



42A10SW0268 2.8707 MACKLEM

010

MAGNETIC and ELECTROMAGNETIC SURVEYS

for

PAMOUR PORCUPINE MINES LIMITED

on the

SOUTH EAST OF RONNOCO PROJECT

in

RECEIVED

DEC 05 1985

Macklem Township

MINING LANDS SECTION

Porcupine Mining Division

District of Cochrane

Ontario

by

Kian A. Jensen
Consulting Geologist/Geophysicist

November, 1985



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INTRODUCTION

During October and November, 1985, line cutting, VLF-EM, and magnetic surveys were conducted on the North Group and the South Group of the Southeast of Ronnoco Project, each consisting of 2 unpatented mining claims for Pamour Porcupine Mines Limited.

The claim groups are located on the eastern shore of Night Hawk Lake, approximately 22 miles east of Timmins, Ontario.

The purpose of these surveys were to identify favourable gold bearing mineralization associated with quartz-carbonate alteration zones, siliceous quartz and/or feldspar porphyry, pyritization of fracture filling quartz veining and to identify and located the major structural features in the area.

The linecutting, total field magnetic survey and the VLF-EM electromagnetic survey were conducted by personnel of Guy Thibault Exploration Services, P.O. Box 1670, Timmins, Ontario, P4N 7W8 and Kian A. Jensen Exploration and Consulting Services, P.O. Box 37, South Porcupine, Ontario, P0N1H0.

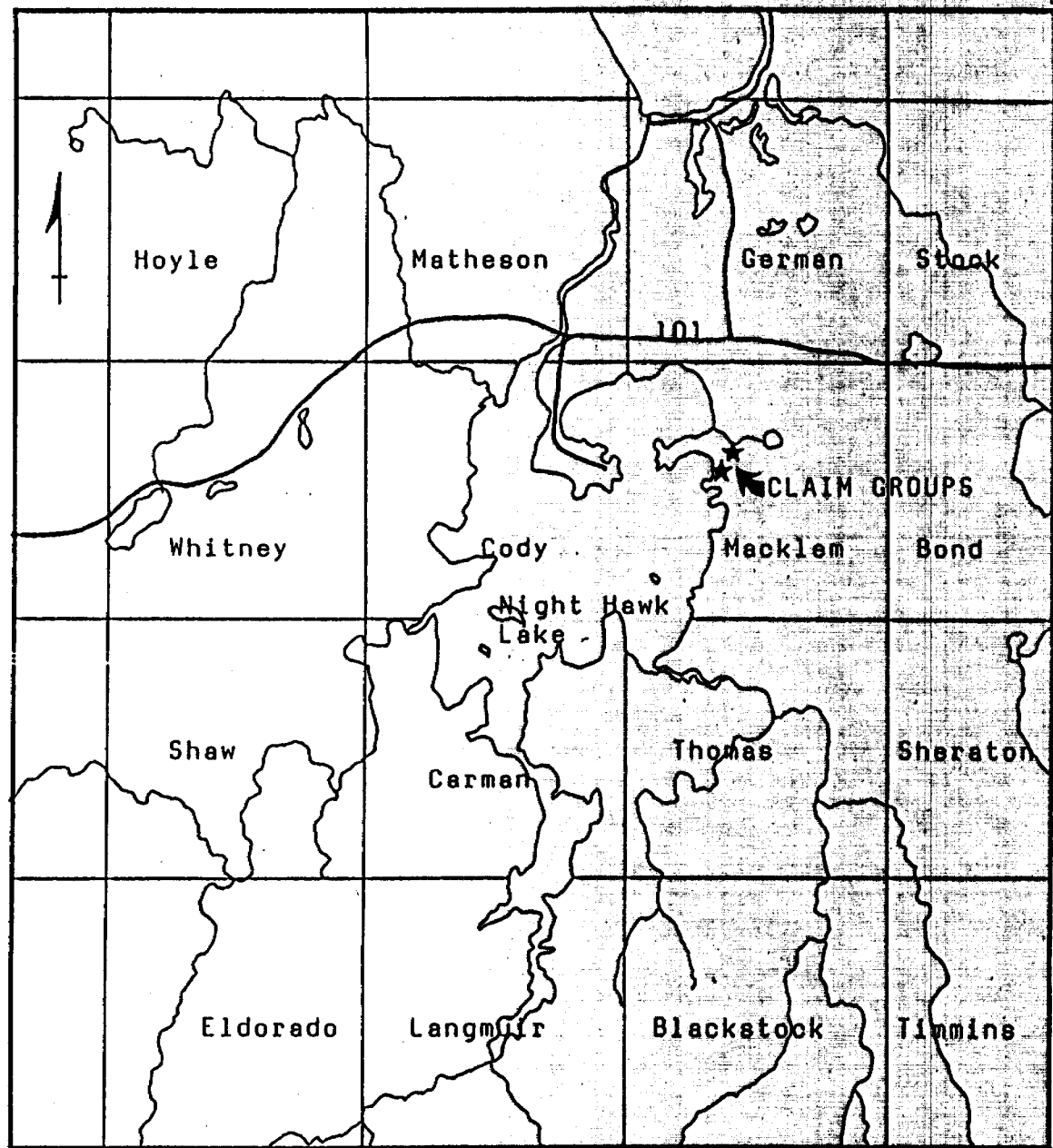
The supervision of the project, drafting, data reduction, interpretation and report were done by the author.

LOCATION and ACCESS

The "Southeast of Ronnoco Project" is located approximately 22 miles east of Timmins, Ontario near the eastern shore of Night Hawk Lake. The two groups of claims are located south of Tincan Creek and southeast of the East Peninsula in Macklem Township. The claim groups also tie to the existing property of Pamour Porcupine Mines (Figure 1).

Access to the claim group is by Highway 101 eastwards from Timmins. During the spring, summer and fall, access to the South Group is by boat from either Highway 803 or Night Hawk Lake Retreat. The North Group can be accessed from the South Group by following an old survey line to Tie Line 20 North.

An additional access route is via Highway 101 eastwards to the Asarco Gold Mine which is about 2.5 miles east of the junction of Highways 101 and 67. An old bush road leads south and southwest from the mine to Tincan Creek. From the creek the access is by foot to the North Group.



LOCATION MAP Scale: 1 inch to 4 miles

Figure 1: Location Map of the South and North Claim Groups Southeast of Ronnoco Project, Macklem Township, Porcupine Mining Division, Ontario.

PROPERTY

The "Southeast of Ronnoco Project" consists of two groups of two unpatented contiguous mining claims in Macklem Township, Porcupine Mining Division, District of Cochrane, Ontario.

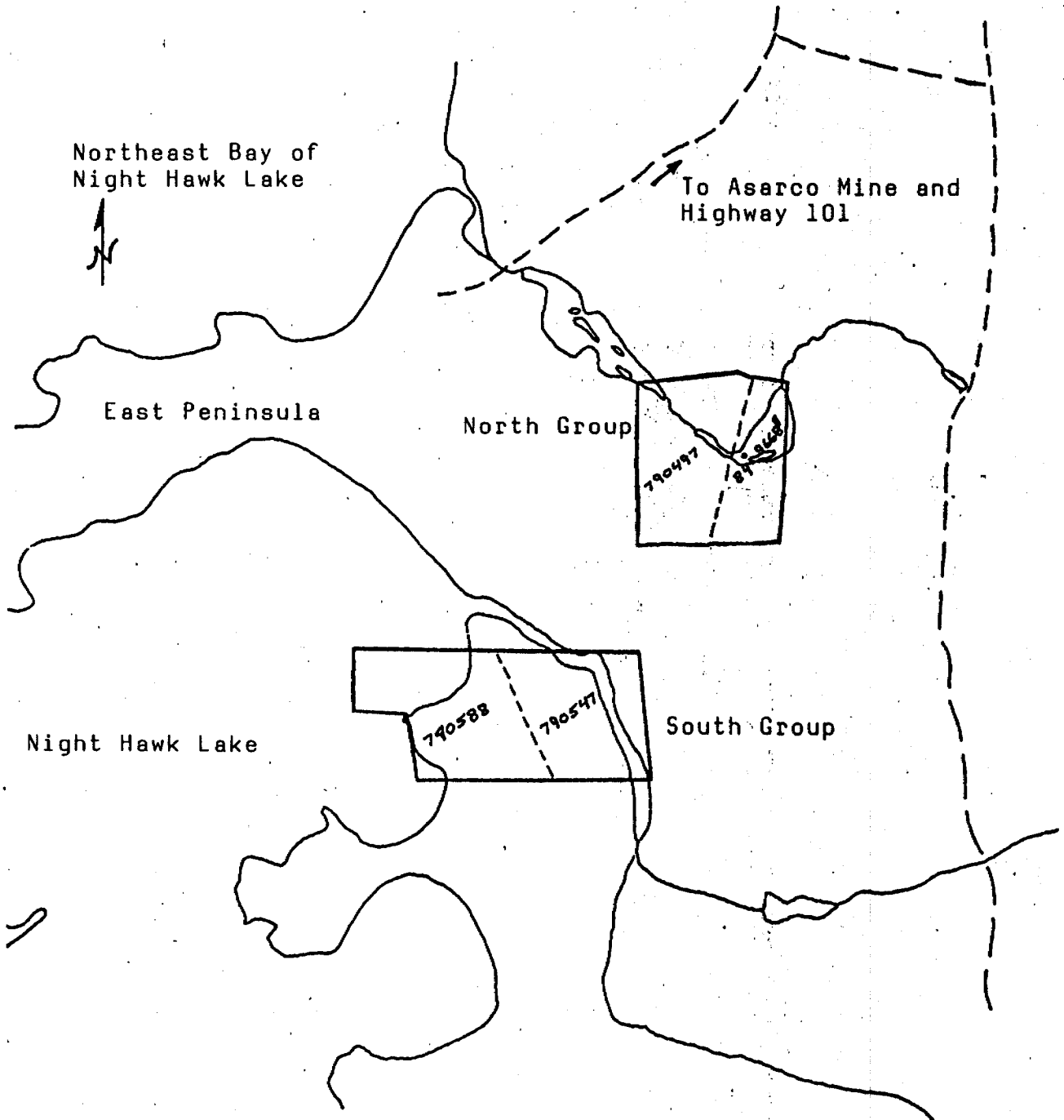
The claim numbers and the recording dates are as follows:

North Group:	P-790497	March 1, 1984
	P-849668	September 11, 1985
South Group:	P-790547	April 3, 1984
	P-790588	April 3, 1984

The mining claims staked and recorded during 1984 are under extension until December 13, 1985. The two claim groups and their respective positions are shown in Figure 2.

GENERAL GEOLOGY

The majority of the underlying rock units are Archean mafic to intermediate metavolcanics. The sparse outcrops along the shoreline and the scattered diamond drillhole information indicate that they are either massive, pillow, spherulitic or amygdaloidal lavas. In a few places they have been carbonatized. Intruded into these volcanics are mafic to ultramafic bodies trending towards a serpentized peridotite.



Company	PAMOUR PORCUPINE MINES LIMITED
Project Name	South East of Ronnoo
Township	Macklem
Mining Division	Porcupine
District	Cochrane
NTS 42 A/10 SW	

In several areas the volcanics and ultramafics have been intruded by diabase dikes, probably Keweenawan in age. During the formation of the Archean setting several periods of faulting has occurred and are recognized by faults with the following strike: N070E, N035W, N055W, N025E, N025W and finally another N070E.

Covering the area are Pleistocene and recent deposits of tills, sands, gravels, and varved clays. It appears that the majority of the overburden is composed of varved clays and sandy clays.

PREVIOUS EXPLORATION ACTIVITIES

The exploration activities in the area date to the mid 1940's with Auconda Porcupine Mines Limited conducting a magnetic survey and limited diamond drilling. Also, during 1930's and 1940's, Electra and New Electra Gold Mines Limited conducted a diamond drilling program located south of Tincan Creek.

In 1965, Broulan Reef Mines Limited conducted a magnetic survey and drilled two holes on their property which was located to the west of the ground covered by this report.

During the 1980's, Pamour Porcupine Mines Limited have

conducted aggressive exploration in the Night Hawk Lake area. The activities included magnetic, VLF-EM, IP, PEM surveys, overburden drilling and diamond drilling. Also, during the same time, Goldeidt has conducted magnetic and Max-Min II surveys, overburden drilling, and diamond drilling on their property immediately to the east of the Pamour property.

To the north of the property, Asarco has conducted magnetic, IP, seismic surveys, overburden drilling and diamond drilling. Their exploration work has lead to the discovery of a gold bearing felsic porphyry and a gold bearing green carbonate zone. During the early 1980's, a shaft was sunk to the 200 metre level with lateral drifting and stoping.

GEOPHYSICAL SURVEYS

INTRODUCTION

The total field magnetic survey was completed on 3.75 line miles (6.03 km) of grid using the Scintrex MP-2 Proton Procession Magnetometer. The instrument specifications are found in Appendix 1. A total of 211 readings were observed on the grid at 100 foot intervals on the north-south survey lines and the east-west baseline and tielines. A total of 97 reading and 114 readings were observed on the South and North Groups respectively.

A VLF-EM survey was completed at the same time as the magnetic survey, using the Phoenix VLF-2 unit. The transmitter station used throughout the survey was Cutler, Maine, with a transmitting frequency of 24.0 kHz. The readings were observed at 100 foot intervals on the north-south grid lines. At each station, the Dip and Horizontal Field Strength (H.F.S.) were recorded. The instrument specifications are found in Appendix 2. A total of 78 and 101 readings were observed on the South and North Groups respectively.

The survey dates were from November 23 and 25, 1985 with Guy Thibault operating the magnetometer and the VLF-EM units. The data was collected under the supervision of the author,

MAGNETIC SURVEY PROCEDURES

Before surveying the grids, two base magnetic station was established to assist in the calculations of daily drift and to tie the data to the existing surveys conducted by the Pamour Exploration Department personnel. The base station was located on Line 36 East, which has a corrected base value of 59292 gammas. The data was adjusted to correlate to the previous survey by Pamour. The adjustment consisted of 308 gammas being added to all the readings. The baseline and all lines were surveyed in a looping fashion which established additional control stations.

All the north-south lines were surveyed with the first and last station in the loop at a control station. This procedure allows for minimum magnetic drift over a short period of time and assists in the calculations to correct the raw data for daily and diurnal magnetic drift.

The magnetic data was plotted on a base map with a scale of 1:2400 (1 inch to 200 feet). A base level of 59,000 gammas has been removed from all the readings. The data was contoured at 100 gamma intervals wherever possible. Figures 3 shows the magnetic readings and magnetic contours.

VLF-EM SURVEY PROCEDURES

Before surveying the north-south grid lines, the VLF-2 unit was calibrated at a base station located on the Baseline at 3800 East. The transmitter station used throughout the survey was Cutler, Maine, with a transmitting frequency of 24.0 kHz.

The unit was rotated to right angles to the transmitting station. When this was completed, the H.F.S. was adjusted to a required percentage, in this survey the H.F.S. was set to 150%. This also allowed a correlation with the previous data collected by Pamour Exploration Department personnel.

Readings were observed at 100 foot intervals with the recording of the H.F.S. and the Dip values (recorded facing in the direction of the transmitting station). The data was plotted on a base map with a scale of 1:2400 (1 inch to 200 feet). The dip values are plotted on the right side of the line and profiled, while the H.F.S. values are plotted on the left side of the grid lines (Figure 4).

INTERPRETATION

To assist in the interpretation of the VLF-EM data, a low pass filter, known as Fraser Filtering, was used on the data.

The filtering rotates the positive peak to be positioned over the conductor. Also, the filtering will attenuate the near surface conductors resulting in higher positive values while the deeper conductors will appear as low positive values.

Numerous natural occurring substances will cause anomalous values, these are the composition and thickness of the overburden, wet areas such as swamps and bogs, bedrock exposure in the areas of swamps and the presence of electrical conductive material such as graphite and sulphides.

The magnetic data provides some indications to the geological stratigraphy of the claim group. The magnetic background of the claim groups is divided into at least four distinct areas, as follows:

South Group:

1) Diabase dike (60100 to 61900 gammas) trends in a ENE direction from Line 36 East to Line 58 East with the apex at 5+00 South to 4+00 North respectively.

2) Mafic Volcanics (59500 to 59700 gammas) are suspected to be on the north and south flanks of the diabase dike.

North Group:

3) Ultramafic (60000 to 60500 gammas) are suspected to be at the southern limits of Lines 58 East, 62 East and 65 East. A more complete body is suspected to be from Lines 58 East to 76 East with the apex at 28+50 North and 26+50 North respectively.

4) Carbonated Volcanics or Felsic Tuffs (59500 to 59700 gammas) are suspected to occur south of the central ultramafic body. This area is believed to have been drilled by New Electra during 1930's to 1940's.

The remainder of the area in the North Group is believed to be underlain by mafic metavolcanics.

All the VLF-EM conductors identified in both claim groups appear to be very weak and may be due to the composition of the overburden or the contacts between contrasting lithological units.

The South Group has one broad anomaly which correlates to the south and north sides of the suspected diabase dike. This would probably be caused by the concentration of magnetite and/or sulphides at or near the contacts.

The North Group has two anomalies of which one may correlate to the shoreline and the swampy conditions of Tincan

Creek. The other anomaly correlates to the axis of the magnetic low which is suspected to be either carbonated volcanics or felsic tuffs.

CONCLUSIONS

Both the magnetic and electromagnetic surveys have provided valuable information pertaining to the understanding of the underlying lithology. It appears that the North Group has a suspected carbonated volcanic or felsic tuff unit correlating with a magnetic low and a weak VLF-EM anomaly. The location of a ultramafic unit to the north of the above unit may also host carbonate alteration in the form of a green carbonate unit.

The South Group contains at least two lithological units consisting of a wide diabase dike and suspected mafic metavolcanics. The only EM anomaly located is correlated to the contacts of the diabase dike.

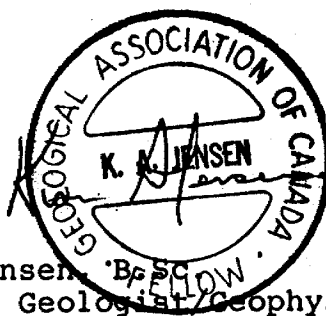
RECOMMENDATIONS

Based upon the survey results, the general geological information available and the known gold bearing mineralization in the area, the author recommends that the North Group warrants further work. The additional work may be in the form of a overburden sampling program and/or diamond drilling.

At the present time and with the available data, the South Group does not appear to contain favourable lithological units or EM anomalies.

Dated the 26th day
of November, 1985
Timmins, Ontario

Kian A. Jensen, B.Sc.
Consulting Geologist/Geophysicist



CERTIFICATE

With reference to my report on the Magnetic and Electro-magnetic Report in the Macklem Township dated for Pamour Porcupine Mines Limited, Dated November 26, 1985,

I, Kian A. Jensen, of the City of Timmins, Ontario, do hereby certify the following to be true and accurate to the best of my knowledge:

- 1) That I received an Honour B.Sc. degree in Earth Science, Geology Major from the University of Waterloo in 1975,
- 2) That I have been employed as a geologist and/or geophysicist by various exploration companies and consulting companies since 1978,
- 3) That I have been and still am a member in good standing in the following associations:
 - a) Society of Exploration Geophysicist - Associate, 1981
 - b) Geological Association of Canada - Fellow, 1983
- 4) That I am the author of the corresponding report, and have been actively exploring and prospecting in the Timmins area since 1981,
- 5) That I have no interest direct or indirect in the 12 mining claims comprising the property described in this report or in the shares of any company or companies involved with this property or the surrounding properties, nor do I expect to receive any directly or indirectly.

Dated this 26th day of November, 1985
Timmins, Ontario.

Kian Jensen

*Qual.
2.3969*

Kian A. Jensen, B.Sc.
Consulting Geologist/Geophysicist



SCINTREX

earth science division

Proton Precession Magnetometer for Portable or Base Station Use

MP-2

features ▶

- ▶ *1 gamma sensitivity and accuracy over range of 20,000 to 100,000 gammas.*
- ▶ *Operates in very high gradients, to 5000 gammas per metre.*
- ▶ *Ultra small size and weight.*
- ▶ *Up to 25,000 readings from only 8 D cells.*
- ▶ *Battery pack isolated from electronics for corrosion protection.*
- ▶ *Battery pack easily extended for winter use.*
- ▶ *Light-emitting diode digital display, with complete test feature.*
- ▶ *Unique no-glare polarized reflector permits easy reading in bright sunlight.*
- ▶ *Indicator light warning of excessive gradient, ambient noise or electronic failure.*
- ▶ *Digital readout of battery voltage.*
- ▶ *Rugged all metal housing for rough field use at all temperatures.*
- ▶ *Automatic recycling or external trigger features permit ready conversion to base station use.*
- ▶ *Short reading time.*
- ▶ *Broad operating temperature range.*

The MP-2 is a portable one gamma proton precession magnetometer for field survey or base station use. The optimized design of sensor and circuitry using the latest CMOS components has resulted in a very light weight, low power consumption, rugged and reliable magnetometer.

Light emitting diodes coupled with an ingenious optically polarized reflector combine solid state reliability with easy reading even in bright sunlight.

A standard automatic recycling feature allows ready use of the MP-2, with suitable (optional) interfacing, as a base station recorder in analogue or digital form. Alternatively, a remote trigger can be used.

The noise-cancelling dual-coil sensor and electronics have been so designed as to effectively eliminate reading problems due to virtually all magnetic gradients which may be encountered in field survey conditions.



SCINTREX a world of discovery

**TECHNICAL
DESCRIPTION OF
MP-2
MAGNETOMETER**



SCINTREX

RESOLUTION	1 Gamma.
TOTAL FIELD ACCURACY	± 1 Gamma over full operating range.
RANGE	20,000 to 100,000 gammas in 25 overlapping steps.
INTERNAL MEASURING PROGRAMME	Single reading — 3.7 seconds. Recycling feature permits automatic repetitive readings at 3.7 seconds intervals.
EXTERNAL TRIGGER	External trigger input permits use of sampling intervals longer than 3.7 seconds.
DISPLAY	5 digit LED (Light Emitting Diode) readout displaying total magnetic field in gammas or normalized battery voltage.
RECORDER OUTPUT (Optional)	Multiplied precession frequency and gate time outputs for interfacing with incremental tape recorders (eg. Increlogger) for digital recording. As an additional option a digital to analogue convertor is available for use with analogue recorders.
GRADIENT TOLERANCE	Up to 5000 gammas/metre.
POWER SOURCE	8 alkaline "D" cells provide up to 25,000 readings at 25° C under reasonable signal/noise conditions (less at lower temperatures). Premium carbon-zinc cells provide about 40% of this number.
SENSOR	Omnidirectional, shielded, noise-cancelling dual coil, optimized for high gradient tolerance.
HARNESS	Complete for operation with staff or back pack sensor.
OPERATING TEMPERATURE TANGE	-35°C to +60°C.
SIZE	Console, with batteries: 80 x 160 x 250mm. Sensor: 80 x 150mm. Staff: 30 x 1550mm. (extended) 30 x 600 mm. (collapsed)
WEIGHTS	Console, with batteries: 1.8kg. Sensor: 1.3kg. Staff: 0.6kg.

SCINTREX LIMITED
222 Snidercroft Road,
Concord, Ontario, Canada L4K 1B5
TELEPHONE (416) 669-2280, TELEX 06-964570

VLF-2

Electromagnetic Unit

- Lightweight, low battery drain, rugged, simple to operate
- Two independent channels
- Each channel may select any station between 14.0 and 29.9 kHz
- Single crystal used for all frequencies
- Locking clinometer provides tilt-angle memory
- Superheterodyne detection and digital filtering provide extremely high selectivity and noise rejection



Military and time standard VLF transmitters are distributed over the world. These stations are used for geophysical EM surveying thus eliminating the need for a local transmitter and permitting one-man operation.

To ensure that a station excites the prospective conductor, two stations at approximately right angles are used during a survey (see data on back).

The choice of 160 frequencies in the range 14.0 to 29.9 kHz permits the use of a local EM transmitter when no suitable regular VLF station is available.



PHOENIX GEOPHYSICS LIMITED

Geophysical Consulting and Contracting, Instrument Manufacture, Sale and Lease.

Head Office: 200 Yorkland Blvd. Willowdale, Ont., Canada M2J 1R5. Tel: (416) 493-6350
310 - 885 Dunsmuir St. Vancouver, B.C., Canada V6C 1N5. Tel: (604) 684-2285
4690 Ironton St. Denver, Colorado, U.S.A. 80239. Tel: (303) 373-0332

Specifications

- Parameters Measured** : Orientation and magnitude of the major and minor axes of the ellipse of polarization.
- Frequency Selection, Front Panel** : Dual channel, front panel selectable (F1 or F2) each with independent precision 10-turn dial gain control.
- Frequency Selection, Internal** : F1 and F2 can be selected by internal switches within the range 14.0 to 29.9 kHz in 100 Hz increments.
- Detection And Filtering** : Superheterodyne detection and digital filtering provide a much narrower bandwidth and thus greater rejection of interfering stations and 60 cycle noise than conventional receivers.
- Meter Display** : 2 ranges: 0 to 300 or 0 to 1000. Background is typically set at 100. Meter is also used as dip angle null indicator and battery test.
- Audio** : Crystal speaker. 2500 Hz used as null indicator.
- Clinometer** : $\pm 90^\circ$, $+0.5^\circ$ resolution. Normal locking, push button release.
- Battery** : One standard 9v transistor radio battery. Average life expectancy - 1 to 3 months (battery drain is 3 mA)
- Temperature Range** : -40° to $+60^\circ$ C.
- Dimensions** : 8 x 22 x 14 cm (3 x 9 x 6 inches).
- Weight** : 850 grams (1.9 pounds).

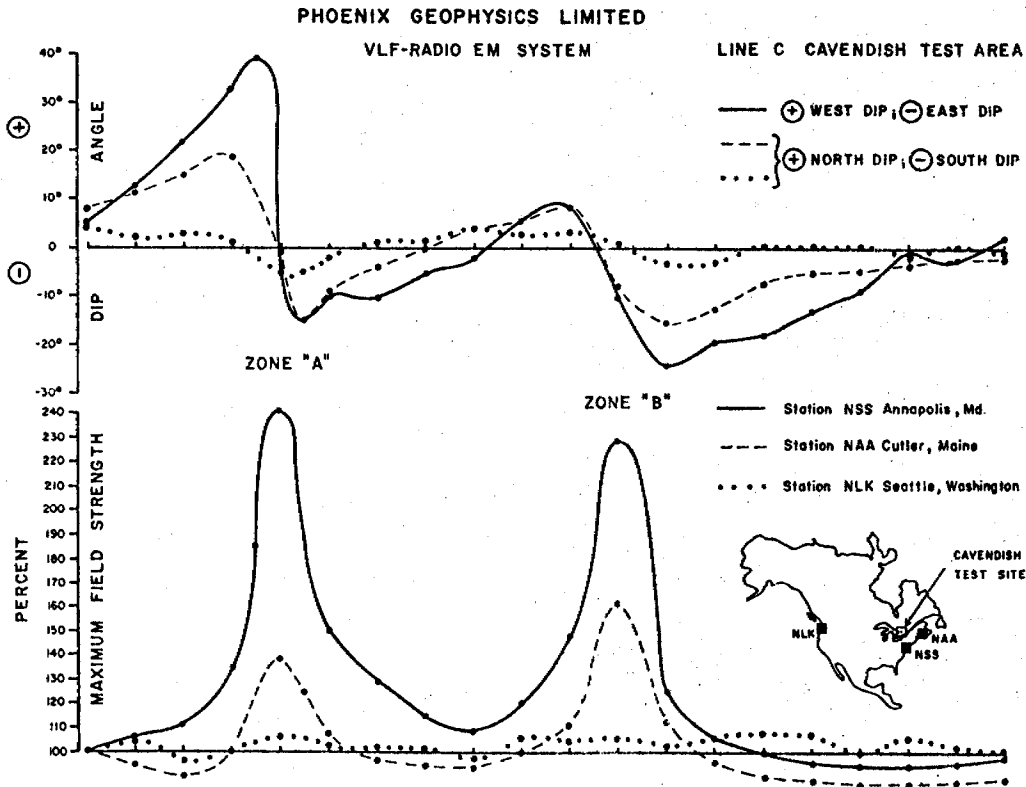
All of the established stations may be selected, or alternatively, a local VLF transmitter may be used which transmits at any frequency in the range 14.0 to 29.9 kHz.

VLF Station	Frequency (kHz)
Bordeaux, France	15.1
Odessa (Black Sea)	15.6
Rugby, U.K.	16.0
Moscow, U.S.S.R.	17.1
Yosama, Japan	17.4
Hegaland, Norway	17.6
Cutler, Maine	17.8
Seattle, Washington	18.6
Malabar, Java	19.0
Oxford, U.K.	19.6
Paris, France	20.7
Annapolis, Maryland	21.4
Northwest Cape, Australia	22.3
Laulualei, Hawaii	23.4
Buenos Aires, Argentina	23.6
Rome, Italy	27.2

Field Data

The results below illustrate the need for using two orthogonal stations when the strike of the prospective conductor is not well-known. The dip angle and amplitude data measured using station NLK in Seattle, Washington, show only a very weak anomaly associated with the two conductive sulphide zones at Cavendish, Ontario.

The results obtained using Cutler, Maine reveal a more prominent anomaly, but the best response was obtained using Annapolis, Maryland since the station lies almost due south and the transmitted electromagnetic field is thus maximum-coupled with the North-South trending conductors.



Mining Lands Section

File No 2.8707

Control Sheet

TYPE OF SURVEY

- GEOPHYSICAL
- GEOLOGICAL
- GEOCHEMICAL
- EXPENDITURE

MINING LANDS COMMENTS:

Handwritten initials

S. Hurst

Signature of Assessor

Jan 14/86

Date



.1985 12 20

File: 2.8707

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


Dear Sir:

We received reports and maps on December 5, 1985 for a Geophysical (Magnetometer and Electromagnetic) Survey submitted under Special Provisions (credit for Performance and Coverage) on mining claims P 790547; 790588; 790497; 849668; in the Township of Macklem.

This material will be examined and assessed and a statement of assessment work credits will be issued.

We do not have a copy of the report of work which is normally filed with your office prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours sincerely,


S.E. Yundt
Director
Land Management Branch

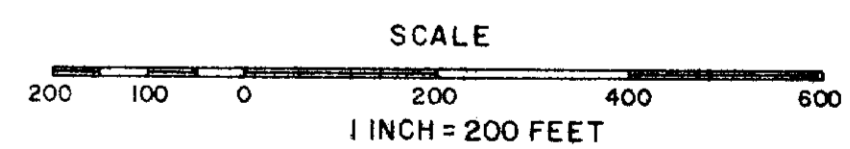
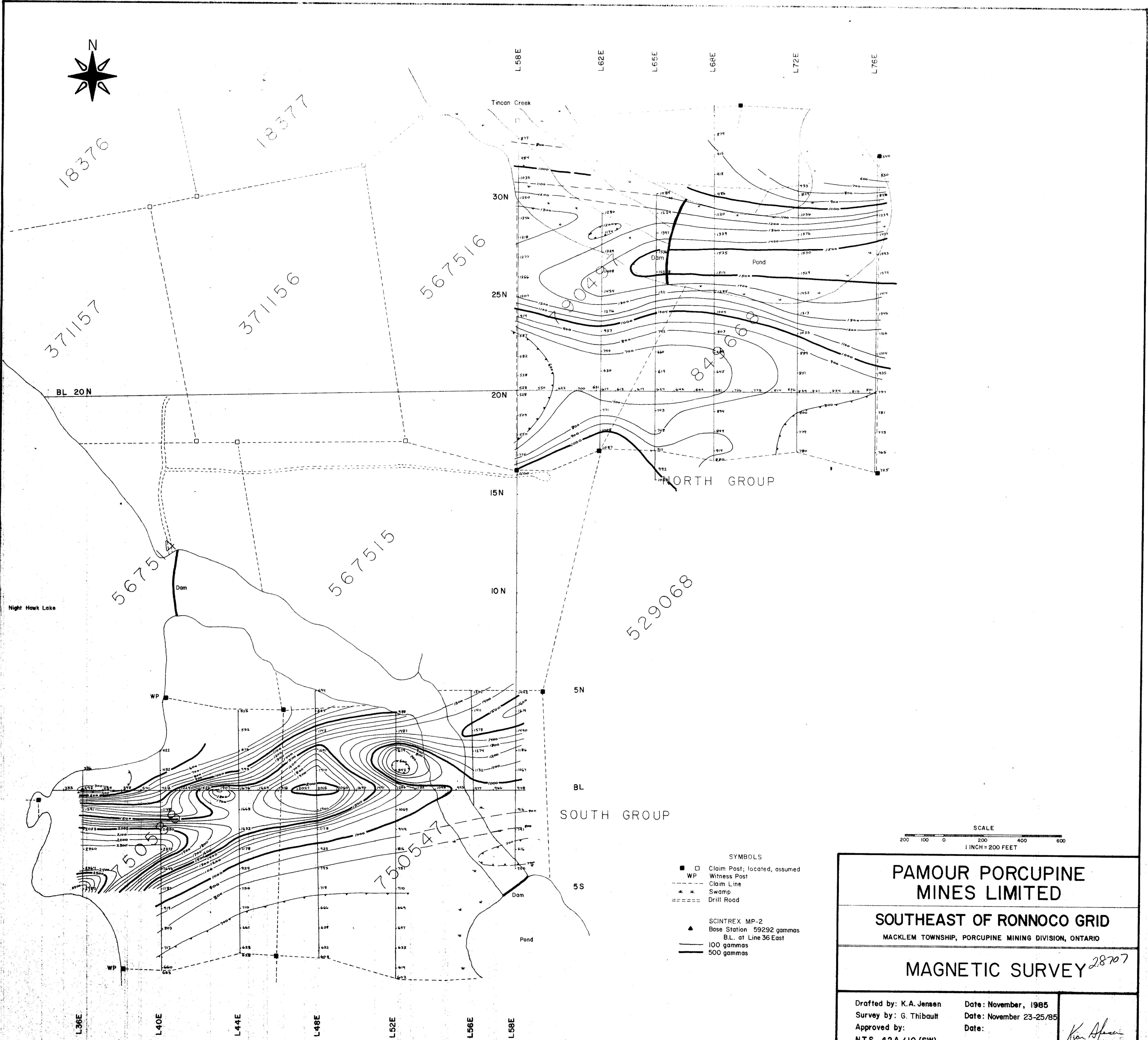
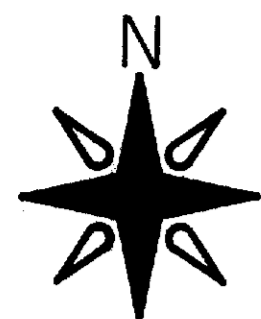
Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: (416)965-4888

AB:bc
Encl.

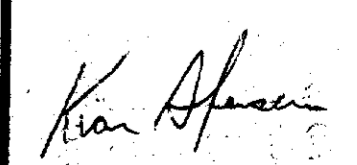
cc: Pamour Porcupine Mines Ltd.
P.O. Bag 2010,
Timmins, Ontario
P4N 7X7

cc: Kian A. Jensen
P.O. Box 37,
S. Porcupine, Ontario
PON 1H0

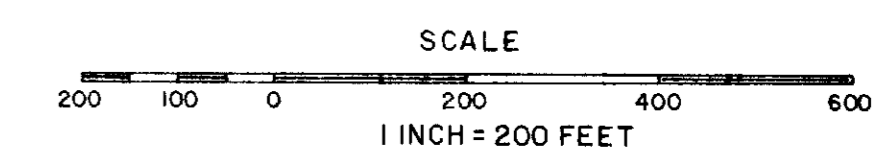
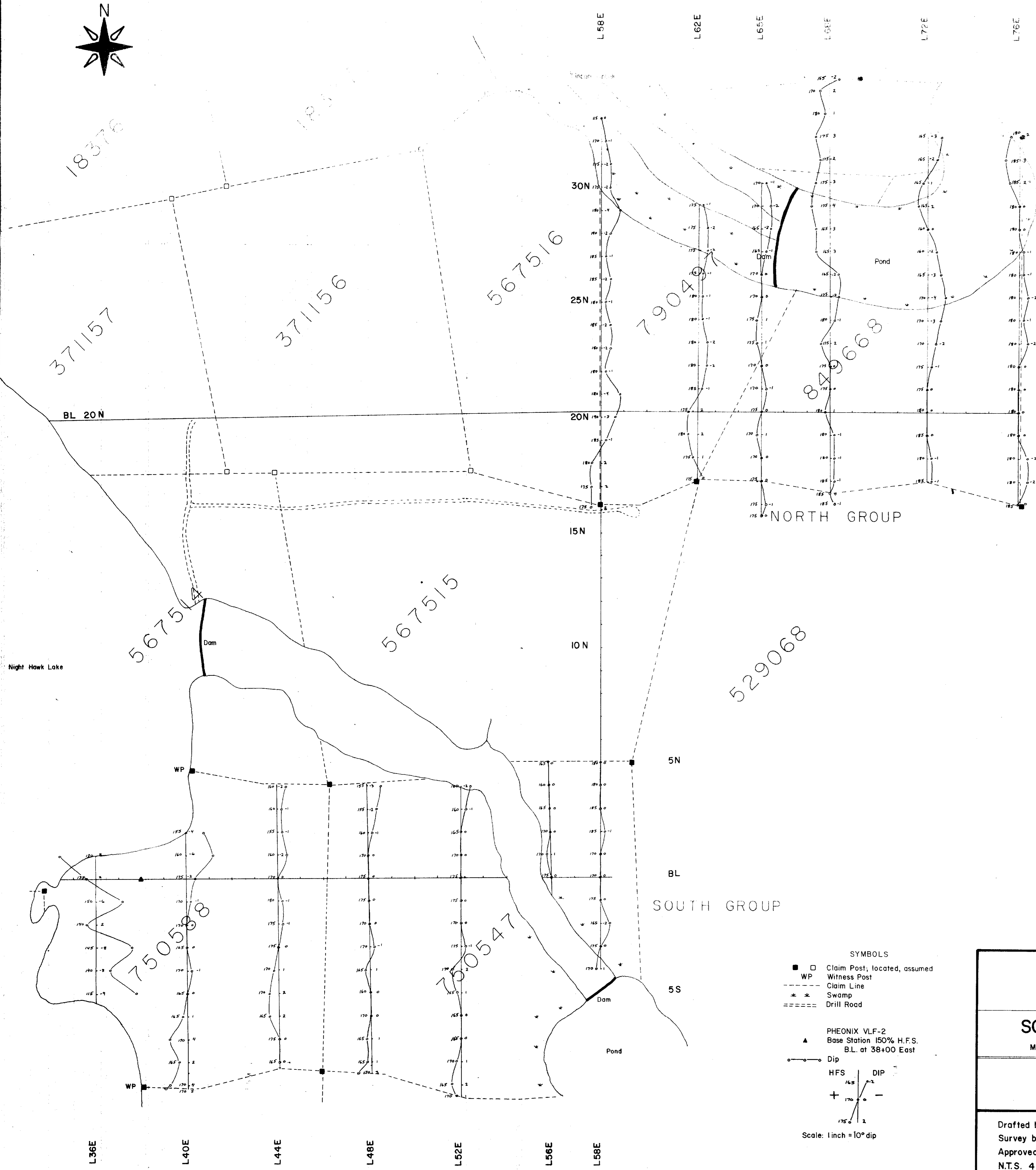
*Called Jan 8/86.
Just filed R-of W. today.*



- SYMBOLS**
- □ Claim Post; located, assumed
 - WP Witness Post
 - - - Claim Line
 - * * * Swamp
 - ==== Drill Road
-
- ▲ SCINTREX MP-2
 - Base Station 59292 gammas
 - B.L. at Line 36 East
 - 100 gammas
 - 500 gammas

PAMOUR PORCUPINE MINES LIMITED	
SOUTHEAST OF RONNOCO GRID	
MACKLEM TOWNSHIP, PORCUPINE MINING DIVISION, ONTARIO	
MAGNETIC SURVEY 28707	
Drafted by: K.A. Jensen	Date: November, 1985
Survey by: G. Thibault	Date: November 23-25/85
Approved by:	Date:
N.T.S. 42A / 10 (SW)	
 Kian A. Jensen Exploration and Consulting Services	





- SYMBOLS**
- □ Claim Post; located, assumed
 - WP Witness Post
 - - - Claim Line
 - * * Swamp
 - ==== Drill Road
- PHEONIX VLF-2
Base Station 150% H.F.S.
B.L. at 38+00 East
- Dip
- HFS DIP
-
- Scale: 1 inch = 10° dip

**PAMOUR PORCUPINE
MINES LIMITED**

SOUTHEAST OF RONNOCO GRID
MACKLEM TOWNSHIP, PORCUPINE MINING DIVISION, ONTARIO

VLF-EMSURVEY 28707

Drafted by: K.A. Jensen	Date: November, 1985
Survey by: G. Thibault	Date: November 23-25/85
Approved by:	Date:
N.T.S. 42A / 10 (SW)	

Kian A. Jensen

Kian A. Jensen
Exploration and Consulting Services

