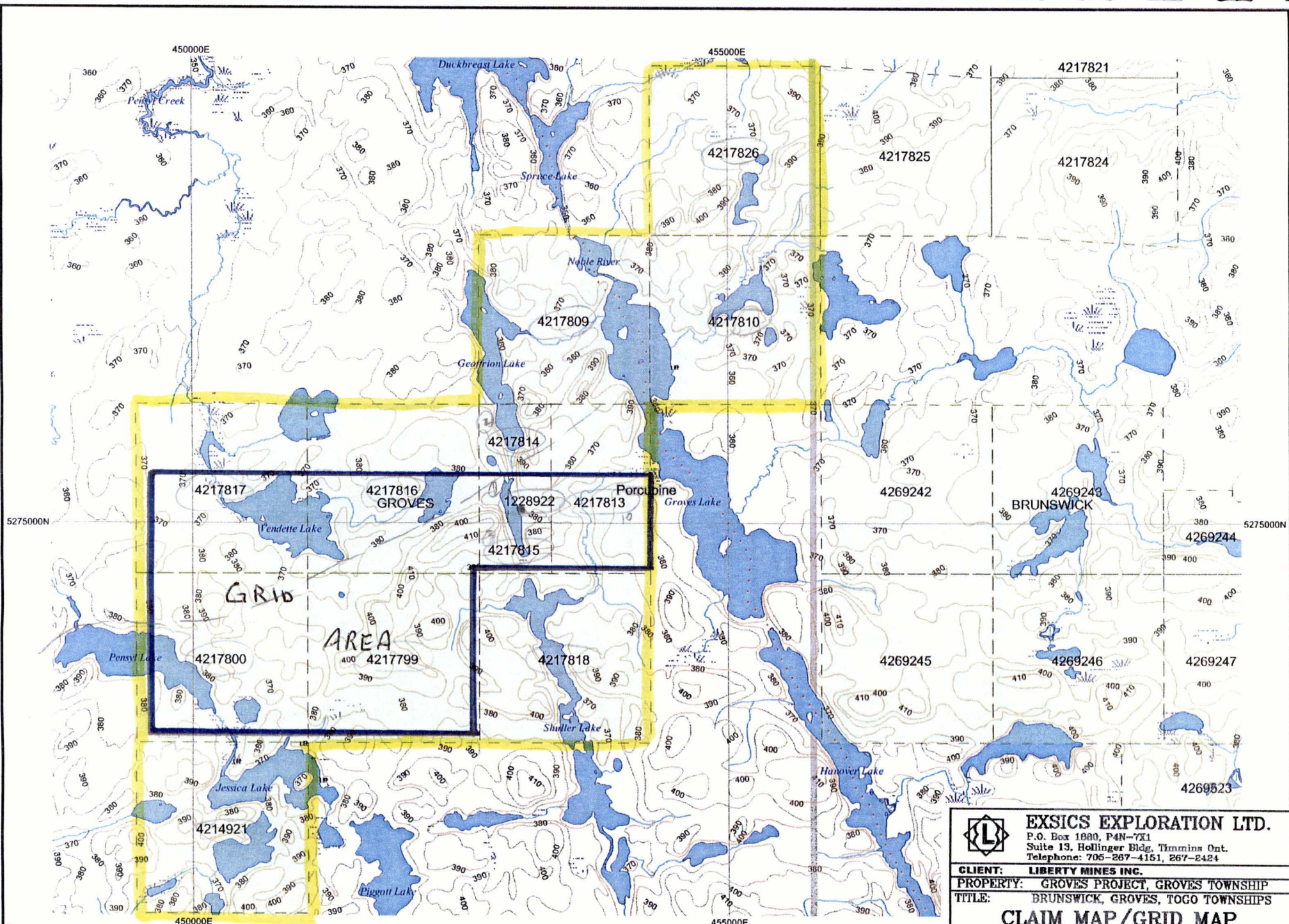
Date: APR. 2013 Scale: 1:100,000 NTS
 Drawn: J.C. Grant Interp: J.C. Grant Job No.: E-853



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	P.O. Box 1880, P4N-7X1 Suite 13, Hollinger Bldg, Timmins Ont. Telephone: 705-267-4151, 267-2424	
CLIENT:	LIBERTY MINES INC.	
PROPERTY:	LIBERTY MINES INC.	
TITLE:	BRUNSWICK, GROVES, TOGO TOWNSHIPS	
	HIGHWAY ACCESS ROUTE	
	Fig. 3	
Date: APR. 2013	Scale: 1:40,000	NTS:
Drawn: J.C. Grant	Interp: J.C. Grant	Job No.: E-853



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CLIENT: LIBERTY MINES INC.		
PROPERTY: GROVES PROJECT, GROVES TOWNSHIP		
TITLE: BRUNSWICK, GROVES, TOGO TOWNSHIPS		
GRID ACCESS ROUTE		
Fig. 4		
Date: APR. 2013	Scale:	NTS:
Drawn: J.C. Grant	Interp: J.C. Grant	Job No.: E-853



UTM Zone 17
5000m grid


 EXSICS EXPLORATION LTD. P.O. Box 1000, P4N-7X1 Suite 13, Hollinger Bldg, Timmins Ont. Telephone: 705-267-4151, 267-2424	
CLIENT: LIBERTY MINES INC.	
PROPERTY: GROVES PROJECT, GROVES TOWNSHIP	
TITLE: BRUNSWICK, GROVES, TOGO TOWNSHIPS	
CLAIM MAP / GRID MAP	
Date: APR. 2013	Scale: NTS.
Drawn: J.C. Grant	Interp: J.C. Grant Job No.: E-853

Fig. 5

PERSONNEL:

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

R. Bradshaw	Timmins, Ontario
J. Hamelin	Timmins, Ontario
J. Francoeur	Timmins, Ontario
A. Chamberlain	Timmins, Ontario

The plotting and interpretation as well as the report were completed by J. C. Grant of Exsics Exploration Limited.

GROUND PROGRAM:

The ground program was completed in two phases. The first phase consisted of cutting a detailed metric grid across the generally centered between Groves Lake to the east and Pensyl Lake to the west. Jessica Lake sits to the immediate south and Geofrion Lake lies just to the north.

A small grid had been cut across the nickel showing east of the small lake in the past and a point on that grid was used to establish the current grid. This start point was labeled line 3200ME and 4600MN of the current grid. A base line labeled 4600MN was turned off at this point and it was cut east for 1000 meters and west for 3700 meters. Cross lines were turned off of this base line at 100 meter intervals from line 4200ME to 500MW. A tie line was cut at 5450MN parallel to the base line from 4200ME to 500MW to control the northern direction of the cross lines. Additional tie lines were established at 3800MN and 3000MN to control the southern direction of the cross lines. Lines 500MW to 2700ME were cut and chained from 3000MN to 5450MN and lines 2800ME to 4200ME were cut from 4600MN to 5450MN. All of the newly cut lines were then chained with 25 meter pickets that had been metal tagged.

The second portion of the program was completed by Exsics Exploration Limited and consisted of a detailed total field magnetic survey that was done in conjunction with a VLF-EM survey over the entire cut grid using the Scintrex Envi Mag system. Specifications for this unit can be found as Appendix A of this report.

In all, a total of 107.6 kilometers of grid lines were cut between February 15th and March 26th and then the grid was covered by the geophysical surveys that were completed between March 5th and the 28th of 2013.

The following parameters were kept constant throughout both of the surveys periods.

Magnetic Survey:

Line spacing.....	100 meters
Station spacing.....	25 meters
Reading intervals.....	12.5 meters
Diurnal monitor.....	base station
Base record intervals	30 seconds
Reference field.....	56,500 gammas
Datum subtracted.....	56,000 gammas
Unit accuracy.....	+/- 0.1 gamma

Once the survey was completed the field data was plotted directly onto a base map at a scale of 1:5000. A datum level of 56000 gammas was removed from the data before it was plotted onto the base map. The data was then contoured at 50 gamma intervals wherever possible. A copy of this color base map is included in the back pocket of this report.

VLF-EM Survey:

Line spacing:	100 meters
Station spacing	25 meters
Reading intervals:	12.5 meters
Transmitting station	Cutler, Maine 24.0Khz
Parameter measured	Inphase and quadrature components of the secondary field.
Unit accuracy	+/- 0.1 %

Once this survey was completed the collected data was then plotted onto base maps at a scale of 1:5000 and then profiled at 40%. A copy of this profiled base map is included in the back pocket of this report.

PROPERTY GEOLOGY:

The Groves property is underlain by a mixture of Intermediate to mafic metavolcanics and metasediments that has been cross cut and or intruded by a very large, southwest to northeast striking quartz diorite to gabbroic sill approximately 500 meters in width and about 2000 meters in length. An accumulation of nickel-copper and platinum hosting sulphides is known to occur within this intrusive sill. The historical deposit is concentrated along part of the sheared footwall of the quartz diorite/gabbroic sill. Weak disseminations of sulphides also occur in adjacent rocks. There is a well-defined north-northwest-southeast striking fault that cuts across the eastern section of the grid area just to the west of the nickel showing. Several narrow northwest to southeast structures were also noted striking across the western section of the grid area that may relate to dike like bodies possible fault controlled. A historical gold showing is situated on the southeast tip of Pensyl Lake in a quartz rich iron formation. Figure 6

450000

455000

460000

Gogama

NOBLE

TOGO

5280000

5280000

5275000

5275000

5270000


5270000

450000

455000

460000

GRID AREA



LIBERTY MINE

Groves Property

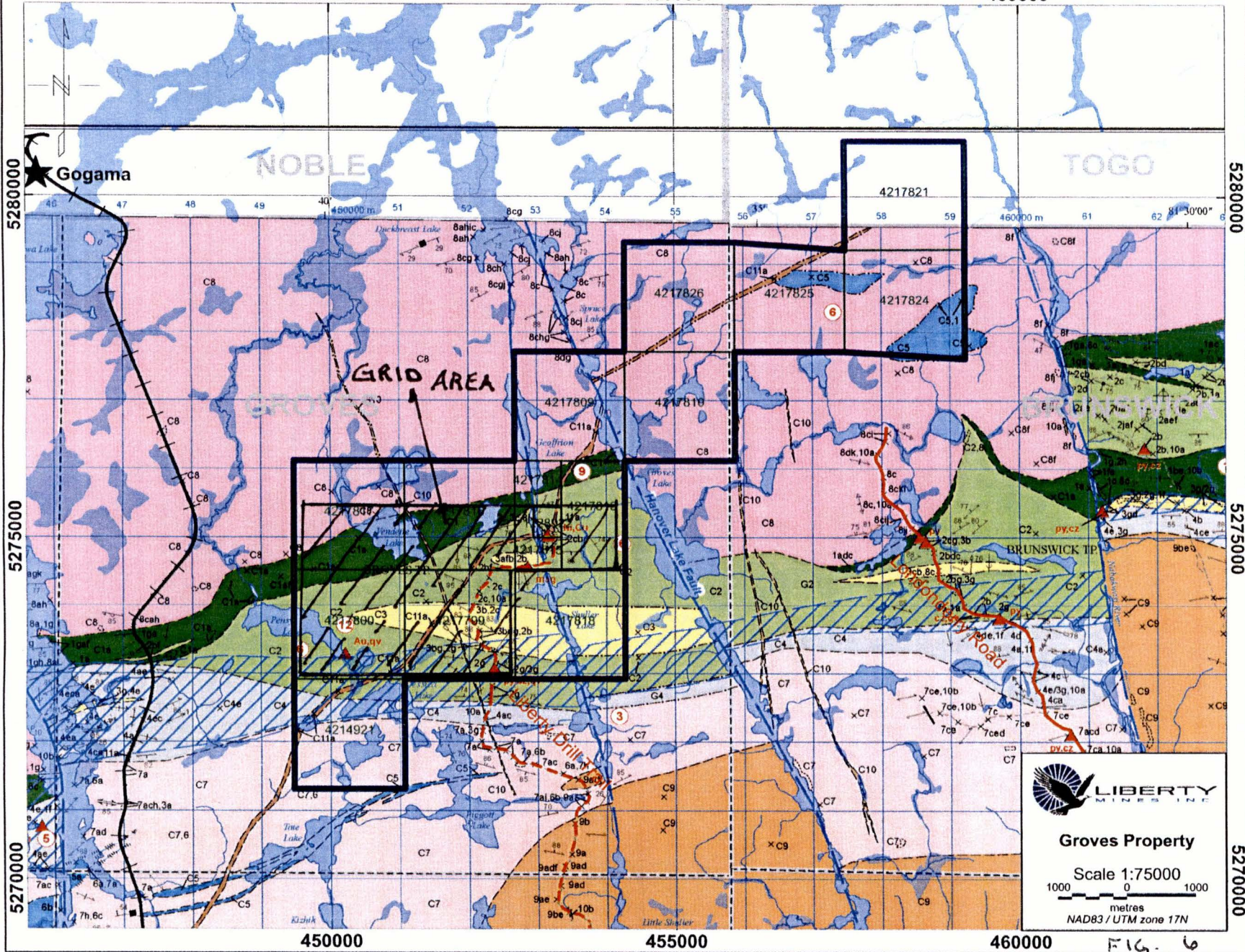
Scale 1:75000

1000 0 1000

metres

NAD83 / UTM zone 17N

FIG. 6



MAGNETIC & VLF-EM SURVEY RESULTS:

The ground program was successful in locating and defining the expected geological structures that cross cut the grid area. The most evident magnetic structure is the broad and highly distorted magnetic high unit that strikes from line 2900ME at 5100MN to the southern ends of lines 900ME and 800ME. This high correlates to the suspected and mapped large dioritic to gabbroic sill that strikes across the entire grid area. This structure is also the probable host for the nickel and platinum mineralization. This massive sill has also interrupted all of the VLF-EM conductor trends that generally strike east-west across the grid area.

Two additional magnetic high units appear to parallel this main sill. The first is a weaker and narrower trend that strikes from line 1100ME at about 4100MN that can be followed in a southwestern direction to 300ME at 3300MN. Again this zone has been offset and or pinched along its strike length by several cross structures.

The second magnetic high that parallels the main sill can be followed from the northern end of lines 2100ME to line 500MW at 4350MN. This unit is somewhat narrower than the main sill but just as magnetic in places and it also appears to continue off of the grid in both directions. Unlike the main sill however, this magnetic high is host to a number of good strong conductive trends that either parallel the edges of the high or correlate directly to the center of the high. This would suggest that this high may represent a geological contact between the band of mafic metalvolcanics that underlies the northwestern section of the grid area and the intermediates to the immediate south.

There are several good northwest to southeast striking cross structures that cut across the central and west sections of the grid area as well as one north-south structure that generally parallels lines 3000ME and 3100ME from 4600MN to 5450MN. All of these cross structures continue off of the grid area in both directions.

The north-south trend between lines 3000ME and 3100ME correlates to a known fault structure that lies to the west and parallels the more predominant Hanover Lake Fault. In fact the two faults may merge into one to the north of the grid area and under Duckbreast Lake. The fault that parallels lines 3000ME and 3100ME has offset the northeast section of the major gabbroic sill and moved it eastward and to the north where it seems to continue northeast and off of the grid.

The 3 most predominant northwest to southeast narrow magnetic trends are located in the central and northwest section of the grid. All three structures are parallel to one another and all zones appear to have offset and or faulted the main sill as well as the suspected parallel zones.

The first northwest trend can be followed from the south end of line 2000ME to the north end of line 1100ME. This structure continues off of the grid in both directions. It appears to represent a dike like unit that has been mapped in the vicinity of the eastern shore of Vendette Lake and to the southeast of the lake. This structure has altered the shape of the northern magnetic trend as well as the main gabbroic sill suggesting it may be fault controlled.

A second similar shaped structure is evident striking from the southern end of line 600ME to the northern end of line 400MW and this unit also appears to continue off of the grid in both directions. This unit does not appear to alter the strike of the narrow northern zone but has offset the southwest tip of the northeast to southwest structure striking between lines 1100ME and 300ME.

There is another northwest-southeast unit closely paralleling this unit and it lies just to the west. It can be followed from line 500MW to the southern tip of line 100ME and continues off of the grid in both directions. This unit has offset the northern magnetic trend as well as the western section of the trend between 1100ME and 300ME. The magnetic trend striking west across lines 100ME to 500MW between 3450MN and 3600MN may be the western extension of the zone between 1100ME and 300ME which would suggest that this northwest unit could be fault controlled.

All of these northwest-southeast trends appear as a series of magnetic bulls eyes across the grid area.

One of the more interesting VLF-EM trends would be the good zone that strikes from 500MW at 4375MN to 800ME at 4850MN. This zone correlates directly with the narrow magnetic trend in the area and appears to be dipping near vertical to slightly grid south. The eastern extension of the zone appears to strike into the lake and then follow a creek bed as it continues northeast across the grid to line 2100ME at 5200MN.

Another good VLF zone appears to strike east off of this zone in the vicinity of line 300ME at 4500MN and continues as far as line 1800ME at 4450MN. The western section of the zone correlates to a narrow and modest magnetic zone striking east from the main magnetic high but the remainder of the zone correlates to weak magnetic lows. The eastern section of this zone terminates at the western edge of the large gabbroic sill.

Another VLF zone strikes from line 500MW at 4900MN to 400ME at 4800MN at it correlates to a series of magnetic lows as well. This zone appears to run into the magnetic high trend to the immediate south.

Another good VLF zone strikes from line 500MW at 3750MN to line 1200ME at 3575MN. This zone continues off of the grid to the west and under Pensyl Lake and correlates to a magnetic low as it strikes east from 500MW to at least 300ME where it is cross cut by the northeast magnetic trend between 1100ME and 300ME. Once across the magnetic high the zone continues as far as line 1200ME and again is associated with a magnetic low. The zone may correlate to the southern edge of the metasedimentary unit that underlies this section of the grid. Refer to Figure 5, Property Geology map.

Another good zone lies along the southern edge of a good magnetic high unit and can be followed from line 500MW at 3550MN to 800ME at 3425MN. However, the eastern extension of this zone may strike southeast from line 300ME at 3350MN to 600ME at 3150MN due to the fact that the northwest strike magnetic high may have faulted the zone and shifted it to the southeast. If this is the case then the suspected gold showing would correlate to the western tip of this southeast section of the VLF zone.

The last of the main VLF trends strikes west into the grid from line 2600ME at 3175MN to 1300ME at 3275MN where it is cut off by the main gabbroic sill. This zone correlates to a broad magnetic low dipping slightly to the north. The zone may correlate to the southern edge of the metasedimentary unit coming into the grid from the east.

The northeast section of the grid area is relatively quiet geophysically speaking compared to the central and western sections of the grid.

CONCLUSIONS AND RECOMMENDATIONS:

The ground surveys were successful in outlining the suspected geological features of the grid area. The dioritic/gabbroic sill is well defined across the grid and it in turn has been cross cut, altered and or faulted by at least 3 to 4 north-south to northwest-southeast cross structures. All of the northwest structures are readily visible in the magnetic plan map as magnetic high bulls eyes that can be easily lined up in the northwest direction. The strong VLF trends appear to correlate to geological contacts and or legitimate conductive zones at their contacts. Several of the zones not talked about in this report correlate to lake shores and or drainage patterns between the lakes.

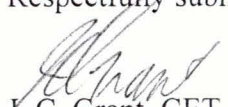
Both the magnetic and VLF surveys are good surveys for locating the geological characteristics of the area as well as topographical features such as lake shores, creek beds and outcrop to swamp contacts. That being said there are still several of the VLF zones that should be followed up further to better define their sources. One such zone would be the VLF anomaly between 300ME at 3250MN to 600ME at 3125MN. This zone appears to be on strike with the gold showing which lies to the immediate west of the western tip of this anomaly.

A detailed geological survey would help in defining the some of the VLF zones and possibly locating the geological contacts. Soil sampling in the area of the gold showing and along the VLF trend striking east from the showing may help in extending the mineralization.

For the most part the grid area is quite hilly, especially in the eastern and central sections but does appear to become more of rolling topography in the western and northwestern section of the grid. Initially a Horizontal Loop Electromagnetic survey was contemplated but the topography did not lend itself well to this type of survey unless the grid was secant chained and corrected for the slope of the area. At the time of the survey this was not possible due to late winter conditions and timing.

A follow up Induced polarization, (IP), survey should be conducted over sections of the grid in the vicinity of good VLF zones with magnetic high and low correlation to better define potential drill targets. This would be for sure in the vicinity of the gold showing and the VLF anomaly striking east from the showing. Should the IP zone return encouraging results then parallel VLF zones in the area should be considered for further follow up.

Respectfully submitted

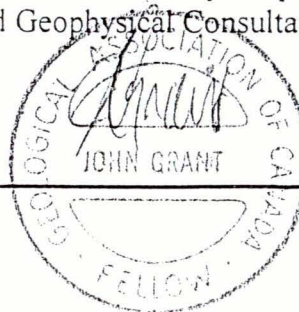

J. C. Grant, CET, FGAC
April 2013.

CERTIFICATION

I, John Charles Grant, of 108 Kay Crescent, in the City of Timmins, Province of Ontario, hereby certify that:

- 1). I am a graduate of Cambrian College of Applied Arts and Technology, 1975, Sudbury Ontario Campus, with a 3 year Honors Diploma in Geological and Geophysical Technology.
- 2). I have worked subsequently as an Exploration Geophysicist for Teck Exploration Limited, (5 years, 1975 to 1980), and currently as Exploration Manager and Chief Geophysicist for Exsics Exploration Limited, since May, 1980.
- 3). I am a member in good standing of the Certified Engineering Technologist Association, (CET), since 1984.
- 4). I am in good standing as a Fellow of the Geological Association of Canada, (FGAC), since 1986.
- 5). I have been actively engaged in my profession since the 15th day of May, 1975, in all aspects of ground exploration programs including the planning and execution of field programs, project supervision, data compilation, interpretations and reports.
- 6). I have no specific or special interest nor do I expect to receive any such interest in the herein described property. I have been retained by the property holders and or their Agents as a Geological and Geophysical Consultant and Contract Manager.

John Charles Grant, CET., FGAC.



APPENDIX A

SCINTREX

ENVI GEOPHYSICAL SYSTEM

The Scintrex ENVI System gives you the flexibility to find the increasingly more elusive anomalous targets. A complete ENVI system is low cost, lightweight, portable proton precession magnetometer/gradiometer with VLF capabilities which enables you to survey large areas quickly and accurately. Whether it is for Magnetic surveys, VLF electromagnetic surveys or a combination of these techniques, the ENVI system can be designed to suit your own unique requirements. This customized approach gives you the ability to select the following options for your instrument:

- Portable Field and Base Station Magnetometer
- True Simultaneous Gradiometer
- VLF Electromagnetic Receiver
- VLF Resistivity Option

BENEFITS

Customize Your System

At the heart of the ENVI system is a lightweight console with a large screen alphanumeric display and high capacity memory which is common to all configurations. Included with each system are the appropriate sensors, sensor staff and/or backpack, a rechargeable battery, battery charger, an RS-232 cable and a transit case.

Increase Productivity

For magnetic surveys you can select sampling rates of 0.5 second, 1 second and 2 seconds.

Rapidly Recall Data

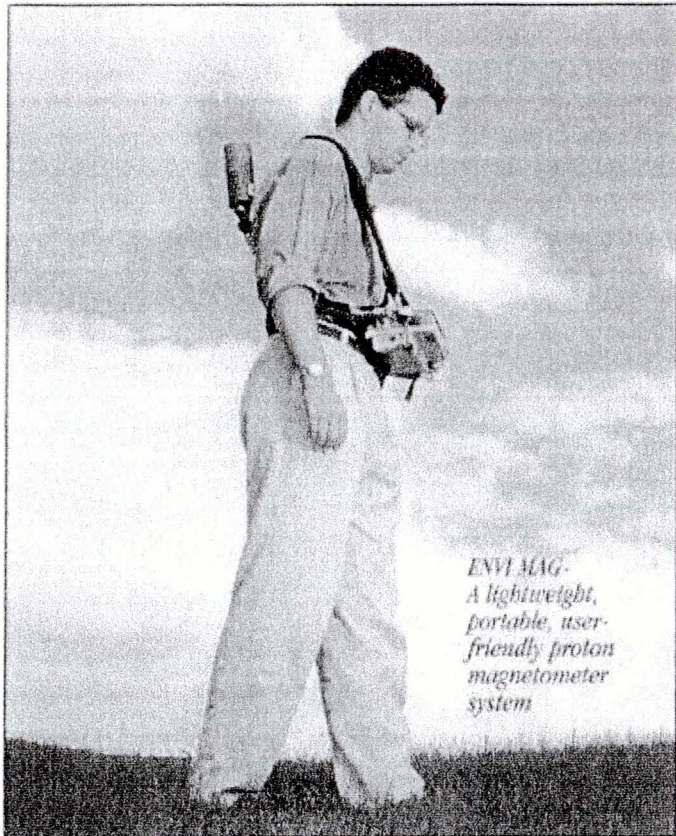
For quality of data and for rapid analysis of the magnetic characteristics of the survey line, several modes of review are possible. These include the measurements at the last four stations, the ability to scroll through any or all previous readings in memory and a graphic display of the previous data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

Simplify Fieldwork

The ENVI makes surveys easier to conduct as the system:

- provides simple operator menus
- presents the data both numerically and graphically on the large LCD screen
- eliminates the need to write down field data as it simultaneously stores time, field measurements and grid coordinates
- clears unwanted last readings if selected
- calculates statistical error for each measurement
- automatically calculates the difference between the current reading and the previous one (base station)
- provides the ability to remove the coarse magnetic field value or data from the field data to simplify plotting of the field results
- automatically calculates diurnal corrections
- allows for hands free operation with the backpack sensor option





ENVI MAG

The ENVI system when configured as a total field magnetometer is referred to as the ENVI MAG. In this set up the ENVI system can be operated a traditional stop and measure mode, thus providing the full sensitivity obtainable with a proton magnetometer, ideally suited for mineral exploration. Alternatively the ENVI MAG can be operated in the "WALKMAG" mode, where readings may be made continuously at a user selectable rate of up to 2 readings per second. Although this reduces the accuracy marginally, it does allow the user to collect increased volumes of data and cover more area in a shorter period of time. This is particularly important for large signal near surface targets as typically found in environmental surveys. This makes the ENVI a very cost effective tool for environmental surveys. The ENVI MAG provides the following information:

- Total Magnetic Field
- Time/Date of Reading
- Co-ordinates of Reading
- Statistical Error of the Reading
- Signal Strength and Decay Rate of the Reading

As a magnetic base station instrument the ENVI can be set up to record variations of the earth's magnetic field. Using this information from a stationary ENVI MAG the total field readings obtained with other roving magnetometers can be corrected for these fluctuations thus improving the accuracy of your magnetic data. All ENVI MAG systems can be operated as either field or base station instruments. The optional base station accessories kit is recommended for base station applications.

ENVI GRAD

The ENVI System configured as an ENVI GRAD enables true simultaneous gradiometer measurements to be obtained.

The ENVI GRAD provides you with an accurate means of measuring both the total field and the gradient of the total field. It reads the measurements of both sensors simultaneously to calculate the true gradient measurement.

In the gradient mode, the ENVI sharply defines the magnetic responses determined by total field data. It individually delineates closely spaced anomalies rather than collectively identifying them under one broad magnetic response. The ENVI GRAD is well suited for geotechnical and archaeological surveys where small near surface magnetic targets are the object of the survey. In addition to what the ENVI MAG provides the ENVI GRAD also provides the gradient of the total magnetic field.

Saves You Time

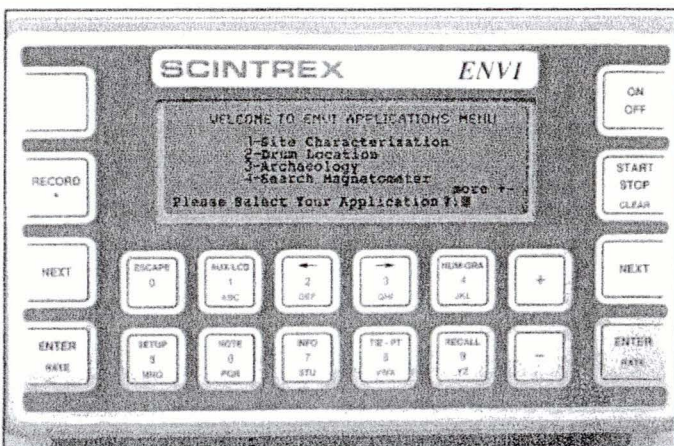
Only one instrument is needed for magnetometer, gradiometer, VLF and VLF resistivity surveying. A complete ENVI System can calculate and record 4 VLF magnetic field parameters from 3 different transmitters, a magnetic total field reading and a simultaneous magnetic gradient reading. It can also measure and record 2 VLF electric field parameters from 3 different transmitters with the VLF Resistivity option.

Upgrade Your Unit at any Time

The ENVI is based on a modular design, you can upgrade your system at any time. This built-in flexibility allows you to purchase an ENVI system with only the surveying equipment that you need for now but does not limit you to one application. When your surveying needs grow, so can your ENVI system. Existing users of OMNI systems can also upgrade their consoles.

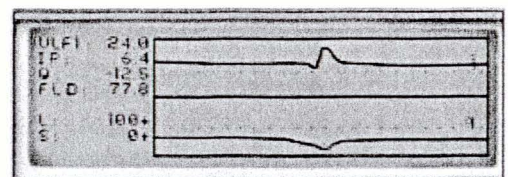
SYSTEM CONFIGURATIONS

- ENVI MAG
- ENVI GRAD
- ENVI VLF
- ENVI MAG/VLF
- ENVI GRAD/VLF



Left: Application oriented menus provide the user with the utmost flexibility

Below: Large screen graphics capability allows for rapid data analysis.





ENVI VLF is the ideal groundwater exploration tool.

With the gradiometer option there is no lost survey time as the ENVI enables you to conduct gradient surveys during magnetic storms. The technique of simultaneously measuring the two sensors cancels the effects of diurnal magnetic variations.

ENVI VLF

The ENVI VLF is ideal for environmental, geotechnical and mineral/water exploration application.

The ENVI VLF unit allows you to read the vertical in-phase, vertical quadrature, total field strength, dip angle, primary field direction, apparent resistivity, phase angle, time, grid coordinates, direction of travel along grid lines and natural and cultural features. The ability to obtain data from as many as 3 VLF transmitting stations provides complete coverage of an anomaly regardless of the orientation of the survey grid of the anomaly itself.

The unique, 3-coil sensor does not require orientation of the VLF sensor head toward the transmitter station. This simplifies VLF field procedures and saves considerable survey time.

The ENVI VLF can measure up to three VLF frequencies. The display indicates the signal to noise ratio which provides you with an immediate indication of how usable a frequency is. The ENVI also enables you to automatically scan the entire VLF spectrum for the most usable stations between 15 kHz to 30 kHz. Using up to three frequencies optimizes conductor coupling even in the most complex geological environments. The ENVI VLF system's ability to obtain repeatable readings from weak signals offers a number of benefits:

- extends the use of VLF to countries where its use was previously marginal
- increases the number of frequencies with which you can operate

VLF Resistivity Option

The ENVI also offers a non-orientation VLF resistivity option.

ENVI MAG/VLF

The ENVI MAG/VLF has the features of both the ENVI MAG and ENVI VLF combined in one instrument.

ENVI GRAD/VLF

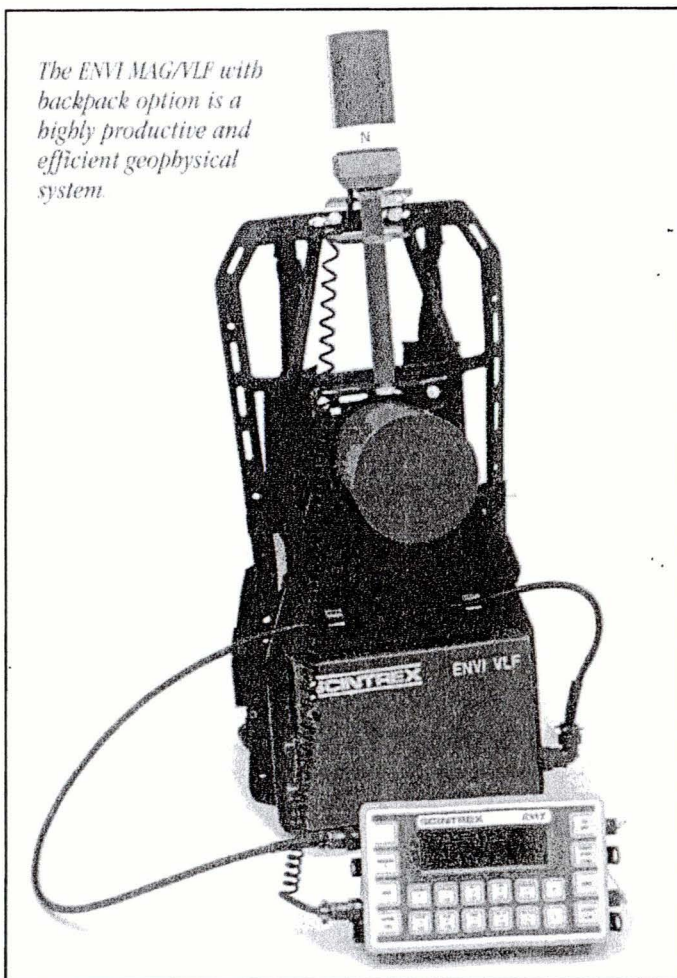
The ENVI GRAD/VLF has the features of both the ENVI GRAD and ENVI VLF combined in one instrument.

ENVI MAP Software

Supplied with the ENVI MAG and ENVI GRAD and custom designed for this purpose, is an easy to use, menu-driven data processing and mapping software for magnetic data called ENVI MAP. The software enables you to:

- read the ENVI MAG/GRAD data and reformat it into a standard, compatible with the ENVI MAP software
- grid the data into a standard grid format
- 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 map surround
- contour the grided data
- autoscale the combined results of the posting/surround step and the contouring step to fit on a standard 8.5 inch wide dot-matrix printer
- rasterize and output the results of the autoscaling to the printer

The ENVI MAP software is fully compatible with Geosoft programs. More advanced data processing, modeling and interpretation software is also available.



The ENVI MAG/VLF with backpack option is a highly productive and efficient geophysical system.

Total Field Operating Range

20,000 to 100,000 nT (gammas)

Total Field Absolute Accuracy:

±1 nT

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

Gradiometer Option

Includes a second sensor, 1/2m (20 inch) staff extender and processor module.

VLF Option

Includes a VLF sensor and harness assembly

'WALKMAG' Mode

continuous reading, cycling as fast as 0.5 seconds

Digital Display

LCD "Super Twist", 240 x 64 dots graphics, 8 line x 40 characters alphanumeric

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
VLF Measurements: 4,500 readings for 3 frequencies

Expanded Memory

Total Field Measurements: 140,000 readings
Gradiometer Measurements: 109,000 readings
Base Station Measurements: 750,000 readings
VLF Measurements: 24,000 readings for 3 frequencies

Real-Time Clock

Records full date, hours, minutes and seconds with 1 second resolution, ±1 second stability over 24 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. High speed Binary Dump. Selectable formats for easy interfacing to commercial software packages.

Analog Output

0-999 mV full scale output voltage with keyboard selectable range of 1, 10, 100, 1000 or 10,000 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: -40° to 60°C

Dimensions & Weight

Console: 250mm x 152mm x 55mm (10" x 6" x 2.25")
2.45 kg (5.4 lbs) with rechargeable battery

Magnetic Sensor: 70mm x 175mm (2.75"d x 7")
1 kg (2.2 lbs)

Gradiometer Sensor: 70mm x 675mm (2.75"d x 26.5")
(with staff extender) 1.15 kg (2.5 lbs)

Sensor Staff: 25mm x 2m (1"d x 76")
.8 kg (1.75 lbs)

VLF Sensor Head: 140mm x 130mm (5.5"d x 5.1")
.9 kg (2 lbs)

VLF Sensor: 280mm x 190mm x 75mm (11" x 7.5" x 3")
1.7 kg (3.7 lbs)

Options

Base Station Accessories Kit
GPS
Software Packages
Training Programs

SCINTREX**SCINTREX****HEAD OFFICE**

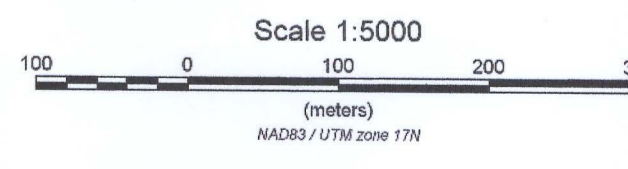
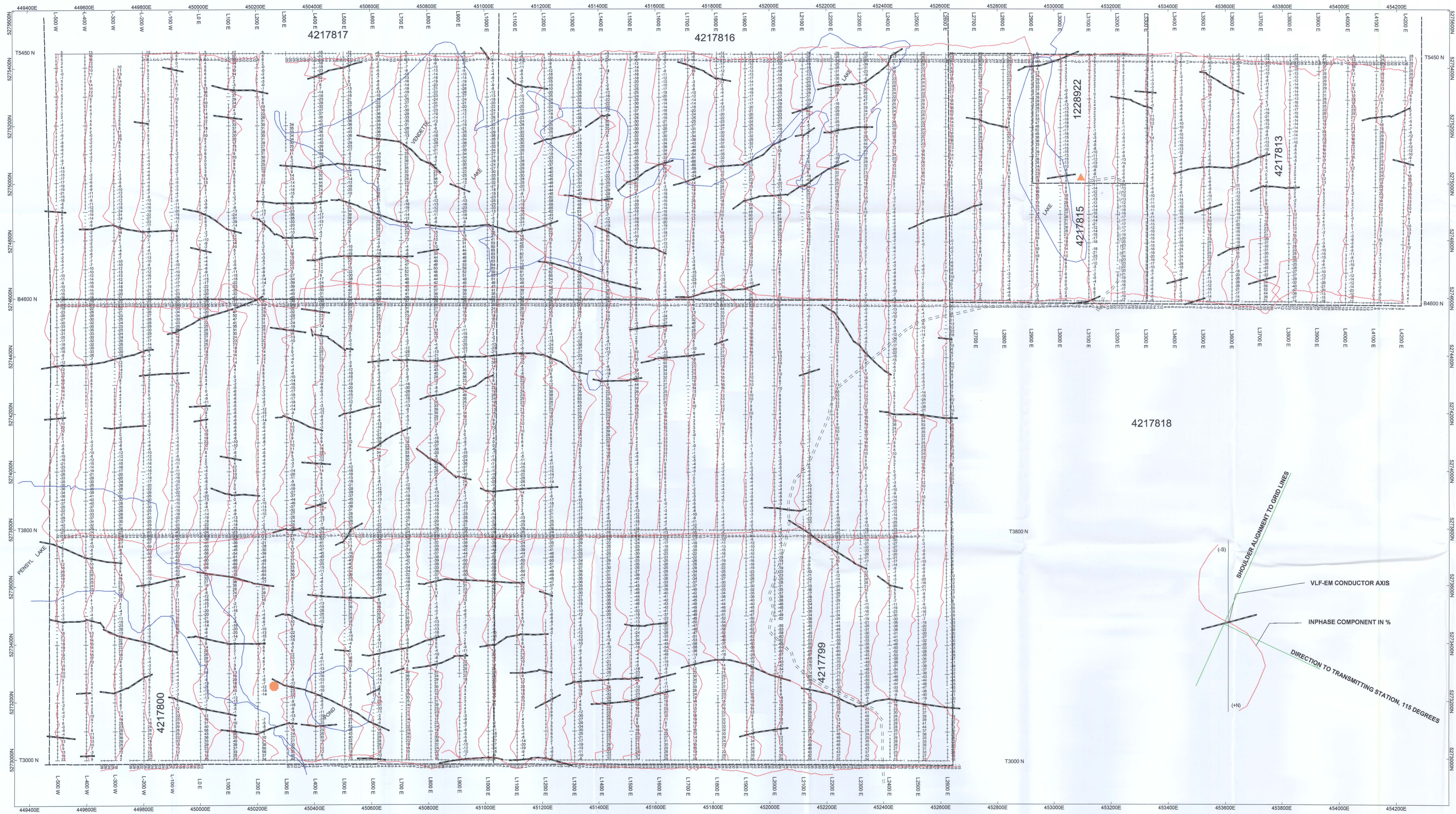
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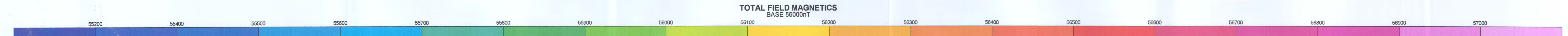
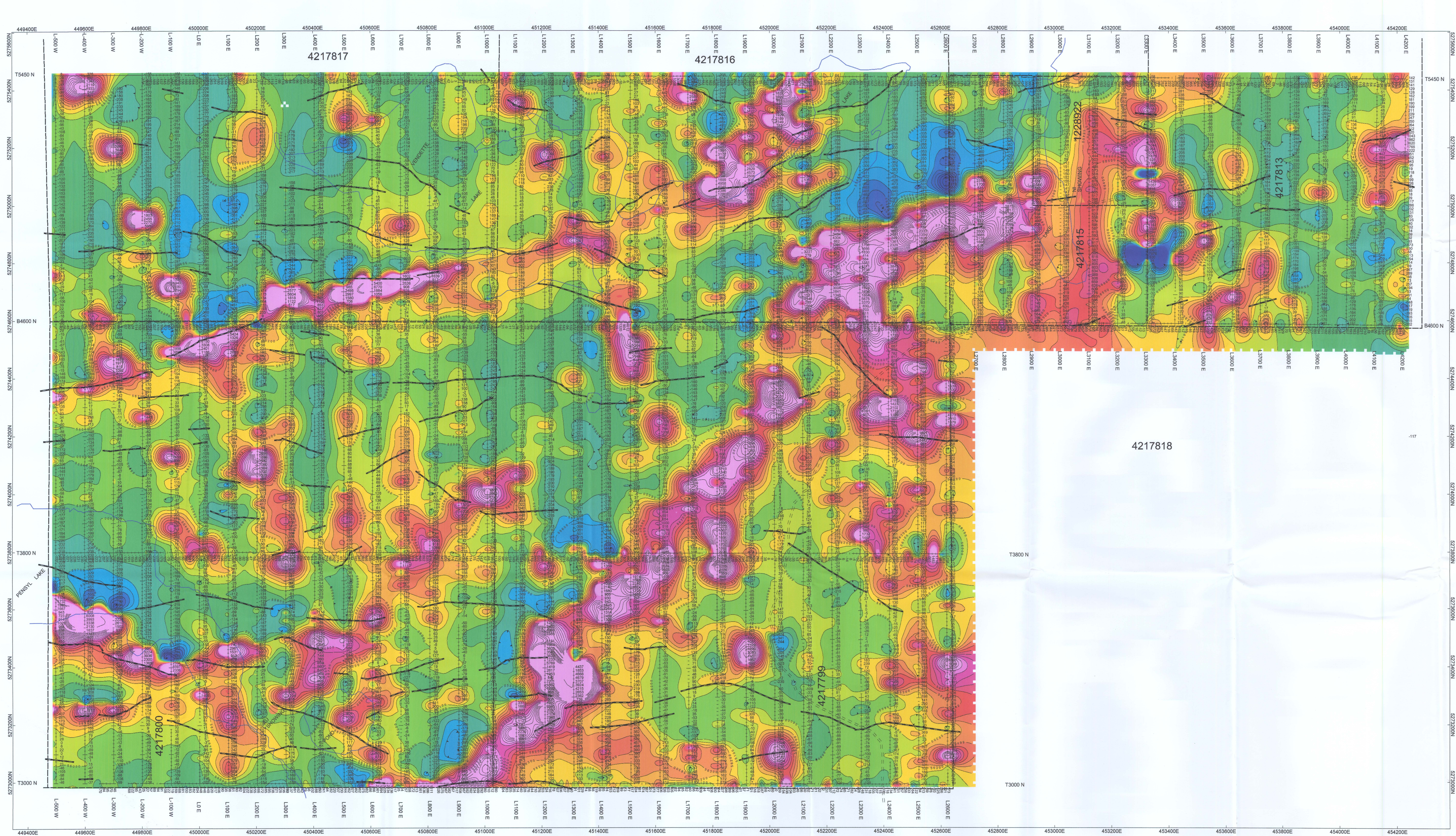
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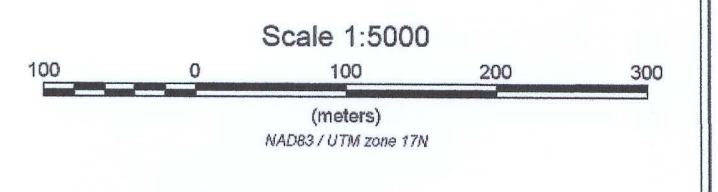
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LIBERTY MINES INC
 GROVES PROPERTY GROVES TOWNSHIP
 VLF-EM SURVEY, CUTLER, MAINE, 24.0KHZ
 SCINTREX ENVI MAG SYSTEM
 PROFILED: 1CM=±.40%
 MARCH 2013 EXSICS EXPLORATION LIMITED E-853



TOTAL FIELD MAGNETICS
BASE 56000nT



LIBERTY MINES INC
GROVES PROPERTY GROVES TOWNSHIP
TOTAL FIELD MAGNETIC SURVEY
SCINTREX ENVI MAG SYSTEM
CONTOURED: 50nT
MARCH 2013 EXSIS EXPLORATION LIMITED E-853