MIDRIM MINING COMPANY LIMITED

MAGNETIC AND ELECTROMAGNETIC SURVEYS OF 9-CLAIM AND 40-CLAIM GROUPS

CAIRO AND POWELL TOWNSHIPS

MONTREAL RIVER MINING DIVISION - ONTARIO

1. INTRODUCTION

During the period October 18 - December 12, 1965, a ground electromagnetic survey was conducted over a 9-claim group (Group A) in Cairo Township; and magnetic and electromagnetic surveys conducted over a 40-claim group (Group B) in Cairo and Powell Townships.

Group A consists of 9 contiguous claims as follows: MR42429 to MR42434 inclusive and MR43560 to MR43562 inclusive, all in Cairo Township.

Group B consists of 40 contiguous claims as follow: MR42002, MR42038 to MR42055 inclusive, MR42315 to MR42325 inclusive, MR42349, MR42422 to MR42428 inclusive, MR42436, all in Cairo Township; and claim MR42435 in Powell Township.

Group A was staked to cover a quartz vein, 12" - 36" in width, well mineralized with pyrite, chalcopyrite and galena. The wall rock is lightly mineralized syenite porphyry. The "break" has been traced for 125 feet.before disappearing under overburden at either end. The entire Group A is underlain by Precambrian syenite porphyry of Algoman age. This has been intruded, in turn, by Matachewan quartz diabase dikes.

Samples from the quartz load gave up to 0.04 ozs gold/ton; 12.74 ozs silver/ton and 2.76% copper.

Group B is likewise underlain by Precambrian formations. These consist, principally, of Keewatin lavas with an E-W strike, which are overlain by a central band of E-W trending Timiskaming sediments. Cobalt conglomerate is in evidence in the extreme southeast corner of the group (B).

The Keewatin series is comprised of basalts, andesites, sericite schists, banded tuffs and rhyolite: the Timiskaming series, of conglomerate, greywacke and arkose.

The Keewatin and Timiskaming series are intruded by Haileyburian diorite, Algoman syenite porphyry and north-south trending Matachewan diabase dikes.

Several base metal showings on Group B indicated the feasibility of geophysical surveys. On claim MR42422 a lead-copper showing associated with an E-W shear gave silver values up to 14.93 lzs/ton. Copper showings were examined on claims MR42315, MR42316 and MR42349, and a copper-lead-zinc showing in sulphides on claim MR42043.

2. LOCATION AND ACCESSIBILITY

Both claim groups are within the Montreal River Mining Division, Ontario.

Group A, centrally located in Cairo Township, is accessible via Highway No. 65 and a secondary gravel road from No. 65 to McDonnel Lake. This group is situated 3 miles northeast of the town of Matachewan, Ontario.

Group B is situated in the southwest corner of Cairo township, with one claim in Powell Township. It lies immediately north of the town of Matachewan and extends within the outskirts of the town. Access is via Highway No. 65 and the Montreal River.

3. THE MAGNETIC AND ELECTROMATNETIC METHODS

(a) The Magnetic Method

The McPhar M500A magnetometer was employed in the Cairo Township magnetic survey.

The field sensitivity of the M500A magnetometer originates in a flux-gate element mounted so that its axis of maximum sensitivity is maintained in the vertical plane. The flux-gate element contains an excitation winding and a detector winding. In addition there is an auxiliary winding around the element which carries a D.C. current. With the auxiliary winding a D.C. flux is created to cancel the earth's field. (Latitude adjust controls).

The flux-gate elements are continuously excited between saturation levels by an A.C. current. A detector winding consisting of differentially wound coils picks up zero voltage when the resultant D.C. flux through the elements is zero.

When the external D.C. field changes in magnitude, a corresponding phase-reversible second harmonic output voltage is produced across the detector winding. The second harmonic output voltage is fed to a phase sensitive rectifier system and used to provide a cancelling D.C. current to oppose the external field attempting to unbalance the flux-gate element.

The system therefore is a self-cancelling one and at all times approximates a condition of zero flux about the flux-gate element.

The D.C. current fed back to maintain the zero flux condition is measured on the display meter and is directly proportional to the change in the earth's field. The meter, then, can be calibrated directly in gammas.

Six meter ranges are provided to permit the measurement of a change of field of up to 300,000 gammas. Because the field at any new measurement station may increase or decrease, a polarity reversal on the on-off switch is provided.

On the most sensitive range the instrument has an accuracy of $\pm$ 5 gammas.

(b) The Electromagnetic Method

The method involves the transmission of an alternating electromagnetic wave of a given frequency, which penetrates the ground in the vicinity of a transmitting coil. This wave or field induces an electric current in any conductor on which it is incident. The flow of an alternating current in a conductor sets up its own, or secondary, radiating electromagnetic field. These two fields form a resultant whose configuration depends on the following characteristics of the sub-surface conductors: (i) size, (ii) shape, (iii) electrical conductivity, (iv) magnetic permeability, and (v) frequency of the transmitted wave. To a lesser extent, the resultant is also dependent on material adjacent to the conductor, topography and surface conductivity. The direction of the resultant vector is measured by a small receiving coil timed to the frequency of the transmitted wave.

The basic geophysical survey over the A and B Groups employed the high frequency (1800 cycles), Crone, wedge-type, junior electromagnetic unit. This is a two-man operated unit; and each man has a transmitting and receiving unit. The men are usually spaced 200 feet apart. Each man transmits and receives; and the dip angles are added together algebraically. Readings greater than 3 are considered significant, unless working along the extension of a conductor, in which case lower readings may be of value.

If a conductor is present, both positive and negative dip angles are obtained. When both men are on one side of the conductor, the reading is minus; when they straddle the conductor, the reading is plus. The coil giving the angle is the coil nearest the conductor. The distance between the cross-overs should equal, approximately, the interval between the two men (200 feet). Positive angles are important as they frequently indicate vertical conductors close to surface.

The purpose of the "shoot-back" method is to eliminate elevation effects. The main advantages of the method:

1. The men traverse perpendicular to the strike.
2. It is sensitive to both vertical and horizontal conductors.
3. It has good penetration.

The magnitude of the angles depends on the conductivity of the body. The shape of the curve depends upon the shape of the conductor. Note that as the conductor becomes wider and deeper, the positive angles decrease or become non-existent. With banded, multiple conductors, the negative readings from one conductor may interfere with the positive readings from another, making accurate interpretation difficult.

Noisy readings are most frequent over broad, clay conductors (e.g. on lake bottom). However, they may occur, in certain locations, with the best of sulphide conductors.

4. CONDUCT OF THE SURVEY

In conducting the basic electromagnetic survey over the 49 claims of Groups A and B, east-west baselines were cut parallel to the strike of the lavas and sediments. On Group A, 2 baselines were cut; a north and a south baseline. On Group B it was necessary to cut 4 baselines for control; a north baseline, a north central, a south central and a south baseline.

At 300-foot intervals, picket lines were cut and chained at right angles to the baselines. With geophysical operators spaced 200 feet apart, electromagnetic traverses were carried out along these picket lines and readings were taken at 100 foot intervals along the lines. Where conductors were located intermediate lines were cut at 200 foot intervals and readings taken at 100 foot stations. These readings were repeated with the low frequency Crone instrument (450 c.p.s.) to eliminate weak conductors.

The magnetic survey was run to check the conductors in the sector of the 40 claim group east of the river. This was considered advisable in order to give further information regarding the electromagnetic anomalies, and to outline the structures associated with the anomalies.

In conducting the electromagnetic survey on Group A, 13 miles of traverse lines were cut, chained and surveyed with the Crone electromagnetic instrument. Instrument readings were taken at a total of 678 stations. In carrying out the electromagnetic and magnetic surveys on Group B, 41.1 miles of traverse lines were cut, chained and surveyed. Instrument readings were taken at 2,057 stations with the Crone electromagnetic instrument, and at 1,241 stations with the McPhar M500A magnetometer.

5. INTERPRETATION OF THE GEOPHYSICAL SURVEYS

As stated previously, the electromagnetic method is capable of detecting buried conductors. Conductors so located may be caused by a number of geological conditions, namely: (i) graphitic slate, (ii) massive bands of metallic sulphides, etc., (iii) interlocked grains of sulphides and oxides, and (iv) ionized, solution-filled fault zones. It is important, therefore, from the interpretation standpoint, that as much be known about the geological environment as possible, if proper diagnosis is to be made from the results.

In the course of the survey of Group A, no electromagnetic anomalies were located. However, 7 electromagnetic anomalies and one prominent magnetic anomaly were outlined on Group B.

(a) Conductor 1

On claim MR42042, line 45+00W, 2300 feet north of the north baseline, this conductor is a moderate one, and appears on one traverse line only.

(b) Conductor II

On claim MR42044, lines 4100W and 3800W, approximately 1200 feet north of the north baseline, the conductor is 700 feet long and is a strong conductor with Crone readings down to -8.

(c) Conductor III

On claim MR42002, line 00, 1500 feet north of the south central baseline, this is a weak conductor, on one line only, but has a good coincident magnetic anomaly.

(d) Conductor IV

On claim MR42316, lines 1200W, 1500W, 1800W, about 150 feet north of the south central baseline. This is a fair but persistent conductor, 700 feet in length.

(e) Conductors V and VI

While these are single line conductors, they appear to line up along the trend of the formations.

Conductor V, on claim MR42319, is located on line 1800E, 200 feet north of the south baseline. It is a moderately strong conductor with Crone readings to -6.

Conductor VI, on claim MR42318, is located on line 30E, 400 feet north of the south central baseline. Crone readings to -5 were registered here.

(f) Conductor VII

On claim MR42428, lines 900W and 1200W, 400 - 700 feet north of the south baseline, this is a moderate conductor, 500 - 700 feet long.

It is of particular interest since it is associated with a magnetic low along the flank of a magnetic high.

(g) Magnetic Anomaly

A prominent magnetic anomaly traverses claims MR42047, MR42048, MR42049, MR42052 and MR42317 for a length of approximately 4,000 feet. It shows a magnetic profile of 500 - 1,500 gammas.

6. CONCLUSIONS AND RECOMMENDATIONS

No electromagnetic conductors were located in the survey of Group A. It is, however, recommended that the copper-gold-silver lode be opened up by bulldozer.

Of the 7 conductors outlined by the electromagnetic survey of Group B, conductors II and VII are of particular interest - the latter by reason of the coincident magnetic low. Next in importance would be anomalies V and VI which appear to have some structural association.

Prospecting in May, 1966, has turned up approximately 2 tons of molybdenum-bearing float on claim MR42317, close to the extensive magnetic 'high'. Grab samples from the float have given the following assays: 0.44% MoS_2, 0.44% copper; 1.32% MoS_2, 0.10% copper.

It is recommended that further detailed electromagnetic surveys be carried out to delineate all 7 conductors, and that this be followed by prospecting and geological mapping in their immediate vicinity.

If substantiated by the detailed work, the conductors should be tested by diamond drilling. In addition, detailed prospecting is recommended in the vicinity of the molybdenum-copper float, and thence westward along the magnetic high.

7. DECLARATION FOR ASSESSMENT

An itemized statement listing the breakdown of the man-days required for this survey is attached.

The undersigned is a graduate of the University of Toronto; is registered as a Professional Engineer in the Provinces of Ontario and Manitoba, and personally supervised the geophysical surveys on the above Groups A and B.

MIDRIM MINING COMPANY LIMITED

H. A. Pearson

REGISTERED PROFESSIONAL ENGINEER
H. A. PEARSON
PROVINCE OF ONTARIO

H.A. Pearson, P.Eng.
Chief Geologist

OFFICE MINING RECORDER

900

ONTARIO
DEPARTMENT OF MINES

March 31st, 1966.

R. V. Scott, Esq.,
Director, Mining Lands Branch,
Department of Mines,
Toronto 2, Ontario.

Dear Sir:-

Midrim Mining Co. Ltd., Suite 911, 25 Adelaide St. W., Toronto, has to-day filed the following Geophysical work on behalf of Harris Hansen et al, recorded holders, Swatika:-

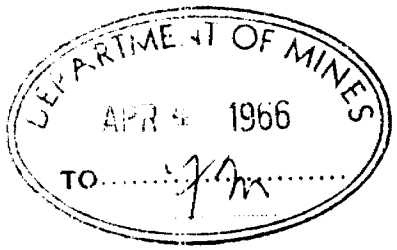
22.7 days credit per claim on M R 42002, 42055, 42315 to 25 incl., 42349, 42422 to 28 incl., 42436 Cairo Twp. and M R 42435 Powell Township (40 in all).

23.77 days credit per claim on M R 42429 to 34 incl., and M R 43560-61-62 Cairo Township (9 in all).

Reports etc., are to be mailed direct to the Department.

Very truly yours,

Mining Recorder.



THE TOWNSHIP OF CAIRO

DISTRICT OF TIMISKAMING

MONTREAL RIVER MINING DIVISION

SCALE: 1-INCH=40 CHAINS

Alma Twp.

Kimberley Twp.

Flavelle Twp.

Pcwe

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.

NOTES

400' Surface rights reservation around all lakes and rivers.

Timagami Provincial Forest boundries shown thus:

L.O. 1392, to H.E.P.C. shown thus: file : 48110.

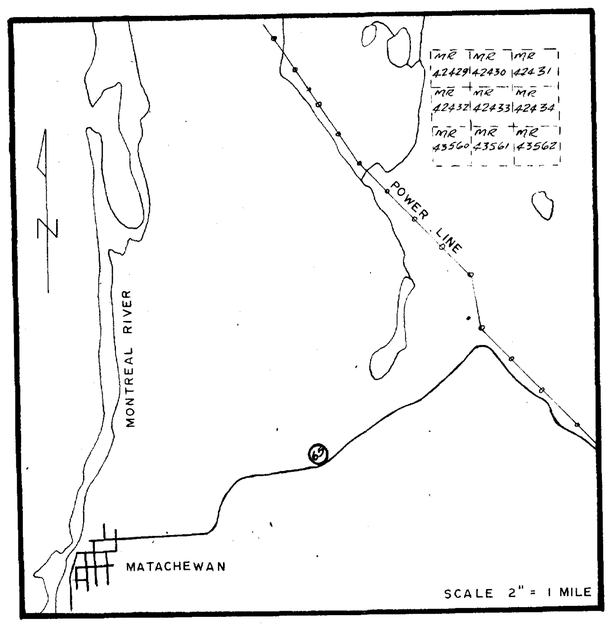
L.O.1415. to H.E.P.C. shown thus: file: 46332.

L.O.6166. to H.E.P.C. shown thus: file: 104344.

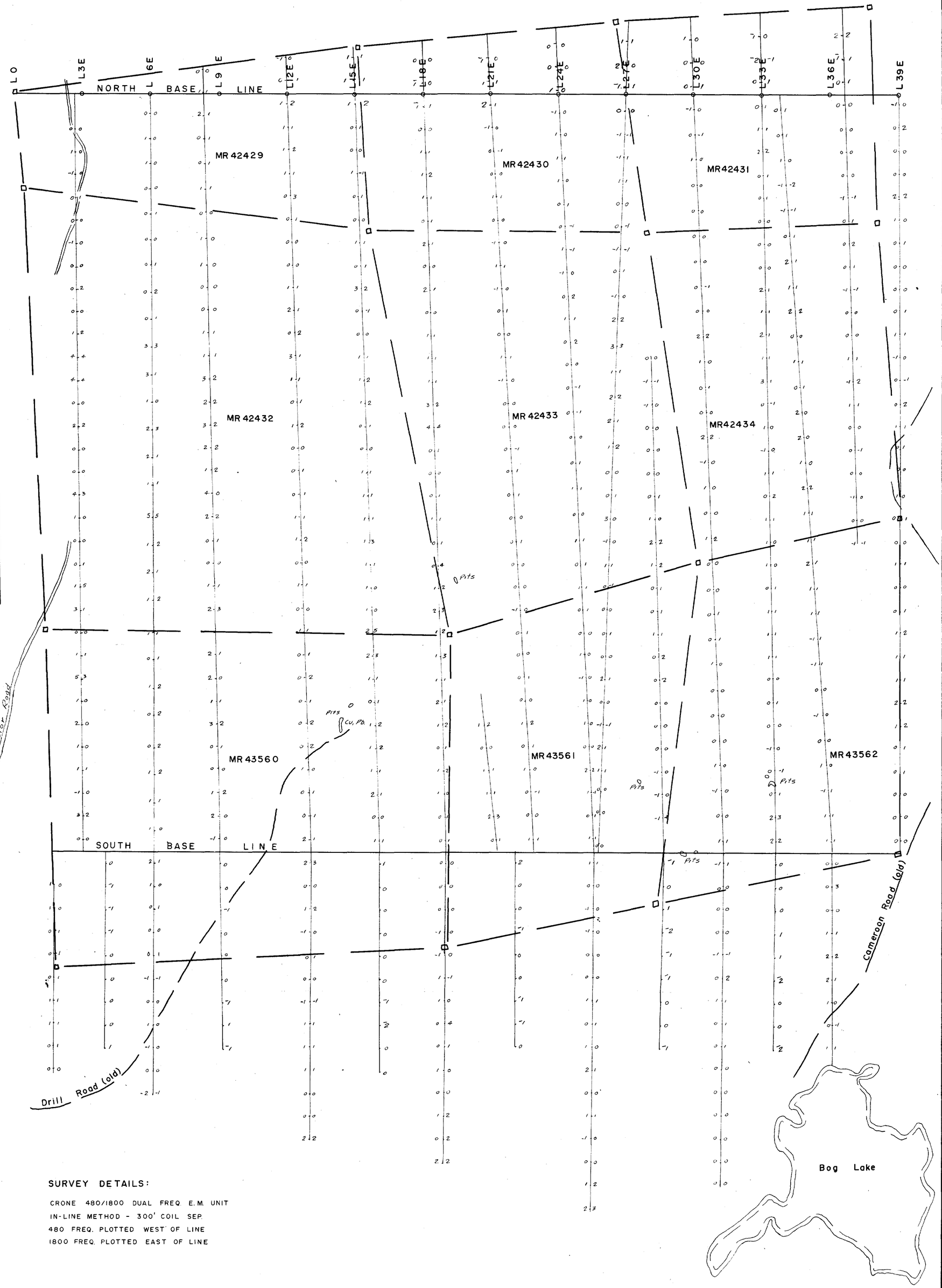
Matachewan Townsite withdrawn from staking shown thus: ////// File 37893 Vol. 4

PLAN NO M – 210

DEPARTMENT OF MINES
— ONTARIO —



LOCATION MAP



GROUP 'A'

MIDRIM MINING CO. LIMITED

9 CLAIM GROUP - CAIRO TWP.

MONTREAL RIVER MINING DIV.

ELECTROMAGNETIC SURVEY

SCALE 1" = 200'

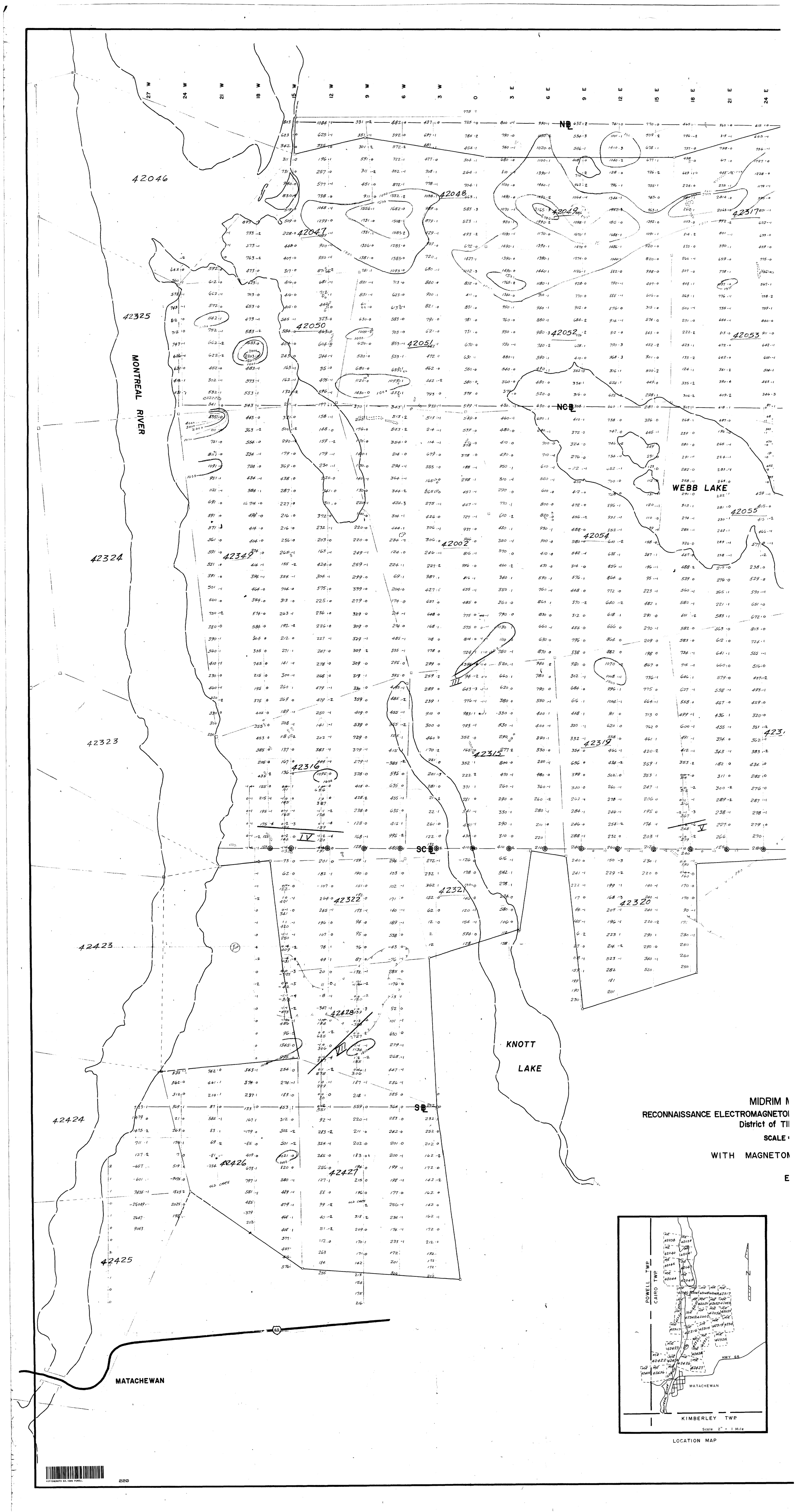
NOVEMBER' 1965

REGISTERED PROFESSIONAL ENGINEER
H. A. PEARSON
PROVINCE OF ONTARIO

H.A. Pearson

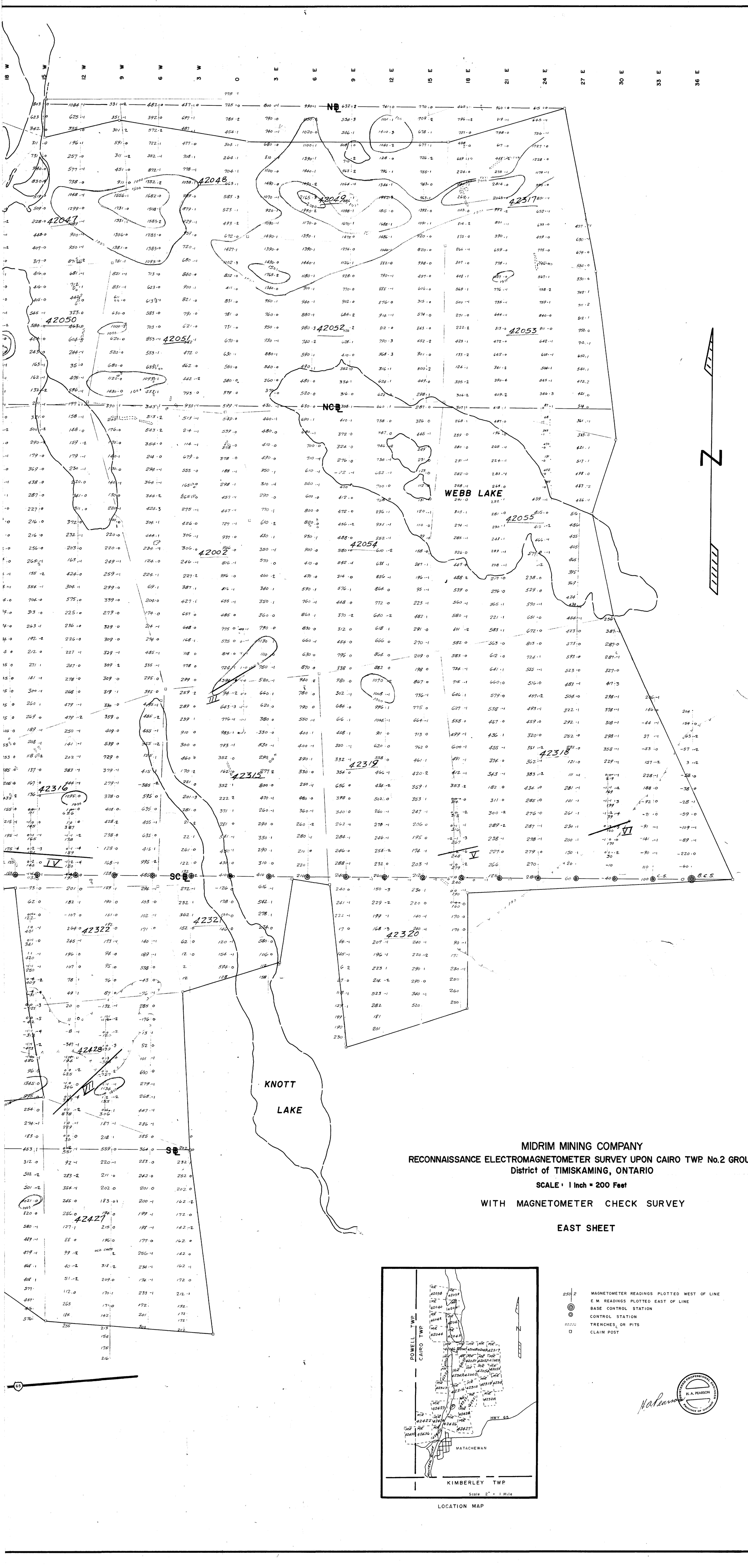
SURVEY DETAILS:

CRONE 480/1800 DUAL FREQ. E.M. UNIT
IN-LINE METHOD - 300' COIL SEP.
480 FREQ. PLOTTED WEST OF LINE
1800 FREQ. PLOTTED EAST OF LINE


MONTREAL RIVER
WEBB LAKE
KNOTT LAKE
MATACHEWAN
42046
42047
42048
42049
42317
42325
42050
42051
42052
42053
42324
42348
42002
42054
42055
42323
42316
42315
42319
42321
42322
42320
42423
42428
42424
42426
42427
42425
NB
NCB
SCB
SB
I
II
III
IV
V
MIDRIM M
RECONNAISSANCE ELECTROMAGNETO
District of TI
SCALE
WITH MAGNETO
E
POWELL TWP
CAIRO TWP
KIMBERLEY TWP
HWY 65
MATACHEWAN
Scale 2" = 1 Mile
LOCATION MAP

273 63.1909 POWELL

230



MIDRIM MINING COMPANY

RECONNAISSANCE ELECTROMAGNETOMETER SURVEY UPON CAIRO TWP. No.2 GROUP

District of TIMISKAMING, ONTARIO

SCALE : 1 Inch = 200 Feet

WITH MAGNETOMETER CHECK SURVEY

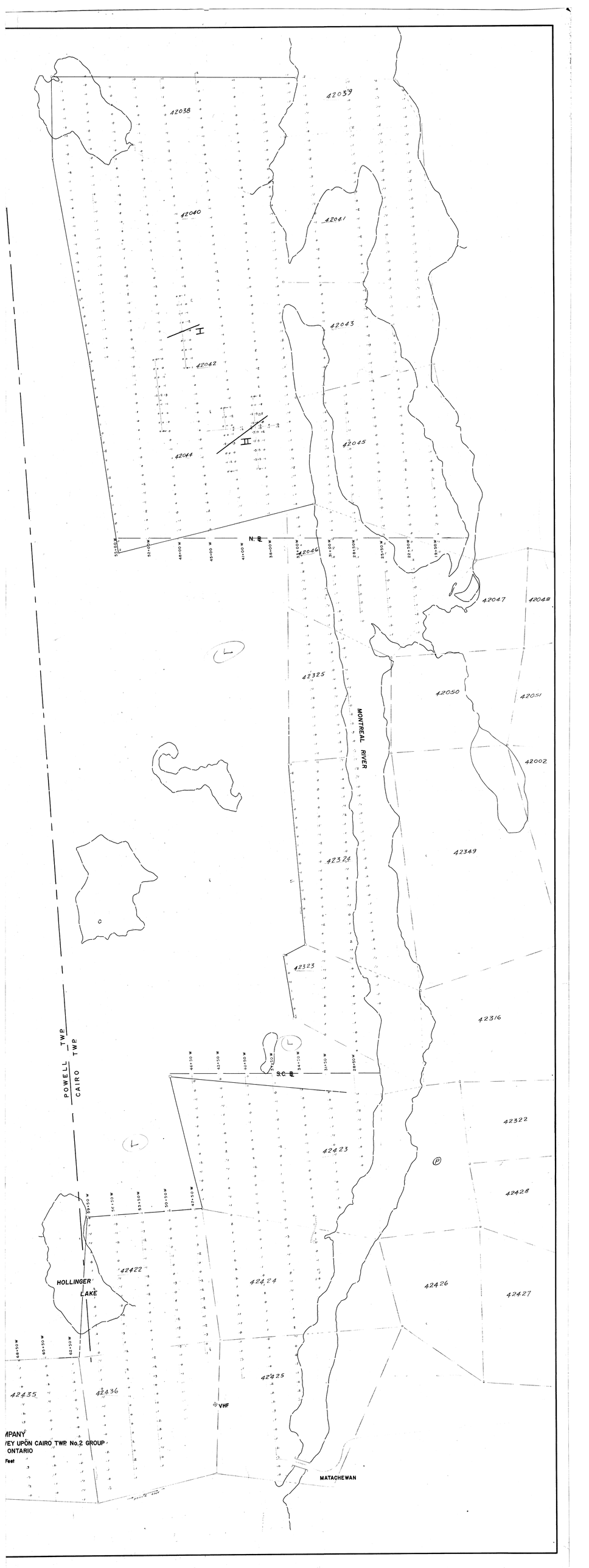
EAST SHEET

LOCATION MAP

250 | 2 MAGNETOMETER READINGS PLOTTED WEST OF LINE
E M. READINGS PLOTTED EAST OF LINE
BASE CONTROL STATION
CONTROL STATION
TRENCHES, OR PITS
CLAIM POST

H. A. PEARSON

42048 & 42427 (EAST SHEET)



MPANY
EY UPON CAIRO TWP. No.2 GROUP
ONTARIO
Feet