MAGNETOMETER & V.L.F. EM REPORT

on

HURONIAN MINES LTD.
PROPERTY

SHAW & ELDORADO TOWNSHIPS

Brett S. Davis, H.B.Sc. November 20, 1984

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MINING LANDS SECTION
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INTRODUCTION

During October and early November of 1984, Ingamar Explorations Limited conducted a V.L.F.-E.M. and a proton precession magnetometer survey over HURONIAN MINES LIMITED'S "Shaw-Eldorado Township Property" located 22 kilometers southeast of Timmins, Ontario, in the Porcupine Mining division (Fig. 1). The property consists of twenty-one (21) contiguous, unpatented mining claims, which straddle the eastern boundary of Shaw and Eldorado Townships.

The property's exploration potential is reflected by the past discoveries of gold and base-metal in and around the Porcupine Mining Camp and more recently the development of the Carshaw and Malga iron formation hosted gold deposits by GAIL RESOURCES LIMITED. The V.L.F.-E.M. and ground magnetometer surveys were carried out over this property in an attempt to discover any possible extensions of the auriferous iron formations to the north or any additional isolated bedrock conductors and/or magnetic anomalies of possible economic potential.
Huronian Mines Limited's Shaw-Eldorado Township property consists of 21 contiguous, unpatented mining claims covering approximately 760 acres. Of the 21 claim property, 11 claims are situated in the southeast corner of Shaw Township; and the remaining 10 claims situated in the northeast corner of Eldorado Township (Fig. 2). The claims in Shaw Township are numbered:

P.724484  
P.758137 - P.758139 (inclusive)  
P.758860  
P.758862 - P.758867 (inclusive)

The claims in Eldorado Township are numbered:

P.724477 - P.724482 (inclusive)  
P.758868, P.758869  
P.764670, P.764671

The property is located 22 kilometers southeast of Timmins and 15 kilometers south-southeast of South Porcupine, in the Porcupine Mining Division, District of Cochrane.

The property is readily accessible by a gravel road (Langmuir Mine road), south of the village of South Porcupine, approximately 15 kilometers. Numerous logging roads in the area allow easy access to the majority of the property (Fig. 1).
TOPOGRAPHY

The property is characterized by relatively flat-lying, open cut ground. Relief rarely exceeds 30 feet in some sections of the property. Outcrop exposure is very poor, being confined to small knobs of fairly resistant rock types (I.E. felsic intrusives diabase, etc.). Vegetation consists primarily of spruce and poplar. Active commercial logging was encountered during the course of the survey.

Overburden consists primarily of glacio-lacustrine sediments (i.e. clays, silts and fine sands) averaging between 9 and 12 meters in depth. Poor drainage in places of thick clays result in the formation of swamps and muskeg along slow moving creeks and streams.

SURVEY PARAMETERS

A control grid consisting of north-south base-lines and tie-lines with east-west cross-lines at 300 foot intervals was established on the claims in Shaw Township. A second control grid consisting of east-west base-lines and tie-lines with north-south cross-lines again at 300 foot intervals was used on the claims in Eldorado Township. Hundred foot station intervals was selected for both grids. Approximately 23.9 miles of line were cut, of which 19.3 miles were surveyed.

The V.L.F. -E.M. survey covered most of the 21 claim group property. Annapolis, Maryland, transmitting at a frequency of 21.4 KHz was used as a signal source for the Shaw Township claims (referred to as the north grid in this report). The Eldorado Township claims (referred to as the south grid) used Cutler, Maine transmitting at a frequency of 24.0 KHz as a signal source.

A ground, vertical component magnetic survey covering the same area was carried out using two McPhar G.P.-70 proton precession magnetometers. Diurnal changes in the earth's magnetic field were compensated for by doing closed loop lines. That is, a control station (C.S.) was used by taking a reading at this point and then a second reading taken at the same station after completing one loop. Corrections were based on the drift between the first and second reading at the control station.
PROPERTY GEOLOGY

Regionally, Huronian Mines Limited's Shaw–Eldorado Township property lies within a belt of intercalated metavolcanics and metasedimentary rocks belonging to that part of the Abitibi Greenstone Belt hosting the Porcupine Gold Camp.

Ontario Department of Mines (presently the Ontario Geological Survey) originally mapped the general area between 1911 and 1924 (Burrows, A.G.), then in 1983 (Harding, W.D. and Berry, L.G., 1939), 1939 (Hurst, M.E.), 1964–1965 (Carlson, 1967) and most recently during the 1970's by D.R. Pyke. This recent mapping shows the property to be underlain predominantly by flows of calc-alkaline basalts and andesites belonging to the (II) Middle Volcanic Formation of the Deloro Group. Most of the volcanics have been metamorphosed to greenschist facies. The general strike of the geology varies from east-northeast in the southern grid to north-northeast in the northern grid. Later intrusions of granodiorite-trondhjemite cut the older volcanic sequence and these are in turn cut by younger intrusions of diabase.

Economically the property exhibits good potential as an exploration target hosting gold and/or base-metal deposits. Directly north of the northern grid are the Carshaw and Malga iron-formation hosted gold deposits currently under active development by Gail Resources Limited. In Eldorado Township immediately west of the southern grid is a base-metal (Cu–Pb–Zn) prospect associated with sulfide facies iron-formation.
**INSTRUMENTATION**

The type of instrument used in the V.L.F. -E.M. survey is a Geonic's E.M.-16, V.L.F. receiver. This principle employs as a source one of numerous submarine communications transmitters in the 15 to 25 KHz band located throughout the world. The transmitted radio waves propagate predominantly in a single mode or "surface wave" along the earth-air interface. Over flat, homogenous ground, in the absence of vertical conductive discontinuities, the magnetic field component of this radio wave is horizontal and perpendicular to its direction of propagation. When these magnetic fields meet conductive bodies in the ground, there will be secondary fields radiating from these bodies. This instrument-receiver measures the vertical components of these secondary fields. Conductive bodies include all non-horizontal structures, such as faults, geological contacts, and massive pyritic sulfide bodies.

The transmitting stations used during this survey were Annapolis, Maryland at 21.4 KHz for the "northern grid" and Cutler, Maine at 24.0 KHz for the "southern grid". Data is presented in profile form with positive to the left, negative to the right for both grids in relation to direction of survey. Instrument specifications are given in Appendix #1.

The type of instrument used in the ground, vertical component magnetic survey is a McPhar G.P.-70 proton precession magnetometer. This instrument measures the magnetic susceptibility of the surface lithological formations that make up the earth's crust. Magnetic susceptibility is a measure of the degree to which a material may be magnetized. Many geological formations by virtue of their content of magnetic minerals (i.e. magnetite, pyrohotite, ilmenite, etc. etc.), will behave like buried magnets and will then have associated with them a magnetic field. These "buried magnets" in effect "disturb" the earth's magnetic field and it is these "disturbances" or "resultant" vertical magnetic components which are measured by the magnetometer. These changes, or anomalies could be large or small and would be either an increase or a decrease of the earth's field and will depend on the depth of burial, degree and direction of magnetization, and the attitude of the formation in relation to the direction of the earth's field at that locality. Instrument specifications are given in Appendix #2.
INTERPRETATION

Both V.L.F. - E.M. and magnetic data will be described simultaneously for each grid.

NORTH GRID (SHAW TOWNSHIP)

Approximately 14 conductive zones were noted on the accompanying V.L.F. - E.M. profile map. (Plan No. 2) The north-northwest striking conductors appear to reflect the presence of the Montreal River Fault system. A few east-west and northeast striking conductors were encountered in the central and eastern portions of the grid representing possible faulting/shearing and/or lithological contacts. Cultural effects and conductive overburden appear to be the cause of the remaining anomalies.

Ground magnetics support the presence of at least one, possibly two east-northeast trending diabase dyke(s) which outcrop on the claims toward the north. The magnetics show the dyke to be offset due to the fault structure. An isolated magnetic anomaly of plus 7,000 gamma's occurs on the northwest corner of grid. This is believed to be caused by underlying iron formation. Inferred bedrock would be intermediate to felsic volcanics (andesites-rhyolites).

ANOMALY "A"

Anomaly "A" extends through Ln's 1200N, 900N, 600N and 300N. Weak to moderate in-phase responses coupled with negative quadrature profiles suggests a weak bedrock source overlain by weakly conductive overburden. The conductor appears to end where an east-northeast magnetic anomaly trends across the western portion of the grid. This magnetic anomaly is believed to be the western extension of the diabase which outcrops to the northeast.

ANOMALY "B"

Anomaly "B" appears to be a short, discontinuous north-south conductor exhibiting a weak to moderate in-phase component, combined with a fairly distinct cross-over and asymmetrical quadrature profile, suggestive of a
ANOMALY "B" (Cont'd)

A moderate bedrock source conductor. As is the case of Anomaly "A", the southern extension appears to be truncated by the east-northeast diabase. Conductive overburden appears to mask any possible extensions of the conductor toward the north.

ANOMALY "C"

Anomaly "C" is a short, discontinuous and weak conductor. Orientation is difficult to determine. Conductive overburden is believed to be the cause.

ANOMALY "D"

Anomaly "D" is a conductor whose axis appears to parallel the traverse line, giving a rather flat response for both in-phase and quadrature components for a length of approximately 400 feet. It is speculated that its western extension ends at the contact between the diabase and volcanics.

ANOMALY "E"

Anomaly "E" is a short, discontinuous and very weak conductor, believed to be caused by conductive overburden. Orientation is difficult to determine.

ANOMALY "F"

Anomaly "F" extends through Ln's 1200N, 900N, 600N, 300N and 000N. Fair to moderate in-phase responses coupled with sub-parallel (negative), quadrature profile suggests a weak to fair bedrock source conductor. The trend appears to reflect the Montreal River Fault system.
ANOMALY "G"

Anomaly "G" displays the characteristic positive in-phase response combined with distinct cross-overs and asymmetrical (negative) quadrature profiles typical of strong bedrock source conductors. Unfortunately, this conductor is coincident with a hydro-line which follows the Langmuir Mine Road. It is believed this conductor is a cultural effect.

ANOMALY "H"

Anomaly "H" exhibits a weak to fair in-phase component coupled with a relatively asymmetrical quadrature profile suggestive of a poor bedrock source conductor. Its trend appears to coincide with Anomaly "I", suggesting "H" to be the northwestern extension of Anomaly "I".

ANOMALY "I"

Anomaly "I" extends through line 900N, 600N and 300N. Fair to moderate in-phase components combined with positive asymmetrical (negative) quadrature profiles indicate a weak bedrock source conductor, overlain by weakly conductive overburden. Its northwest trend reflects the Montreal River Fault system.

ANOMALY "J"

Anomaly "J" appears to parallel Ln's 1500N, 1800N and 2100N. Weak to good in-phase responses combined with relatively asymmetrical quadrature profiles suggest a weak bedrock source conductor. This zone may reflect a fault which strikes east-northeast and is cut off by the Montreal River Fault to the west. A magnetic anomaly of plus 1,000 gammas appears to strike northwest from the conductor. This anomaly corresponds to a north-northwest striking diabase dyke outcropping southeast in Carmen Twp.
ANOMALY "K" & "L"

Anomalies "K" and "L" appear to correspond with a conductive zone that parallels an east-northeast striking fault structure. Anomaly "L" exhibits fair to moderate in-phase responses with distinct cross-overs and asymmetrical (negative) quadrature profiles. This is suggestive of a moderate bedrock source conductor overlain by weakly conductive overburden. Anomaly "K", due to its close proximity to "L" is believed to strike northeast. Both in-phase and quadrature profiles suggest a weak bedrock source.

ANOMALIES "M" & "N"

Anomalies "M" and "N" are discrete, possibly short, weak conductors. Fair in-phase values coupled with parallel and positive quadrature profiles suggest a weak bedrock source conductor. Their orientation is believed to be east-northeast or roughly parallel to the survey lines.

SOUTH GRID (ELDORADO TOWNSHIP)

Approximately 15 conductive zones were noted on the accompanying V.L.F. - E.M. profile map (Plan No. 4). A zone of north-northwest striking conductors reflect the presence of the Montreal River Fault system. A small discrete northeast conductor was encountered in the northeast corner of the grid and an additional zone encountered in the southwest portion of the grid.

Ground magnetics appear to have outlined at least one east-northeast striking diabase dyke intrusion in the southwestern portion of the grid (Plan No. 3). A small discrete magnetic high exists north of the base-line on Ln 960E. A magnetic depression zone occupies the central part of the grid that contains the Montreal River Fault system. Lastly, the inferred bedrock based on the magnetic data appears to be intermediate to felsic volcanics of andesite-dacite (rhyolite?) composition. Outcrops in the area are generally andesites, iron formation and a small granodiorite intrusion.
ANOMALIES "A", "B" & "C"

All three anomalies appear to be short, discontinuous rather weak conductors. Their orientation, with the exception of "A", appears at best to be speculative. Anomalies "A" and "B" contain minor in-phase responses with relatively asymmetrical quadrature profiles indicative of a weak bedrock source. Anomaly "C" exhibits in-phase and quadrature profiles typical of poor conductors caused by conductive overburden.

Magnetics suggest the presence of an east-northeast diabase intrusion immediately to the north of these anomalies, truncated to the east by the fault system.

ANOMALIES "D" & "E"

Anomalies "D" and "E" are short, discontinuous and very poor conductors. Weak in-phase responses coupled with positive quadrature profiles suggest conductive overburden to be the cause.

ANOMALY "F"

Anomaly "F" extends across Ln's 600E, 960E and 1200E in a northwest-southeast trend. Both in-phase and quadrature responses appear to be quite weak, however their asymmetrical profiles suggest a weak bedrock source. The trend of the conductor reflects a portion of the Montreal River Fault system. The conductor bisects the magnetic response of the assumed east-northeast diabase intrusion, showing little, if any lateral displacement.

ANOMALY "G"

Anomaly "G" is a short, discontinuous and poor conductor. Orientation is difficult to determine. Weak in-phase response coupled with a positive quadrature profile is suggestive of conductive overburden.
ANOMALY "H" & "H"'

Anomaly "H" extends through Ln's 1200E, 1500E, 1800E, 2100E and 2400E and Anomaly "H'", through Ln's 3000E, 3300E, and 3600E. Fair to good in-phase responses coupled with negative quadrature profiles occur towards the northwest indicating a fair to good bedrock source. As the anomaly extends southeastward the V.L.F. - E.M. responses become weaker, possibly as a result of increased depth of conductive overburden within the fault system. Anomaly "H" appears to be a possible extension of "H". Weak to fair in-phase responses with negative quadrature profiles suggest a fair bedrock source. The trend of these anomalies tend to reflect the Montreal River Fault system.

ANOMALY "I"

Anomaly "I" extends through Ln's 1200E, 1500E, 1800E and 2100E (2400E?). Fair to moderate in-phase responses coupled with relatively asymmetrical quadrature profiles, particularly on Ln's 1500E and 1800E suggest a moderate bedrock source. The trend reflects the Montreal River Fault system, with a possibility of merging with Anomaly "H" and "H'", towards the southeast. Both "H-H" and "I" appear to lie within a magnetically depressed zone belonging to the fault system.

ANOMALIES "J" & "K"

Anomalies "J" and "K" are short, discontinuous, and poor conductors. Orientation is at best speculative. Anomaly "J" may be significant if additional east-west extensions were to be found. Anomaly "K" appears to have been caused by conductive overburden.
ANOMALY "L"

Anomaly "L" extends through Ln's 2100E, 2400E, 2700E, 3000E and 3300E. Fair to good in-phase responses coupled with relatively asymmetrical quadrature profiles (few exceptions) suggest a good bedrock source, overlain in some areas by conductive overburden. Unlike Anomalies "H", "H" & "I", this anomaly appears to be underlain by positive magnetic relief trending parallel to the northwest strike of the conductor. This conductor also reflects the Montreal River Fault system.

ANOMALY "M"

Anomaly "M" displays the characteristic positive in-phase response combined with distinct cross-overs and asymmetrical (negative) quadrature profiles typical of strong bedrock source conductors. Unfortunately, this conductor is coincident with a power-line which follows the Langmuir Mine Road. Therefore, it is assumed that this conductor is a cultural effect.

ANOMALY "N"

Anomaly "N", extending through Ln's 3300E and 3600E, exhibits fair to good in-phase responses with a distinct cross-over, and asymmetrical quadrature profile on Ln 3600E suggestive of a good bedrock source conductor. Possibility exists for a northeastern extension, however would require additional survey lines to the east. To the southwest the conductor is faulted off. This anomaly is situated within a magnetically depressed area.
Two distinct and separate zones of conductivity were outlined during this survey. One zone striking northwest-southeast reflects the presence of the Montreal River Fault System. A second zone striking east-northeast-west-southwest representing a northeasterly trending fault in Shaw Twp. (O.D.M. Prelim. Map #343), and possible faulting/shearing and/or lithological contacts in Eldorado Twp. Most V.L.F.-E.M. responses were masked by an extensive blanket of conductive overburden characteristic of the area. Magnetics have shown a discrete anomaly of plus 7000 gammas, situated in the northwest part of the north grid suggesting the presence of iron formation. Due to close proximity of the auriferous iron formations of Carshaw and Malga deposits, this anomaly could be economically significant. Linear anomalies on both north and south grids, striking east-northeast and south-southwest, correspond to the surrounding outcrops of diabase. In addition, the magnetics tend to help define the geology at depth and sort out the structural characteristics of the area.

In summary, the property is situated within a favourable geological environment for both gold and base metal deposits as evidenced by the Carshaw and Malga auriferous iron formations immediately toward the north. East-northeast trending conductors, some associated with a northeasterly striking fault in Shaw Twp., may be economically significant as they appear to be on strike with several precious-base metal prospects, just east of the boundary in Carmen Twp. These are shown striking south-westerly toward the Huronian claims on O.D.M. Map. 2222 (Leahy, E.H., G.R. #96, 1971). In Eldorado Twp., a base metal (Cu-Pb-Zn) prospect in sulphide facies iron formation is shown striking northeasterly toward the subject property on O.D.M. Map. P.#572. Preliminary exploration work should be continued in order to properly evaluate the economic potential of this property and to select priority targets. Additional claims are required toward the northwest and toward the east-northeast for follow-up.
RECOMMENDATIONS

1) A follow-up V.L.F.-E.M. survey with readings taken every 20 or 50 foot intervals in order to obtain better definition of possible conductors. It is suggested that the data be "Fraser filtered" in order to "smooth out" any noise resulting from the relatively high transmitted frequency, and the effects of the conductive overburden.

2) If the effects of conductive overburden are still a problem then it is recommended that a Turam survey be executed in hopes of deeper penetration through the clays, resulting in better definition of any bedrock conductors that may be present on the property.

3) In order to increase definition of the magnetic data the maps should be drawn at 50 gamma intervals instead of the requested 500 gamma intervals. This will help better define the geology and structure at depth.

4) Further recommendations will be based upon completion and results of all preliminary work.

Respectfully submitted,

November 20, 1984,
Timmins, Ontario.

Brett S. Davis, H.B.Sc.
CERTIFICATION

I, Bretton Scott Davis, of Timmins, Ontario certify that:

1) I hold an Honours B.Sc (1981) degree in Geology from the University of Western Ontario, London, Ontario.

2) I have practised my profession in mineral exploration continually since graduation.

3) I have based my conclusions and recommendations contained in this report on my knowledge of the area, on information supplied and on the results of this survey.

4) I hold no interest in Huronian Mines Limited, nor do I expect to receive any interest in the property other than my professional fees.

November 20, 1984

Brett S. Davis, H.B.Sc.
REFERENCES

Carlson, H.D.
1967: Geology of Shaw Township; Ontario Department of Mines,
Preliminary Map no. 343, scale 1" = 1/4 mile.


Harding, W.D. and Berry, L.G.
1938: Geology of the Keefer-Eldorado Area; Ontario Department
by Map 47D, scale 1" to 1 mile.

Hunt, D.S. and Maharaj, Deosaran
1980: Shaw Township, District of Cochrane; Ontario Geological
Scale 1:15,840 or 1" to 1/4 mile. Data compiled 1980.

Leahy, E.H.
1971: Geology of the Night Hawk Lake area, District of Cochrane;
Ontario Department of Mines and Northern Affairs, G.R. 96,
74 p., Accompanied by Map 2222, scale 1" to 1/2 mile.

Middleton, R.S. and Moon Woon Wooil
1974: Grocend Vertical Component Magnetics, Eldorado Township,
District of Timiskaming; Ontario Division Mines Prelim.
Map P. 788, Scale 1" to 1/4 mile. Survey and compilation

Pyke, D.R.
1969: Geology of Eldorado Township; Ontario Department of
Scale 1" to 1/4 mile.

1982: Geology of the Timmins Area, District of Cochrane;
Accompanied by Map. 2455, Scale 1:50,000, 3 Charts,
and 1 Sheet Microfiche.
EM16

VLF Electromagnetic Unit

Invented and patented exclusively by Geonics Limited, the LF method of electromagnetic surveying has been proven to be a major advance in exploration geophysical instrumentation.

Since the beginning of 1965 a large number of mining companies have found the EM16 system to meet the need for simple, light and effective exploration tool for mining geophysics.

The VLF method uses the military and time standard VLF transmissions as primary field. Only a receiver is then used to measure the secondary fields radiating from the local conductive targets. This allows a very light, one-man instrument to do the job. Because of the almost uniform primary field, good response from deeper targets is obtained.

The EM16 system provides the in-phase and quadrature components of the secondary field with the polarities indicated.

Interpretation technique has been highly developed particularly to differentiate deeper targets from the many surface indications.

Principle of Operation

The VLF transmitters have vertical antennas. The magnetic signal component is then horizontal and concentric around the transmitter location.

Specifications

<table>
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<th>Source of primary field</th>
<th>VLF transmitting stations.</th>
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<tbody>
<tr>
<td>Transmitting stations used</td>
<td>Any desired station frequency can be supplied with the instrument in the form of plug-in tuning units. Two tuning units can be plugged in at one time. A switch selects either station.</td>
</tr>
<tr>
<td>Operating frequency range</td>
<td>About 15-25 kHz.</td>
</tr>
<tr>
<td>Parameters measured</td>
<td>(1) The vertical in-phase component (tangent of the tilting angle of the polarization ellipsoid). (2) The vertical out-of-phase (quadrature) component (the short axis of the polarization ellipsoid compared to the long axis).</td>
</tr>
<tr>
<td>Method of reading</td>
<td>In-phase from a mechanical inclinometer and quadrature from a calibrated dial. Ruling by audio tone.</td>
</tr>
<tr>
<td>- Cal range</td>
<td>In-phase ± 150%; quadrature ± 40%.</td>
</tr>
<tr>
<td>Readability</td>
<td>± 1%.</td>
</tr>
<tr>
<td>Reading time</td>
<td>10-40 seconds depending on signal strength.</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>−40 to 50 °C.</td>
</tr>
<tr>
<td>Operating controls</td>
<td>ON-OFF switch, battery testing push button, station selector, switch, volume control, quadrature, dial ± 40%; inclinometer dial ± 150%.</td>
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<tr>
<td>Power Supply</td>
<td>6 size AA (penlight) alkaline cells. Life about 200 hours.</td>
</tr>
<tr>
<td>Dimensions</td>
<td>42 x 14 x 9 cm (16 x 5.5 x 3.5 in.)</td>
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<tr>
<td>Weight</td>
<td>1.6 kg (3.5 lbs.)</td>
</tr>
<tr>
<td>Instrument supplied with</td>
<td>Monotone speaker, carrying case, manual of operation, 3 station selector plug-in tuning units (additional frequencies are optional), set of batteries.</td>
</tr>
<tr>
<td>Shipping weight</td>
<td>4.5 kg (10 lbs.)</td>
</tr>
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</table>
Measures absolute magnitude of total magnetic field

1 gamma sensitivity.
10 scale ranges: 20,000 to 100,000 gammas

Readout with long life, light emitting diodes.

Noise canceling toroidal sensor.
Wide operating temperature range.

Model GP-70 is a reliable, lightweight, proton magnetometer designed for field operation under widely varying environmental conditions. It measures absolute magnitude of the total magnetic field within the range of 0 to 100,000 gammas to an absolute accuracy of ±1 gamma and ±15 parts per million of the field under measurement, over the

The instrument is simple to operate. A complete reading is obtained in 3.5 seconds by depressing a push button. The field intensity is read directly in gammas from a five digit display consisting of light emitting diodes. A 10 position switch sets the appropriate range.

The instrument is powered by internally mounted or rechargeable batteries (standard) or by non-ferrous rechargeable batteries (optional). The rechargeable batteries have virtually zero magnetic effect and permit full use of the magnetometer sensitivity even with close spacing between the sensor and console.

A battery meter shows condition of batteries at all times and allows
anticipation of when batteries should be replaced.

The GP-70 noise cancelling toroidal sensor minimizes effect of external interference from man made sources. In high electrical noise areas, further improvement in signal to noise ratio can be achieved by keeping the push button depressed during a reading. This procedure automatically doubles the sensor polarize time, creating a higher signal output from the sensor.

Model GP-70 comes complete and ready for use with console, carrying strap, sensor, extending aluminum staff, spare batteries, instruction manual; all in a sturdy transit case.

An optional feature of the GP-70 is the back pack sensor harness. This option allows for a hands-free operation of the magnetometer, a major benefit in areas of rough terrain or thick vegetation.

pecifications

Sensitivity: 1 gamma
Range: 20,000 to 100,000 gammas in ten switch positions.
Operating Temperature: -40° to 55° C.
Absolute Accuracy: ± 1 gamma and ± 15 parts per million of measured field over range of -30° to +50° C.
Sensor: Noise cancelling toroidal coil is electro-statically balanced to minimize interference between sensor and console.
Read Out: 3.5 seconds total - by push button. Double polarizing time by keeping button depressed.
Display: 5 digits on long life, light emitting diodes.

Electronic Circuits: Integrated circuits complying with military specifications used throughout.
Consone: Sturdy aluminum housing with rubber light shield and shock guard.
Dimensions: Console - 3" x 6" x 9.5" (7.5 x 15 x 24 cm)
Sensor - 4.5" x 5" (10.5 x 12.7 cm)
Staff - 5 ft. (1.5 m) extended
2 ft (0.6 m) collapsed

Weights:
Console 3.8 lbs. (1.7 kg)
Sensor and cable 5 lbs. (2.3 kg)
Aluminum staff 1 lb. (0.45 kg)
12 Alkaline "D" cells 3 lbs (1.1 kg)

Power Supply: Standard - 12 internally mounted alkaline "D" cells provide over 10,000 readings at 25° C, decreasing to approximately 1,000 readings at -30° C. Optional: Internally mounted rechargeable non-ferrous batteries and charger. Over 3,000 readings between charges.

Battery Indicator: A miniature meter monitors battery life and helps predict battery replacement time.

McPhar Instrument Corporation
Head Office:
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'llowdale, Ontario, Canada M2H 2R9
Tel: (416) 497-1700 Telex: 0623541
Cable: McPhar TOR

Sales agents in:
Africa, Asia, Australia, Europe, North & South America

Contact McPhar Instrument Corp. head office for the agent in your area.
SUPPLEMENTARY SUMMARY

OF

MAGNETOMETER & VLF-EM REPORT

ON

HURONIAN MINES LIMITED

PROPERTY

SHAW & ELDORADO TOWNSHIPS

BRETT S. DAVIS, H.B.Sc., NOVEMBER 20, 1984

INGAMAR EXPLORATIONS LIMITED

December 31, 1984

- by -

A.S. Bayne, P.Eng., Supervising Engineer
December 31, 1984

Huronian Mines Limited
2180 Yonge Street
Suite 1800
Toronto, Ontario
M4S 2B9

Gentlemen:

Re: Magnetometer and VLF-EM Surveys
Ingamar Explorations Limited
Report November 20, 1984 by
Brett S. Davis, H.B.Sc.

Following is a supplementary summary to the captioned report.

OBJECT & SCOPE

1. The twofold object of the surveys was:-

(a) To explore the possible extension of the gold-bearing iron formation striking about S 20° W from the Carshaw and M & M properties immediately north, currently operated by Gail Resources Ltd.

(b) To explore the possible S-W strike extensions of several Au-Cu showings, mapped and described by Ontario Department of Mines geologists, on areas adjacent to the Huronian claims.

2. The scope of the surveys was limited, under the allotted time and budget, by poor outcrop exposure through the overburden-covered area of the property.

All grid lines were spaced at 300-foot intervals, with instrument readings taken at picket stations at 100-foot intervals. These lines on the 11 Shaw Township claims were oriented E-W to accommodate VLF-EM readings from transmitter NSS, Annapolis, Md., with the operator facing east. (See Plan 2 accompanying Davis' report.)

The lines on the 10 Eldorado Township claims were oriented N-S, with readings from NAA, Cutler, Maine, with the operator facing north. (See Plan 4.)

RESULTS OF SURVEY

Mr. Davis' interpretations of the geophysical data (North Grid, Shaw Twp., pages 6 - 9, and South Grid, Eldorado Twp., pages 9 - 12) show conscientious study and are well done.
The conclusions on page 13 summarize the underlying geological indications accurately, allowing for the obscuring influence of overburden, particularly in critical swampy areas covering the creek valleys.

In addition, it should be noted that an electrical transmission line runs southeasterly through the middle of the North Grid and across the northeast corner of the South Grid.

The magnetics on both grids were generally flat with moderately "high" anomalies of 1000(+) gammas indicating probable mafic dykes and "lows" and magnetic depressions indicating probable felsic rocks. The highest magnetic anomalies, 5000(+) gammas, are shown on Plan 1 in the west part of the North Grid (Shaw Twp.). This may indicate underlying iron formation striking southwesterly from the Carshaw and M & M properties and warrants further investigation. Keeping in mind the lean iron, high quartz content of this iron formation, there is also the possibility that these anomalies reflect mafic dykes which outcrop to the northeast.

EM conductors A and B, Plan 2, are coincident to these magnetic anomalies.

Of the 14 E-M conductive zones noted on Plan 2 (North Grid), 11 appear to indicate "weak" to moderately fair bedrock conductors, with instrument response influenced by conductive overburden. These are shown as A, B, D, F, H, I, J, K, L, M & N.

Conductors C and E appear to reflect only conductive overburden, while conductors C and E are most certainly the result of inductive influence from the power line.

Of the 15 conductors shown on Plan 4, South Grid, 5 of them, C, D, E, G and K, appear to be conductive overburden.

Conductor M is definitely inductive effect from the power line.

Of the other 9 conductors, the most definitive appear to be H, H₁, I, J, K and L. These appear to indicate fair to good bedrock conductors reflecting an underlying S-E striking shears or fault zones.

Conductor N, in the N-E corner of the grid, may reflect a southeasterly striking extension from Carman Township.

CONCLUSIONS AND RECOMMENDATIONS

Mr. Davis' conclusions are logically in accordance with the findings, as are his recommendations (pages 13 & 14).

With regard to the latter, I recommend that the first priority, on further exploration, be given to the following:-
1. Establish a locational cross grid on the 11 Shaw Twp. claims with grid lines running E-W at 300-foot intervals.

Complete magnetic and VLF-EM surveys on this grid, with readings at 50-foot station intervals.

The VLF readings, with the operator facing northerly, will be taken from transmitter station NAA, Cutler, Maine.

This is necessary to check out the possibility that the most important rock structures strike more westerly, rather than southerly, as initially assumed by the projection of the S 20° W strike of the Carshaw and M & M gold deposits.

This work should be done during a (hopefully) dry period in early September 1985, to provide access more readily to small but possibly important areas found flooded during the October-November surveys.

2. Conduct a soil sampling for geochemical survey over both grids, with assays for gold and copper.

Samples by auger-drill from the "B" zone (from up to 5-foot depth) should be taken every 100 feet along the grid lines.

3. The work to this point will guide the locations of 50± vertical drill holes, probably averaging 100± feet.

These holes will be drilled by reverse circulation equipment to sample the overburden to bedrock and to penetrate and sample bedrock.

All samples will be analyzed for gold and copper content; the bedrock samples will also be subjected to lithogeochemical analyses to determine the underlying geological formation.

ESTIMATE OF COST

The estimated costs of implementing the foregoing recommendations are:-

Phase I - Geophysical Surveys
- North Grid, Shaw Twp.

Line-cutting, E-W grid - 11 miles @ $300/mile - $ 3,300

Proton magnetometer survey, with dual readings on 50-ft. stations and 25-ft. in obvious anomalous areas, including gradients, topography and interpretation - 20 miles @ $340/mile - 6,800

Detailed VLF-EM survey with in-and-out-of-phase readings on 50-ft. stations, including profiles, topography, filtered contouring and interpretation - 11 miles @ $310/mile - 3,410

Mobilization - 2,000

Contingency - 2,000

Total Phase I (2 months) $17,510
Phase II - Geochemical Soil Sampling
- North & South Grids, Shaw & Eldorado Twps.

The Phase II field work is scheduled concurrently with Phase I:

Collecting soil samples, 5-foot auger drill
- estimated 14 days @ $200/day $2,800

Sample preparation, shipment, assays and analyses
- estimated 1110 samples @ $12/sample 13,320

Mobilization 2,000

Contingency 2,000

Total Phase II 20,120

Forward Phase I 17,510

Total Phase I & Phase II (3 months) $37,630

Phase III - Reverse Circulation Drilling
- North and South Grids, Shaw & Eldorado Twps.

Drilling:
- 50 holes @ 100 feet per hole - 5000 feet @ $15/foot $75,000

Survey control 3,000

Assaying (till, plus bedrock chips) 16,000

Sample handling & shipping 1,100

Mobilization 7,000

Communications 300

Supervision and engineering - 4 months 26,000

Contingency @ 15% 19,260

Total Phase III 147,660

Forward Phases I & II 37,630

TOTAL PHASES I, II & III $185,290

---

A. S. BAYNE & COMPANY, CONSULTING ENGINEERS, TORONTO, CANADA
Note: The division of the above estimates into consecutive phases is to schedule the work consistent with the most favourable climatic and ground conditions, to facilitate budgeting the required expenditure. Phases I & II, estimated at $37,630 over 3 months, are the minimum required to follow up and test the favourable indications to date.

The Phase III drilling, estimated to require additional expenditure of $147,660, is also a necessary adjunct to Phases I and II.

Therefore, although the scheduling and budgeting of this drill sampling will be contingent on the findings of Phases I and II, provision should be made for this additional speculative capital on completion of Phase II, to permit economic continuity of the exploratory work.

Respectfully submitted,

A. S. Bayne, B.Sc., P.Eng.
**Report of Work**

*Geophysical, Geological, Geochemical and Expenditures*

---

**Type of Survey(s)**
- Magnetometer and VLF-Electromagnetic

**Claim Holder(s)**
- Huronian Mines Limited

**Address**
- 2180 Yonge Street, Suite 1800, Toronto, Ontario M4S 2B9

**Survey Company**
- Ingamar Explorations Limited

**Date of Survey (from to)**
- Dec 1, 1984 to Dec 3, 1984

**Total Miles of line Cut**
- 23.87

---

**Geophysical**

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**Credits Requested per Each Claim in Columns at right**

**Total Days Credits:**
- 21

**Expenditures (excludes power stripping)**

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<td>VLF-Electromagnetic</td>
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<td>Radiometric</td>
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---

**Calculation of Expenditure Days Credits**

- Total Expenditures: $15
- Total Days Credits: 15

**Instructions**
- Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

---

**For Office Use Only**

- Total number of mining claims covered by this report of work: 21

---

**Certification Verifying Report of Work**

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed the same during and/or after its completion and the annexed report is true.

**Name and Address of Person Certifying**
- Arthur Stewart Bayne, 45 Strathallan Blvd., Toronto, Ont. M5N 1S8
  - Office: 45 Richmond St. W., Suite 1101
  - Date Certified: Dec. 1, 1984
Mining Lands Section

Control Sheet

File No 27742

TYPE OF SURVEY

- GEOPHYSICAL
- GEOLOGICAL
- GEOCHEMICAL
- EXPENDITURE

MINING LANDS COMMENTS:

[Handwritten text]

[Blank lines]

[Signature of Assessor]

L D

[Date]

4/2/85
Dear Sirs:

RE: Notice of Intent dated February 12, 1985
Geophysical (Electromagnetic & Magnetometer)
Survey on Mining Claims P 724477, et. al.,
in Shaw and Eldorado Townships

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

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

Yours sincerely,

S.E. Yundt
Director
Land Management Branch
Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1N3
Phone: (416)965-4888

D. Isherwood:mc

cc: Huronian Mines Limited
   Suite 1800
   2180 Yonge Street
   Toronto, Ontario
   M4S 2B9

cc: Ingamar Explorations Limited
   122 Donna Crescent
   Timmins, Ontario
   P4N 7Z7
   Attention: Bretton S. Davis

cc: Mr. G.H. Ferguson
    Mining & Lands Commissioner
    Toronto, Ontario

cc: Resident Geologist
    Timmins, Ontario

cc: Arthur Stewart Bayne
    45 Richmond Street West
    Suite 1101
    Toronto, Ontario
    M5H 1Z2

Encl.
<table>
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<tr>
<th>Type of survey and number of Assessment days credit per claim</th>
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<tr>
<td>Radiometric</td>
<td>days</td>
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<tr>
<td>Induced polarization</td>
<td>days</td>
</tr>
<tr>
<td>Other</td>
<td>days</td>
</tr>
<tr>
<td>Section 77 (19) See &quot;Mining Claims Assessed&quot; column</td>
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<tr>
<td>Geological</td>
<td>days</td>
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<tr>
<td>Geochemical</td>
<td>days</td>
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<tr>
<td>Man days ☐</td>
<td>Airborne ☐</td>
</tr>
<tr>
<td>Special provision ☑</td>
<td>Ground ☑</td>
</tr>
<tr>
<td>☑ Credits have been reduced because of partial coverage of claims.</td>
<td></td>
</tr>
<tr>
<td>☐ Credits have been reduced because of corrections to work dates and figures of applicant.</td>
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</tr>
</tbody>
</table>

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

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ Insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77(19)—60.
1985 02 12

Your File: 521/84
Our File: 2.7762

Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. R.J. Pichette at 416/965-4888.

Yours sincerely,

[Signature]

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3

[Signature]

D. Isherwood:mc

Encls.

cc: Huronian Mines Limited
Suite 1800
2180 Yonge Street
Toronto, Ontario
M4S 2B9

cc: Ingamar Explorations Limited
122 Donna Crescent
Timmins, Ontario P4N 7Z7
Attention: Bretton S. Davis,

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Arthur Stewart Bayne
45 Richmond Street West
Suite 1101
Toronto, Ontario
M5H 1Z2
An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the “Special Provision-Performance and Coverage” method and you are of the opinion that a re-appraisal under the “Man-days” method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Land Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.
Type of Survey(s): Magnetometer and VLF-EM Electromagnetic
Township or Area: Shaw & Eldorado Twps. Porcupine
Claim Holder(s): Huronian Mines Limited
Survey Company: Ingamari Explorations Ltd.,
Surveyor: Cedar Hill, Connaught, Ont. P0N 1A0
Author of Report: Bretton S. Davis, H.B.Sc., Geologist
Address of Author: Porcupine, Ont. M4S 2B9
Covering Dates of Survey: Oct. 5 - Nov. 8, 1984
Total Miles of Line Cut: 23.87

### SPECIAL PROVISIONS CREDITS REQUESTED

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### AIRBORNE CREDITS

(Special provision credits do not apply to airborne surveys)

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<td>Enter 20 days for each additional survey using same grid.</td>
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Date: December 31, 1984

Res. Geol. Qualifications: 27103

Previous Surveys

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MINING CLAIMS TRAVERSED

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GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS — If more than one survey, specify data for each type of survey

Magnetometer - 2,066
Magnetometer - 2,066

Number of Stations
VLF - EM - 1,097
VLF - EM - 1,097

Station interval
Magnetometer - 50 ft; VLF - EM 100 ft.

Profile scale
VLF - EM 1/2 inch = 20'

Contour interval

full field
McPhar G.P. - 70 proton magnetometer. (dual gradients not read.)

Accuracy — Scale constant ± 1 gamma

Diurnal correction method repetitive ("closed loop") readings on control stations along
Base Station check-in interval (hours) one hour (base lines and tie lines.
Base Station location and value (see Davis' report Nov. 20/84)

Instrument
Geonics EM-16 VLF Electromagnetic Unit.

Coil configuration

Coil separation

Accuracy ± 1 percent

Method: □ Fixed transmitter □ Shoot back □ In line □ Parallel line

Frequency
North Grid (Shaw Twp) - NSS, Annapolis Md. 21.4 kHz
South Grid (Eldorado Twp.) - NAA, Cutler, Maine, 24.0 kHz

Parameters measured

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

Instrument

Method □ Time Domain □ Frequency Domain
Parameters - On time
- Off time
- Delay time
- Integration time

Frequency

Range

Type of electrode
SELF POTENTIAL
Instrument __________________________ Range _______________________
Survey Method ______________________________________________________
Corrections made _____________________________________________________

RADIOMETRIC
Instrument __________ Values measured _____________________________
Energy windows (levels) _____________________________________________
Height of instrument ______________________________ Background Count ______
Size of detector ____________________________________________________
Overburden __________________________________________________________
(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)
Type of survey ______________________________ Instrument _______________________
Accuracy ____________________________________________________________
Parameters measured _________________________________________________
Additional information (for understanding results) __________________________
____________________________________________________________________

AIRBORNE SURVEYS
Type of survey(s) __________________________________ Instrument(s) ______________
(specify for each type of survey) __________________________________________
Accuracy __________________________ (specify for each type of survey) ____________
Aircraft used __________________________________________________________
Sensor altitude _________________________________________________________
Navigation and flight path recovery method ________________________________
____________________________________________________________________
Aircraft altitude _______________________________ Line Spacing __________________
Miles flown over total area ______________________________ Over claims only ______
GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken

Total Number of Samples

Type of Sample
(Nature of Material)

Average Sample Weight

Method of Collection

Soil Horizon Sampled

Horizon Development

Sample Depth

Terrain

Drainage Development

Estimated Range of Overburden Thickness

ANALYTICAL METHODS

Values expressed in: per cent □ p. p. m. □ p. p. b. □

Cu, Pb, Zn, Ni, Co, Ag, Mo, As (circle)

Others ________________________

Field Analysis (___________ tests)

Extraction Method

Analytical Method

Reagents Used

Field Laboratory Analysis

No. (___________ tests)

Extraction Method

Analytical Method

Reagents Used

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis

General

Commercial Laboratory (___________ tests)

Name of Laboratory

Extraction Method

Analytical Method

Reagents Used

General
January 30, 1985

VIA REGISTERED MAIL

Mr. R.J. Pichette
Land Management Branch
Ontario Ministry of Natural Resources
Whitney Block, Room 6643
99 Wellesley Street West
Toronto, Ontario
M7A 1N3

Dear Sir:

Re: Assessment Work Reports - 21 Claims (P-724484 et al, 11 claims in Shaw Twp. and P-724477 et al, 10 claims in Eldorado Twp.) Porcupine Mining Division - Huronian Mines Limited

On December 3, 1984, 60 days per claim geophysical assessment work was recorded on the captioned claims.

Enclosed you will find, in duplicate, the reports following, with accompanying maps:


You will find the Technical Data Statement OMNR Form 837(5/79) - back of page 5 of this Summary.

PLEASE NOTE: On our Report of Work dated December 1, 1984, Bretton S. Davis' address was given as 122 Donna Crescent. The correct address is 322 Donna Crescent.

Yours sincerely,

ASB:TP
Encs.

cc - Huronian Mines Limited
- Mr. D.E. Smith, President
- Mr. M.A. Eustace, Secretary

A. S. Bayne, P.Eng.
For Huronian Mines Limited
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NOTES

400' Surface Rights Reservation along the shores of all lakes and rivers

This township lies within the Municipality of CITY of TIMMINS

SAND and GRAVEL

(171534 19576)

MINISTRY OF NATURAL RESOURCES