REPORT
ON
AEROMAGNETIC SURVEY
DYER LAKE AREA, ONTARIO

Project: 857-11 - Metcalfe-5
and
Project: 857-12 - Metcalfe-6

AMAX MINERALS EXPLORATION

J. Roth
September, 1978
SUMMARY

A detailed aeromagnetic survey was executed by Questor Surveys Limited in February, 1978 for Amax Minerals Exploration in the Dyer Lake area, south of Tashota, Ontario.

The survey successfully defined the principal magnetic sources present on the property. In particular, a remnant of the Kowkash greenstone belt, disrupted by significant folding and faulting, is inferred to extend generally E-W across the center of the survey area.
I. INTRODUCTION

This report presents the results of an airborne magnetic survey executed by Questor Surveys Limited for Amax Minerals Exploration.

The claim groups staked in April, 1978 for which an airborne certificate is requested consist of 43 mining claims (listed in Appendix I).

II. PREVIOUS EXPLORATION

The earliest assessment work on record is a 1952 aeromagnetic survey flown for Kennco which extends approximately a mile into the present area from the north. Later, in 1973 Noranda filed ground magnetometer and electromagnetic work on their North Brennan Lake claim group and this also falls partly within the present area, to the east of North Brennan Lake and north of Dyer Lake. Phelps Dodge filed logs of two short drill holes put down on an island in Dyer Lake just outside this survey area. They intersected graphite, pyrite and pyrrhotite in fragmental rhyolites and rhyolite tuffs.

III. GEOLOGY

The geology of most of the survey area is shown on the southwest part of OGS Map 2354 which accompanies Report No. 167. A small portion at the south end of the area is on OGS Map P. 846 (revised).

Except for the area between Dyer and North Brennan Lakes and around South Girvan Lake, the area is shown as totally covered by drift and swamp. The interpretation shown is that this part of the Kowkash Greenstone Belt almost wedges out southwestwards into granitic terrain. The rocks to the northwest are mapped as hornblende-biotite-quartz monzonite gneiss and those to the south as biotite-quartz monzonite. A small stock of biotite quartz monzonite is also shown in the northeast corner of the survey area. Most of the greenstone belt rocks are shown as intermediate to mafic volcanics with a thinner central unit of felsic tuffs, agglomerates and volcaniclastic sediments. A body of metagabbro is shown around the southern part of Dyer Lake. The only other rocks mapped were several isolated outcrops of diabase.

There is no clear indication of major structures but it is possible that the wedge shape of the supracrustal rocks' distribution reflects the converging limbs of a major fold.
IV. SURVEY EQUIPMENT AND PERSONNEL

The survey was carried out by Questor Surveys Limited on February 23, 1978 using a Britten Norman Trislander aircraft. Base of operations were at Armstrong, Ontario.

Spatial variations of the earth's total magnetic field were recorded with a Geometrics G-803 proton presession magnetometer installed in a tail stinger. Data were recorded digitally on magnetic tape to ±1 gamma and in analog form to ±5 gammas on a Honeywell chart recorder at 1.13 second intervals during flight. An effective noise envelope of ±10 gammas was achieved.

Aircraft (and sensor) altitude was smoothly maintained at an average of 120m (400'), as determined by the radar altimeter. Aircraft speed during survey averaged 160km/hour. Flight line spacing was 1/8 mile (200m), with a total of 120km (80 miles) of survey coverage effected.

Flight line positioning utilized a photomosaic base at a scale of 1"=1320'. Recovery of flight lines employed the continuous flight film obtained from the 35mm camera during flight and referenced the magnetometer data by automatic fiducials.

A recording base station magnetometer was used to monitor diurnal variations. Subsequent levelling of the magnetic data utilized the base station data, together with one tie line orthogonal to the survey lines.

Questor personnel involved in the survey were:

G. Mason operator/navigator
M. Portalier pilot
G. Reid co-pilot
J. Boysenko engineer
R. DeCarle office compilation

The author supervised the survey for Amax.
V. DATA REDUCTION AND PRESENTATION

After recovering the flight path on the photomosaic base, the flight lines and fiducials were digitized by Data Processing Associates of Don Mills.

The digitally recorded magnetic data was then edited, and merged with the digitized flight lines. After levelling of the survey data using the tie line and base station data, a computer generated contour map at a scale of 1"=1320' was realized. The resulting contour map still displays some residual herringboning at the 25 gamma level, but is a satisfactory representation of the principal magnetic feature.

VI. DISCUSSION OF THE RESULTS

The compiled and contoured aeromagnetic data principally display a series of moderate amplitude anomalies extending across the Metcalfe-6 group with a general E-W trend. Several distinct magnetic horizons are indicated, probably disrupted by folding and faulting. Weak iron-formation, possibly of sulphide facies, could well be the source of such responses.

North of this magnetic unit, the magnetic terrain is characterized by weak, diffuse responses. It is reasonably surmised that this area is underlain by weakly gneissic granitic rocks. The one anomaly evincing significant elongation trends ESE and likely reflects a magnetic diabase dyke.

South of the principal magnetic unit, a string of discontinuous, short anomalies is speculatively inferred to demarcate the southern boundary of the greenstone inlier, with gneissic granitic rocks occurring further south. The Metcalfe-5 group would, on this interpretation, lie within the greenstone remnant.

Faults, as alluded to above, clearly disrupt the magnetic stratigraphy. In several cases, the postulated fault trace closely parallels the flight direction. In at least one instance, along line 11705, it is suggested that residual deficiencies in compiling the aeromagnetic data have accentuated the apparent disruption of the magnetic responses.
VII. CONCLUSIONS AND RECOMMENDATIONS

The detailed aeromagnetic survey executed by Questor Surveys has usefully served to define the principal magnetic features on and adjacent to the Metcalfe-5 and 6 claim groups. In particular, a greenstone remnant with a dominant E-W orientation is inferred; it is further surmised that considerable geologic complexity has been induced by folding and faulting.

In conjunction with other geological and geophysical exploration of this property, it is recommended that detailed ground magnetic surveys be executed to better resolve and define the indicated magnetic features, particularly those associated with conductors.

September, 1978
AIRBORNE GEOPHYSICAL CERTIFICATE

To the Mining Recorder at Thunder Bay:

This is to certify that Amax Minerals Exploration, has met the requirements of Section 87 of The Mining Act with respect to the following 42 mining claims in the Areas of Coughlan Lake and Metcalfe Lake:

TB. 472244 to 472252 inclusive
  472255 to 472264 inclusive
  472318 to 472326 inclusive
  472337 - 472338
  472400 to 472409 inclusive
  472411 - 472412

November 30, 1978

James A.C. Auld, Minister
MINISTRY OF NATURAL RESOURCES
APPENDIX I
SCHEDULE OF MINING CLAIMS - THUNDER BAY MINING DIVISION

Airborne Magnetic Survey

<table>
<thead>
<tr>
<th>Area of Metcalfe Lake and Coughlan Lake (Our File: 857-12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>472244</td>
</tr>
<tr>
<td>472245</td>
</tr>
<tr>
<td>472246</td>
</tr>
<tr>
<td>472247</td>
</tr>
<tr>
<td>470248</td>
</tr>
<tr>
<td>472249</td>
</tr>
<tr>
<td>472250</td>
</tr>
<tr>
<td>472251</td>
</tr>
<tr>
<td>472252</td>
</tr>
<tr>
<td>472255</td>
</tr>
<tr>
<td>472256</td>
</tr>
<tr>
<td>472257</td>
</tr>
<tr>
<td>472258</td>
</tr>
<tr>
<td>472259</td>
</tr>
<tr>
<td>472260</td>
</tr>
<tr>
<td>472261</td>
</tr>
<tr>
<td>472262</td>
</tr>
<tr>
<td>472263</td>
</tr>
<tr>
<td>472264</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area of Metcalfe Lake (Our File: 857-11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>472409</td>
</tr>
<tr>
<td>472411</td>
</tr>
</tbody>
</table>

(43 claims)
TASHOTA AREA
BLOCK A EXTENSION
MAGNETIC INTERVAL
(TOWAY FIELD)
22 GAMMA COLOUR
LINE
50 GAMMA COLOUR
LINE
100 GAMMA COLOUR
LINE
MAGNETIC DEPRESSION
FLIGHT ALTITUDE 400' ABOVE TERRAIN

SURVEY AREA
BOUNDARY

KINSHASH PROJECT, ONTARIO
AERIAL MINERALS EXPLORATION
AIRBORNE MAGNETOMETER SURVEY AREA
MAGNETITE G.R. GROUPS
1'' = 1520'
PLANT BY QUARRY SURVEYS LIMITED, FEB. 1976