AIRBORNE GEOPHYSICAL SURVEY

of the

CLERGUE TOWNSHIP AREA, LARDER LAKE DISTRICT, ONTARIO

for

W.R.L. TORRANCE

by

CANADIAN AERO MINERAL SURVEYS LIMITED

PROJECT NO. 4042

CANADIAN AERO *Mineral Surveys* LIMITED

INTRODUCTION

An airborne geophysical survey was carried out by Canadian Aero Mineral Surveys Limited on behalf of Mr. W.R.L. Torrance.

The area flown comprises approximately 24 square miles and includes portions of Clergue, Walker, Stock and Taylor Townships in the Larder Lake Mining Division of Ontario. Forth nine North-south traverses totalling 200.9 miles were flown at 1/8 mile spacing. A mean terrain clearance of 150 feet was maintained except in areas of sharp topographic relief.

A detailed description of the anomalies according to flight line is given in Appendix I. A description of the geophysical equipment, and the survey procedures and results is presented in Appendix II and III respectively.

Canadian Aero Mineral Surveys Limited personnel assigned to the project were as follows:

G.A. Curtis	- Project Manager
D. Smith	- Pilot
K. McLeod	- Navigator
D. Graham	- Operator
D.J. Sarazin	- Data Compiler

GEOLOGY

In the survey area undifferentiated basic volcanics, mainly andesites, basalts, and some dacites are intruded by a large ultrabasic stock. The pipestone fault cuts East-Northeasterly across the southern edge of the survey area. Small ultrabasic intrusives occur locally along the north side of the pipestone fault in the volcanics. Keewatin and undifferentiated sediments lie South of this fault. North-South diabase dikes and a North-South striking fault system are prominent in the rocks around Monteith.

Two small gold showings occur in the pipestone fault, and Noranda Mines Limited'Alexo Mine (Nickle, Copper) is located near andesite and dacite inclusions in the ultra basic stock at the boundary between Dundonald and Clergue Townships.

Generally, pyrite and pyrrhotite are the most common sulphide minerals found in the Timmins - Kirkland Lake Area. The gold occurences invariably are associated with pyrite, pyrrhotite and chalcopyrite and to a lesser degree galena, sphalerite and magnetite. In the survey area no substantial sulphide deposits have been mapped except at the Alexo Mine.

GEOPHYSICAL RESULTS

The important features of the magnetic contour map are; a) highly magnetic trends of the ultrabasic stock in the North-west corner of the survey area; b) North-south striking magnetic high of the diabase dikes West of Monteith; c) magnetic highs, just South of the power line, representing local ultrabasic intrusives along the North side of the pipestone fault; and d) a broken East-west magnetic trend West of the diabase dikes caused possibly by small ultrabasic intrusives.

The EM anomalies, their characteristics, and association to these magnetic features are listed below. We believe anomalies 4 and 5 the most probable conductors to contain sulphides. However in any area worth prospecting there are few times when one can discard an anomaly without first finding the cause.

Anomaly I - A broad multiple conductor associated with the ultrabasic intrusive. It is highly probable that the zone contains some sulphides although such response is generally indicative of serpentinazation in the ultrabasics. Outcrops are not scarce and some detailed geology should confirm the cause of the anomaly.

Anomaly 2 - A weak conductor at the South contact of a magnetic trend (a "thumb shaped" spur off the East side of the ultrabasic stock). The conductor may be serpentine, pyrite, or graphite at the contact of the ultrabasic intrusive.

Anomaly 3 - A weak conductor, likely a small lense of pyrrhotite, in the andesites.

Anomaly 4 - A fairly strong conductor with magnetic coincidence, and a high probability of being sulphides. This conductor lies on an East-west magnetic trend of isolated highs. Anomaly 5 is also a part of this trend and occurs on a magnetic high East of anomaly 4.

Anomaly 5 - A fairly strong conductor with magnetic coincidence, and a high probability of being sulphides. See anomaly 4.

Anomaly 6 - A moderately weak anomaly that may be a valid bedrock conductor. This zone is associated with the pipe line and power line anomalies of the Monteith area. We can find no evidence to link these anomalies to man made causes. They occur every other line, and in two cases have a very weak conductive twin on the North side. We recommend further ground checking to establish their validity.

Anomaly 7 - A moderately strong conductor with little magnetic association. This conductor is located West of Monteith in an area of North-south striking diabase dikes and a North-east fault.

There is a possibility of graphite in shears in the fault system, however a lack of multiplicity of anomalies, and short strike length are favorable indications of a sulphide occurrence.

There are a few isolated anomalies that because of their very weak response are questionable. They may be caused by very small concentrations of sulphides in the bedrock or conducting material in the overburden. They may be instrument noise, turbulence in flight, or possible cultural features not clearly discernable from the film strips.

Such anomalies when associated with magnetic trends warrant further ground checking. Anomalies of this nature are located on:

Line 12 (A) Fiducial 50 36/9

Line 37 (A) Fiducial 3751/5

REFERENCES

Ontario Department of Mines:

a) Preliminary Geological Map No. P.132 1"= 1 mile
Hanna - Coulson Sheet.

b) Preliminary Geological Map No. P.119 1"= 1 mile
Matheson - Black Sheet.

c) Geological Compilation Series Map 2046 1"= 1 mile
Timmins - Kirkland Lake Sheet.

Anomaly	Fiducials	In-Phase Quad	Altitude	Magnetics	Rate	Comments
25 A	8313/6	0/50	170	Dir.250g	3	possible I.P. mag effect
26 A	4191/5	200/40	100	Dir.60g	3	multiple twin at N.Edge not mag.
B	4199/202	680/740	100	Dir.100g	2A	
36 A	8873/6	80/20	120	Mag S.adj. 25g	x	questionable culture
37 A	3751/5	0/180	125	Nil	3	twin conductor at granite out-crop
38 A	2827/9	0/80	155	N.Edge 30g	3	
38 B	2800/3	30/160	125	60g	x	broad mag zone, possible culture
39 A	9197/200	(-)/30	130	Dir.50g	3	
40 A	3589/92	(-)/400	115	Nil	3	Quad only sharp strong
B	3612/5	0/280	120	No	x	possible pipe line

PROJECT No. 4042 - Torrence Clergue Township, Timmins APPENDIX I

Anomaly	Fiducials	In-Phase Quad	Altitude	Magnetics	Rate	Comments
1 A	7061/5	40/100	155	Off Scale	3	I.P. noise, I.P. mag effect, mag
B	7057/61	40/170	155	Off Scale	3	Association questionable - record off scale
2 A	305/8	(-)40	155	S Flank 4000g	3	Mag anomaly at contact
B	301/5	(-)170	155	Dir 4000g	3	
3 B	588/91	(-)80	125	2000g	3	I.P. mag effect, Mag anomaly at contact, weak multiple to south
A	0583/6	10/20			x	
4B A	7270/3	(?)10/40	155	S adj.to >2000g	3	Weak, I.P. mag effect, edge of swamp
B B	7312/6	(-)270	140	Off scale	3	Conductor S adj. to strong mag. coincidence questionable
5 A	670/3	(-)/40	150	S of 80g	3	I.P. mag effect
B	630/3	(-)/120	135	Dir.3000g	3	I.P. mag effect
C	0622/8	(?)10/60	130	Dir.1200g	x	Weak, broad OP
6 A	916/20	(-)90	120	Dir.7200g	3	I.P. mag effect
10 A	7575/8	(?)10/30	150	Dir.20g	x	Noise (?)
12 A	5036/9	80/(-)(?)	135	N.Edge 600g	x	Possibly topo effects
20 A	4514/7	(-)/600	100	Dir.700g	3	I.P. mag effect, multiple magnetics
21 A	1912/7	>10/800	110	Dir.170g	3	I.P. mag effect, multiple magnetics

REFERENCES

Geological Survey of Canada:

Geophysics Paper 297, Aeromagnetic Map,
Porquis junction 1" - 1 mile.

September 29, 1964.

G. Wieduwilt,
Geophysicist.

MONTEITH

POWER LINE

N. ONT. NATURAL GAS

Driftwood R.

HIGHWAY No. 11

CNR

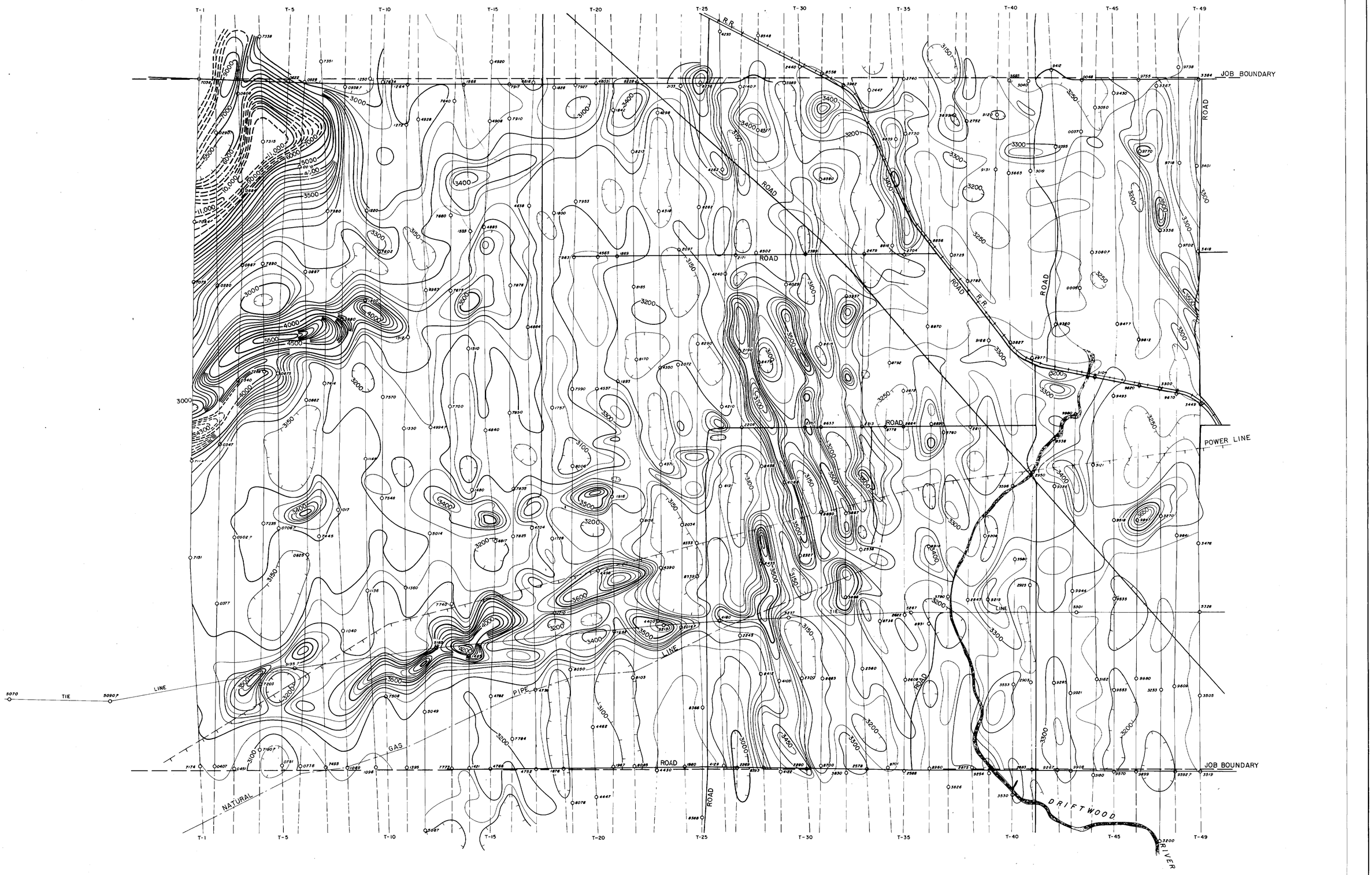
CLERGUE STOCK

WALKER TAYLOR

Scale: 1 in to 1320 ft

Nov. 2/64
Tom Sedlak

200



LEGEND

CONTOUR INTERVAL...50 GAMMAS
500 GAMMA CONTOUR
100 GAMMA CONTOUR
50 GAMMA CONTOUR
MAGNETIC LOW

MEAN TERRAIN CLEARANCE....150 FEET
FLIGHT LINE SPACING.....1/8 MILE
RIVERS AND LAKES
HORIZONTAL CONTROL.....BASED ON PHOTO LAYDOWN

AIRBORNE MAGNETOMETER SURVEY

CLERGUE TWP. AREA

ONTARIO

W.R.L. TORRANCE

SCALE: 1 INCH = 1/4 MILE (approx.)

(APPROX.)

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OTTAWA, TORONTO, ONTARIO
Nov. 2/66 Tom Eastfield

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63.1328

T-1 T-5 T-10 T-15 T-20 T-25 T-30 T-35 T-40 T-45 T-49

JOB BOUNDARY

ROAD

POWER LINE

TIE LINE

PIPE LINE

GAS LINE

NATURAL

DRIFTWOOD RIVER

R.R.

1 A 7064
1 B 7315
2 A 7265
2 B
3
4 170Y 250Y 1915
5 250Y 120Y 100Y 60Y 4191
6 60Y
7 50Y

LEGEND

- 1 A ANOMALY
- 1 B ANOMALY
- 2 A ANOMALY
- 2 B ANOMALY
- 3 ANOMALY
- X type ANOMALY

MEAN TERRAIN CLEARANCE.... 150 FEET
FLIGHT LINE SPACING.....1/8 MILE
RIVERS AND LAKES .....
HORIZONTAL CONTROL.....BASED ON PHOTO LAYDOWN

AIRBORNE ELECTROMAGNETIC SURVEY

CLERGUE TWP. AREA

ONTARIO

W.R.L. TORRANCE

SCALE: 1 INCH = 1/4 MILE (approx.)

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