Report on the Ground Magnetic Survey

Horne and Glenwater Properties - Projects 508 and 509

Horne Township, Ontario

Thunder Bay Mining Division

NTS 52 A12/SW

Latitude 48°32' Longitude 89°48'

By: Douglas P. Parker, Senior Geologist
Avalon Ventures Ltd.

April 30, 1997
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Map 2  Total Field Magnetics Data Map ..................... back pocket
1.0 Introduction

From October to November, 1996 a cut-grid was established and a magnetic survey was conducted on the Horne and Glenwater properties.

The cut grid was oriented north-south with east-west surveyed base and tie lines. The grid totaled 228.5 line kilometres and consisted of 100 metre spaced lines with 25 metre stations.

The magnetic survey was conducted over the entire grid with readings taken every 12.5 m.

2.0 Conclusions and Recommendations

The magnetic survey outlined numerous magnetic features.

Two highly magnetic trends in the western part of the grid are interpreted to be caused by magnetite-rich iron formation. Further to the east these anomalies become disrupted and die out before reaching the eastern edge of the property. This may be indicative of structural complexities, folding or faulting, or may represent a mineralogical change due to alteration or facies change.

In the northern part of the grid, high magnetic anomalies are interpreted as resulting from ultramafic rocks possibly intercalated with magnetite-rich iron formation.

A weak magnetic high trending northwest across the southwest corner of the property is probably the result of a mafic dyke.

The magnetic data should be used to delineate favourable stratigraphic and structural features in conjunction with additional ground geophysical surveys, particularly induced polarization, and geological investigation.

3.0 Location and Access

The properties are located in Horne Township approximately 45 km west northwest of the city of Thunder Bay, Ontario, as shown in Figure 1.

NTS 52 A/12 SW

Latitude 48°32' Longitude 89°48'

Access to the north part of the property is best achieved via logging roads off of Highway 11-17, located 1 kilometre north of the property. The southern part of the property is accessed by an extensive network of forestry access roads off of the Glenwater-Boreal road which starts from Highway 590 about 14 kilometres west of Kakabeka Falls.
4.0 Disposition

The Horne and Glenwater properties consist of 11 contiguous claims which comprise 135 claim units (5400 acres), as shown in Figure 2.

Horne Property

The Horne property consists of five contiguous claims, TB 1215010 to TB 1215014 inclusive which comprise 64 claim units (2560 acres).

The claims are recorded in the Thunder Bay Mining Division in the names of:

Don Leishman, Kenneth Fenwick and Scott Christiansen
c/o 204 Anten Street
Thunder Bay, ON P7B 5J6

In May, 1996, Avalon Ventures Ltd. entered into an option agreement with the recorded holders to earn a 100% interest, (subject to a 2.5% NSR of which 1.5% can be bought back for $1.5 million cash or increments of $500,000 per 0.5% NSR) in the property. To earn these interests, Avalon paid $10,000, issued 25,000 shares, and must pay $40,000, issue 50,000 shares and incur $300,000 in exploration expenditures before May 29, 1999.

Glenwater Property

The Glenwater property consists of six contiguous claims, TB 1210312, TB 1224676, TB 1224679 TB 1224680, TB 1224681 and TB 1224683 which comprise 71 claim units (2840 acres).

The claims are recorded in the Thunder Bay Mining Division in the names of:

Stephen and Michael Stares
1124 W. Arthur Street,
Thunder Bay, Ontario P7E 6L2

In May, 1996, Avalon Ventures Ltd. entered into an option agreement with the recorded holders to earn a 100% interest, (subject to a 2% NSR of which 1.5% can be bought back for $1.0 million cash) in the property. To earn these interests, Avalon paid $10,000, issued 25,000 shares, and must pay $65,000 and incur $300,000 in exploration expenditures by May 14, 1999.

The Horne and Glenwater properties then became subject to the Bema Gold Corporation Joint Venture Agreement between Avalon Ventures Ltd. and Consolidated Westview Resources, which includes three properties in Horne and Conmee Townships.

April 30, 1997

Avalon Ventures Ltd.
5.0 Previous Exploration

1925: T.L. Tanton conducts regional mapping survey for the Department of Mines.

1977 M. A. Stewart conducts a small stripping program to evaluate dimension stone.

1983-1984 Corporate Oil and Gas Co. conducts reconnaissance mapping and soil geochemistry, over a small area in the north part of the property.


6.0 Current Program

Line cutting and a ground magnetometer survey was conducted during October and November, 1996 by Vytyl Exploration Services on behalf of Avalon Ventures Ltd.

The cut grid was oriented north-south with east-west surveyed base and tie lines. The grid totaled 228.5 line kilometres and consisted of 100 metre spaced lines with 25 metre stations.

The magnetic survey was conducted over the entire grid with readings taken every 12.5 m.

All readings were corrected for diurnal variation. Survey data was plotted as raw data and contours at a scale of 1:5000 on Maps 1 and 2 (back pockets).

7.0 Results

The magnetic survey outlined numerous magnetic features.

Two highly magnetic trends in the western part of the grid are interpreted to be caused by magnetite-rich iron formation. Further to the east these anomalies become disrupted and die out before reaching the eastern edge of the property. This may be indicative of structural complexities, folding or faulting, or may represent a mineralogical change due to alteration or facies change.

In the northern part of the grid, high magnetic anomalies are interpreted as resulting from ultramafic rocks possibly intercalated with magnetite-rich iron formation.

A weak magnetic high trending northwest across the southwest corner of the property is probably the result of a mafic dyke.
8.0 Instrument Description and Specifications

Magnetometer/Gradiometer GSM-19

Resolution: 0.01 nT (gamma), magnetic field and gradient.
Accuracy: 0.2 nT over operating range.
Range: 20,000 to 120,000 nT, automatic tuning requiring initial set-up.
Gradient Tolerance: Over 10,000 nT/m.
Operating Interval: 3 seconds minimum, faster optional. Readings initiated from keyboard, external trigger, or carriage return via RS-232-C.
Input/Output: 6 pin weatherproof connector, RS-232C, and (optional) analog output.
Power Requirements: 12V, 200mA peak (during polarization), 30 mA standby. 300mA peak in gradiometer mode.
Power Source: Internal 12 V, 1.9 Ah sealed lead-acid battery standard, others optional. An External 12V power source can also be used.
Battery Charger: Input: 110/220 VAC, 50/60 Hz and/or 12 VDC (optional). Output: 12V dual level charging.
Operating Ranges: Temperature: -40° to +60° C.
Battery Voltage: 10.0V minimum to 15V maximum.
Humidity: up to 90% relative, non condensing.
Storage Temperature: -50°C to +65°C
Dimensions: Console: 223 x 69 x 240 mm.
Sensor Staff: 4 x 450 mm sections.
Sensor: 170 x 71 mm dia.
Weight: Console 2.1 kg, Staff 0.9 kg, Sensors 1.1 kg each.

Physical Overview

The parts of the GSM-19 magnetometer/gradiometer are as follows:

- The sensor is a dual coil type designed to reduce noise and improve gradient tolerance. The coils are electrostatically shielded and contain a proton rich liquid in a pyrex bottle, which also acts as an RF resonator.
- The sensor is coaxial, typically RG-58/U, up to 100 m long.
- The staff is made of strong aluminum tubing sections (plastic staff optional). This construction allows for a selection of sensor elevations above ground during surveys. For best precision the full staff length should be used. Recommended sensor separation in gradiometer mode is one staff section (56 cm from sensor axis to sensor axis), although two or more sections are sometimes used for maximum sensitivity.
- The console contains all the electronic circuitry. It has a 16 key keyboard, a 4 x 20 character alphanumeric display, and sensor and power/input/output connectors. The keyboard also serves as an ON-OFF switch.
- The power/input/output connector also serves as RS232C input/output and optionally as analog output and/or contact closure triggering input.
- The keyboard, front panel, and connectors are sealed i.e. the instrument can operate under rainy conditions.
- The charger has 2 levels of charging, full and trickle, switching automatically from one to another, input is normally 110V 50/60 Hz. Optionally, 12 VDC input can be provided.
- The all-metal housing of the console guarantees excellent EMI protection.

Software Version 4.0

There are several major versions of software for the GSM-19. As of August 92, GEM Systems added a major software upgrade to its GSM-19 family, enhancing its capabilities. This new generation of software (version 4.0) has the following advantages:
1. Diurnal correction (reduction) with interpolation can be used in conjunction with other GSM-19 models with software version 4.0. This allows the base mag to run with longer cycle time. Previous software could do interpolation only with fast GSM-19 types.
2. Memory filing system. Now 50 files can be stored in a directory, and mode of operation can be changed without erasing memory. With the software previous to version 4.0, only 1 file could be retained in memory, and this would be lost when modes of operation were switched.
3. Line and station numbers have been enlarged. Lines can now be 5 digits as opposed to 4 digits in previous software. Station numbers are now 7 digits as opposed to 6 in the previous software.
4. Transmission time has been significantly shortened.

April 30, 1997

Avalon Ventures Ltd.
STATEMENT OF QUALIFICATIONS

I, Douglas P. Parker, of 365 Lark Street, Thunder Bay, Ontario, hereby certify:

I am a graduate of Lakehead University in Thunder Bay, Ontario and hold an Honours Bachelor of Science (Geology) Degree, 1986.

I am presently employed as Senior Geologist with Avalon Ventures Ltd. of 777 Red River Road, Thunder Bay, Ontario.

I have been employed as an exploration, mining and research geologist with various government agencies and mining companies since 1986.

Dated in Thunder Bay, Ontario this 30th day of April, 1997.

Douglas P. Parker, B.Sc.
GRID / CLAIM MAP
AVALON VENTURES LTD.
HORNE GLENWATER PROPERTY
Horne Twp., Thunder Bay area, NW Ontario
N.T.S. 52 A/12
GROUND GEOPHYSICAL SURVEY
Scale: 1 : 40,000

Survey by JVX Ltd.
Feb., 1997

Figure 2
1. Recorded holder(s) (Attach a list if necessary)

<table>
<thead>
<tr>
<th>Name</th>
<th>Client Number</th>
<th>Telephone Number</th>
<th>Fax Number</th>
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<tbody>
<tr>
<td>DON LEISHMAN, KEN FENWICK, SCOTT CHRISTIANSON</td>
<td>152178300158, 021676</td>
<td>345-2332</td>
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<tr>
<td>THUNDER BAY, ON P7B 5J6</td>
<td>197293</td>
<td>197236</td>
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<tr>
<td>STEPHEN AND MICHAEL STAPES</td>
<td>577-3490</td>
<td>7535</td>
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<tr>
<td>THUNDER BAY ON P7C 6L2</td>
<td>(W10)(10)(E)</td>
<td>(mag)</td>
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2. Type of work performed: Check (x) and report on only ONE of the following groups for this declaration.

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

<table>
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<th>Work Type</th>
<th>Office Use</th>
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<td>LINE CUTTING</td>
<td>GROUND MAGNETIC SURVEY</td>
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<table>
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<th>Dates Work Performed</th>
<th>From Day</th>
<th>Month</th>
<th>Year</th>
<th>To Day</th>
<th>Month</th>
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<th>Global Positioning System Data (if available)</th>
<th>Township/Area</th>
<th>Mining Division</th>
<th>NTS Reference</th>
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<td>DOWSON 85</td>
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<td>THUNDER BAY</td>
<td>THUNDER BAY</td>
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<td>L13 (D11)</td>
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<td>STS Reference</td>
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<tr>
<th>Resident Geologist</th>
<th>District</th>
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<td>THUNDER BAY DISTRICT</td>
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3. Person or companies who prepared the technical report (Attach a list if necessary)

<table>
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<tr>
<th>Name</th>
<th>Telephone Number</th>
<th>Fax Number</th>
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<tr>
<td>DOUG PARKER - AVALON VENTURES</td>
<td>767-3012</td>
<td></td>
</tr>
<tr>
<td>JOLLY</td>
<td>767-179</td>
<td></td>
</tr>
</tbody>
</table>

4. Certification by Recorded Holder or Agent

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

<table>
<thead>
<tr>
<th>Signature of Recorded Holder or Agent</th>
<th>Date</th>
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<td>MAY 1, 1997</td>
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<table>
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<th>Agent's Address</th>
<th>Telephone Number</th>
<th>Fax Number</th>
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<tr>
<td>777 RED RIVER ROAD, T-BAY</td>
<td>767-3012</td>
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the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form.

**Mining Claim Number.** Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.

<table>
<thead>
<tr>
<th>Claim Number</th>
<th>Number of Claim Units</th>
<th>Value of work performed on this claim or other mining land.</th>
<th>Value of work applied to this claim.</th>
<th>Value of work assigned to other mining claims.</th>
<th>Bank. Value of work to be distributed at a future date.</th>
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</table>

Column Totals: 103505 103505

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

Signature of Recorded Holder or Agent Authorized in Writing: __________________________ Date: 01/05/97

6. Instructions for cutting back credits that are not approved.

Some of the credits claimed in this declaration may be cut back. Please check (X) in the boxes below to show how you wish to prioritize the deletion of credits:

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

Thunder Bay
Mining Division

MAY 1 1997
RECEIVED

Thunder Bay
Mining Division

MAY 2 1997
RECEIVED

Note: If you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only

Received Stamp: May 2 1997

Deemed Approved Date: July 31 1997

Date Notification Sent: Total Value of Credit Approved: 

Approved for Recording by Mining Recorder (Signature):
Statement of Costs for Assessment Credit

Personal information collected on this form is obtained under the authority of subsection 6(1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th Floor, 833 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

<table>
<thead>
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<th>Units of Work</th>
<th>Cost Per Unit of work</th>
<th>Total Cost</th>
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<tr>
<td>LINE CUTTING</td>
<td>228.5 KM</td>
<td>$360/KM</td>
<td>82,260</td>
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<tr>
<td>MAGNETIC SURVEY</td>
<td>228.5 KM</td>
<td>$70/KM</td>
<td>15,995</td>
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<tr>
<td>SUPERVISION AND REPORT</td>
<td></td>
<td></td>
<td>4,300</td>
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Associated Costs (e.g. supplies, mobilization and demobilization).

<table>
<thead>
<tr>
<th>Work Type</th>
<th>Units of Work</th>
<th>Cost Per Unit of work</th>
<th>Total Cost</th>
</tr>
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<tbody>
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<td>DRAFTING AND PRINTING</td>
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<td></td>
<td>650</td>
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<tr>
<td>Transportation Costs</td>
<td>850 KM</td>
<td>35¢/KM</td>
<td>300</td>
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<tr>
<td>Food and Lodging Costs</td>
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Calculations of Filing Discounts:
1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

\[
\text{TOTAL VALUE OF ASSESSMENT WORK} \times 0.50 = \text{Total $ value of worked claimed.}
\]

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

Certification verifying costs:
1. DOUG PARKER, do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying Declaration of Work form as AGENT (recorded holder, agent, or state company position with signing authority). I am authorized to make this certification.
August 7, 1997

DONALD MURRAY LEISHMAN
204 ANTEN STREET
THUNDER BAY, Ontario
P7B-5J6

Dear Sir or Madam:

Submission Number: 2.17535

Subject: Transaction Number(s):

W9740.00247  Deemed Approval

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

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice.

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

If you have any questions regarding this correspondence, please contact Lucille Jerome by e-mail at jerome_j@torv05.ndm.gov.on.ca or by telephone at (705) 670-5858.

Yours sincerely,

Blair Kite
Supervisor, Geoscience Assessment Office
Mining Lands Section

Correspondence ID: 11178
Copy for: Assessment Library
# Work Report Assessment Results

**Submission Number:** 2.17535  
**Date Correspondence Sent:** August 07, 1997  
**Assessor:** Lucille Jerome

<table>
<thead>
<tr>
<th>Transaction Number</th>
<th>First Claim Number</th>
<th>Township(s) / Area(s)</th>
<th>Status</th>
<th>Approval Date</th>
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<td>1215010</td>
<td>HORNE, DAWSON ROAD LOTS</td>
<td>Deemed Approval</td>
<td>July 31, 1997</td>
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</table>

**Section:**  
14 Geophysical MAG  

**Correspondence to:**  
Resident Geologist  
Thunder Bay, ON

**Assessment Files Library**  
Sudbury, ON

**Recorded Holder(s) and/or Agent(s):**

- Douglas P. Parker  
  THUNDER BAY, ONTARIO

- DONALD MURRAY LEISHMAN  
  THUNDER BAY, Ontario

- KENNETH GEORGE FENWICK  
  THUNDER BAY, ONTARIO

- SCOTT ALEXANDER CHRISTIANSON  
  THUNDER BAY, ONTARIO

- STEPHEN A STARES  
  THUNDER BAY, Ontario

- MICHAEL ROBERT STARES  
  THUNDER BAY, Ontario
AVALON VENTURES LTD.
MAGNETOMETER SURVEY
HORNE-GLENWATER PROPERTY
INSTRUMENT: GSM-.19
CONTOUR INTERVAL: 50 nT
BASE STATION CORRECTED
VfTfL EXPLORATION SERVICES