REPORT ON AIRBORNE MAGNETOMETER SURVEY OF THE JESSOP TOWNSHIP AREA, ONTARIO, for CINCINNATI-PORCUPINE MINES LTD.,

I. INTRODUCTION

Between March 5 and March 11, 1965, a combined airborne EM and magnetometer survey was flown by Canadian Aero Mineral Surveys Limited on behalf of Cincinnati-Porcupine Mines Limited in the Timmins area of Ontario. The block of gound is located mainly in the central and northeastern part of Jessop Township extending a short distance into Murphy and Kidd Townships.

This report pertains to the magnetometer phase of the programme.

II. SURVEY AND COMPILATION DETAILS

The survey was flown by the Canadian Aero Mineral Surveys Limited geophysically equipped Otter aircraft, registration CF-IGM, based at Timmins. The line direction for the survey was approximately N40°W (astr.) and the line spacing was 1/8 mile. The mean terrain clearance of the aircraft was approximately 150 feet. The geophysical data acquired within the block totalled 100 line miles.

Canadian Aero Mineral Surveys Limited personnel associated with the project were as follows:

G. A. Curtis	-	Project Manager
J. Gaudry	-	Pilot
D. McDonell	-	Navigator
D. Graham	-	Operator
R. Sarsfield	-	Mechanic
D. Sarazin	-	Data Compiler
G. Granger	-	Draftsman
A. Martin	-	Draftsman
P. Tallyhoe	-	Data Chief

The project was supervised by A. R. Rattew, P.Eng., author of this report.

The magnetometer used in this survey was the Elliott electron-tube instrument. The measuring head, installed in the tail section of the Otter, utilizes National Union Electron Beam tubes. Deflection of a beam of electrons by the magnetic field produces a differential current which flows between two cathode plates in the tube. This current is amplified and the resultant voltage is proportional to the magnetic field. Two such tubes orient a third tube by means of servo-mechanisms into the direction of the earth's total field. Total field is then cancelled electronically and variations in the total field

are measured and recorded.

Three settings are available providing full scale measurements of 600, 2000, and 6000 gammas. The useable short-term sensitivity is approximately 5 gammas and the total dynamic range of the instrument is 60,000 gammas.

The magnetic profile is displayed in rectilinear form on an 8-inch Texas Instruments Rectilinear Recorder.

The flight path of the aircraft is recorded by an Aeropath AS-5 continuous strip, 35 mm. camera. The camera is synchronized with the magnetometer record by means of a fiducial numbering system. Path recovery is accomplished by relating this strip film to an airphoto composite of the area. Identified points are designated by their fiducial numbers.

An overlay of the airphoto mosaic showing the recovered fiducial points, provides the base for the isomagnetic contour map. After a line-to-line comparison of the levels of the magnetic record to reduce all the profiles to the same base level, the profiles are transcribed from the tapes to the plan map. These data are then contoured at 50-gamma intervals and drafted. The isomagnetic contours of the Jessop Township Area are presented on a single map at the scale of 1 inch equals ¼ mile.

III. GEOLOGY

The best published geology map of Jessop Township is the Ontario Department of Mines Preliminary Geology Map P-158 at the scale of 1 inch equals ½ mile.

The Township is covered by an extensive clay plain and by muskeg and spruce swamps, so outcrop is very rare.

Most of the outcrops are volcanics ranging in composition from acidic to basic. Greywacke was mapped in the southeastern part of the Township.

IV. RESULTS

Most, and perhaps all of the magnetic anomalies in this block derive from occurrences of basic volcanics. The elongate high in the northwestern corner of the block marks the most extensive and most clearly defined belt. The high located immediately northwest of the airport contains two outcrop zones of basic pillow lavas. The high on lines 63 through 65 also corresponds to a group of basic volcanic outcrops.

It is, therefore, quite probable that the other small highs on the sheet have the same source. The most obvious features are:

a) T45 to T50 northeast of the airport,
b) T67 north of fiducial 9181,
c) T68 near fiducial 9451.

The last of these three highs is considerably sharper and larger than the others. Information is incomplete because it occurs on the last line, but it could be a basic intrusive rather than volcanics.

Respectfully submitted,

A. R. Rattew, P.Eng.,
Geophysicist.

OTTAWA, Ontario,
February 26, 1966.

INTRODUCTION

An electro-magnetic survey was carried out on a group of forty-eight claims in the northeast quarter of Jessop Township.

LOCATION AND ACCESS

This group of claims consists of all of lots 1,2,3,4, concession V and the north half of lots 2,3,4, concession IV, and the north quarter of lot 1, concession IV, Jessop Township.

The claim group is situated about 8 miles due north of the Town of Timmins. Highway 629 provides access to the Airport which lies about 1.5 miles south of the group. A westerly bearing winter road about 2 miles long, which branches off the road from Timmins to the Texas Gulf property is used for access to the claim group.

PREVIOUS WORK

In March, 1965, Canadian Aero Mineral Surveys Limited conducted a combined airborne E.M. and magnetometer survey over the claim group.

Lines spaced at approximately 1/8 mile intervals were flown approximately N 40 deg. W (ast). Mean terrain clearance was 150 feet.

One, "X" type anomaly was located in the extreme north-east corner of the property. The E.M. response is entirely out-of-phase and the anomaly occurs on the north flank of a 120 gamma magnetic anomaly.

INSTRUMENTS USED AND SURVEY METHOD

A Crone, dual frequency (1800 c.p.s. - 480 c.p.s.) transceiver unit was used for the complete survey. The survey

was carried out using the in-line method, 300 foot coil separation and readings were taken at 100 foot intervals. The dip angles shown are resultant dip angles and are plotted at the mid-point between the coils.

Two easterly bearing baselines were cut and lines bearing north and south from these baselines were cut at 300 foot intervals.

58.2 miles of line were cut and 3074 readings were taken.

SURVEY RESULTS

Most of the dip angles obtained at 1800 c.p.s. are anomalous however only in the northeast portion of the area were the anomalous readings confirmed at 480 c.p.s.

It is believed that the area is largely covered by conductive overburden and only in the northeast portion is there any likelihood of a bedrock conductor.

It would appear that there are several, short conductors rather closely spaced in the northeast portion of the area.

Additional detail work would be required to delineate the conductors.

RECOMMENDATIONS

It is recommended that several vertical loop set-ups be made in the northeast section and a number of search squares be read at two frequencies.

If one or more conductor axes is located a detail grid should be cut and further vertical loop work done to detail the conductor. It is also recommended that a magnetometer survey of the northeast portion be carried out in conjunction with detail E.M.

No drilling is recommended at this time.

Respectfully Submitted,
MESPI MINES LIMITED

J.E. Steers, Geologist.

REPORT ON AIRBORNE GEOPHYSICAL SURVEY OF THE JESSOP TOWNSHIP AREA, ONTARIO FOR CINCINNATI-PORCUPINE MINES LTD.

I. INTRODUCTION

This report pertains to the combined airborne EM and magnetometer survey flown on behalf of Cincinnati-Porcupine Mines Ltd. over a block of ground lying mainly in Jessop Township, Ontario. The survey was flown during the period of March 5 to March 11, 1965 by the Canadian Aero Mineral Surveys Limited geophysically-equipped Otter aircraft (registration CF-IGM), based at Timmins.

The line direction was selected at approximately N40°W (astr.) and the lines were spaced at 1/8-mile intervals. The mean terrain clearance of the aircraft during survey was 150 feet. The geophysical data acquired in this block totalled 121 line miles.

Canadian Aero Mineral Surveys Limited personnel associated with this project were as follows:

G.A. Curtis	- Project Manager
J. Gaudry	- Pilot
D. McDonell	- Navigator
D. Graham	- Operator
R. Sarsfield	- Mechanic
D. Sarazin	- Data Compiler
G. Granger	- Draftsman
A. Martin	- Draftsman
P. Tallyhoe	- Data Chief

The project was supervised by A. R. Rattew, P.Eng., and this report.

The EM data and all magnetic anomalies in excess of 100 gammas are plotted on a plan map at the scale of 1 inch equals 1/4 mile. An airphoto laydown provided the base for this map.

Details of the equipment carried on the aircraft and an explanation of the recorder charts are provided in Appendix II. Appendix III describes our anomaly rating and anomaly listing procedures. Appendix I is a complete listing of all EM anomalies detected.

II. GEOLOGY

The best published geology map of Jessop Township is the Ontario Department of Mines Preliminary Geological Map No. P.158 at the scale of 1 inch = 1/4 mile.

The township is covered by an extensive clay plain and by muskeg and spruce swamps, so outcrop is very rare.

Most of the outcrops are volcanics which range in composition from acid to basic. Greywacke was mapped in the southeastern part of the township.

III. RESULTS

Six zones of anomalous conductivity have been outlined by the airborne EM survey. Additionally, eight isolated, questionable (X-type) EM anomalies have been plotted.

All of the six conductive zones occur in a relatively small area about 1-1/2 miles northwest of the airport. The EM response is quite weak throughout this group of conductors. The

conductivity of the bodies ranges from low to fair, as indicated by the ratio of the in-phase to quadrature components.

Conductors 1 and 2 appear to be two parts of the same zone. On many of the traverses crossing this zone the EM response is entirely out-of-phase, similar to that expected from surface conductors, but on a few lines the conductivity is high enough to yield in-phase response as well. We therefore interpret a belt of low-conductivity bedrock material, and graphite is the most probable source. On traverse 47 in conductor 2 there appears to be a small magnetic anomaly in coincidence with the southern peak of the double EM anomaly, which offers hope for a local pyrrhotite content.

Conductor 6, positioned more or less alongstrike from conductors 1 and 2, may be a continuation of the same zone. However, since the EM response is entirely out-of-phase the source could be a surface conductor. There is some indication of a small coincident magnetic anomaly.

Conductor 4 was detected on two lines, both anomalies being weak quadrature response only. The sharpness of the anomalies suggests a weak bedrock conductor rather than a surface feature.

Zone 5 consists of a clear, double-peaked, quadrature response, with the conductivity of the southern conductor being high enough to yield a minor in-phase anomaly as well. Anomalous bedrock conductivity is clearly indicated. This feature may be considered interesting due to its short strike length and relatively isolated position.

Zone 3 consists entirely of questionable EM anomalies. However, with four such anomalies lining up there is good reason to believe that a conductor actually exists. The ratio of in-phase to quadrature response on these anomalies reveals a somewhat higher conductivity than on the other conductors in the group.

Any of the eight isolated, X-type anomalies could be indications of anomalous bedrock conductivity, but it must be borne in mind that they are all questionable EM features. Several of them are suspected of being expressions of surface conductivity, as some of the swamps and clays in this area are quite conductive. This group includes anomalies 28A, 34A, 41B and 67B. Anomaly 41D is considered the most reliable of the questionable anomalies.

IV. RECOMMENDATIONS

The excellent base metal potential of the Timmins area dictates that all definite bedrock conductors be explored. It is expected, however, that graphite will be found to be the source of most of the bedrock conductors detected. Zone 5 and the central part of zone 2 are considered the best prospects for sulphides.

Respectfully submitted

A. R. Rattew, P.Eng.
Geophysicist

Ottawa, Ontario
May 5, 1965

PROJECT NO. 5044 - JESSOP TOWNSHIP AREA, ONTARIO

Anomaly	Fiducials	In-Phase Quad	Altitude	Magnetics	Rate	Comments
28A	1760/4	10?/40	145	Nil	X	Possible surface conductor
34A	2834/40	0/50	160	Nil	X	" "
39A	3420/4	20/40	170	N Edge 240g	X	Weak
40A	3544/9	-/40	155	Nil	X	
41A	3640/3	30/30	170	Nil	X	
B	3649/53	0/50	165	Nil	X	Possible surface conductor
C	3658/64	10/60	155	Nil	3	" "
D	3724/8	30/40	170	N Flnk 250g	X	Double?
42A	3791/5	40/30	160	Nil	3	Broad
B	3740/4	30/30	165	N Edge 320g	X	Weak
43A	3862/7	30/60	170	S Edge 20g	3	Broad Quad
44A	3983/6	30/40	160	N Flnk 40g	X	
45A	4057/61	0/60	175	Nil	3	Possible surface conductor
B	4066/70	40/20	165	Nil	X	Weak Quad
46A	4188/91	10/40	175	Nil	3	Surface Conductor?
B	4180/4	40/10	170	Nil	X	Noise?
47A	1187/93	40/60	150	Dir S 30g	3	Broad, Double?
B	1201/4	20/20	150	Nil	X	Weak
48A	1335/9	50/40	155	N Edge 30g	3	
49A	9729/32	10/40	160	Nil	3	Possible surface conductor
B	9735/8	0/40	150	Nil	3	" "
50A	5162/5	0/40	150	S Edge 15g	3	" "
B	5168/71	0/50	150	Nil	3	" "
51A	4821.5/30	30/60	150	Nil	3	
B	4819.5/215	0/70	150	Nil	3	
52A	9651/7	20?/40	155	Dir? 30g	3	Possible surface conductor
67A	9170/04	0/50	155	N Edge 120g	X	" "

63.1543

63.1543

THE MINING ACT

Assessment Work Credits

NAME: CINCINNATI-PORCUPINE MINES LIMITED

TOWNSHIP OR AREA: JESSOP TOWNSHIP

Number of assessment work days per claim:

Geophysical 20.2 Electromagnetic
20. Airborne Magnetometer

Geological nil

Mining Claims: P 53742 to 53744 inclusive
P 55887 to 55901 inclusive
P 56839 to 56868 inclusive

Kidd Twp.

Jamieson Twp.

Murphy Twp.

Mountjoy Twp.

VI

V

IV

III

II

I

12 11 10 9 8 7 6 5 4 3 2 1

RADIO RANGE SITE

GRAVEL FILE 61009

Withdrawn from staking

Withdrawn from staking

42A11NW0569 63.1543 JESSOP

200

B.D.

THE TOWNSHIP OF

JESSOP

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	(S) or 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	

NOTES

Lands Withdrawn From Mining Act See ... 38

For Airport Shown Thus

Surface Rights Only Withdrawn From ...

Lands Shown Thus:

Gravel Reserve For S.W. pt. S 1/2 Lot 9 Con I

400' Surface rights reservation around all lakes & rivers.

No disposition of sand & grave from May 8th, 1964 until further notice.

PLAN NO.-M.289

DEPARTMENT OF MINES

—ONTARIO—

THE TOWNSHIP OF

JESSOP

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

Kidd Twp.

Murphy Twp.

Mountjoy Twp.

VI

V

IV

III

II

I

12 11 10 9 8 7 6 5 4 3 2 1

Withdrawn from staking

Withdrawn from staking

File No. 151699

File No. 151697

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	Ⓢ or C.S.
LEASES	Ⓛ
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	

NOTES

Lands Withdrawn From Mining Act Section 2(2) For Airport Shown Thus:

Surface Rights Only Withdrawn From Certain Lands Shown Thus:

Gravel Reserve For S.W. pt. S. 1/2 Lot 9 Con. I

400' Surface rights reservation around all lakes & rivers.

No disposition of sand & gravel from May 8th, 1964 until further notice.

DATE OF ISSUE
OCT 8 1964
ONTARIO DEPT. OF MINES

PLAN NO. - M.289

DEPARTMENT OF MINES
—ONTARIO—

JAMIESON

KIDD

JESSOP

MOUNTJOY

MURPHY

AREA BOUNDARY

ROAD

AIRPORT

POWER LINE

KIDD CREEK

MURPHY CREEK

T-28 T-30, T-30A T-35 T-40 T-45 T-50 T-55 Ts.-57,57A T-58 T-60 T-65 T-68

Ts.-28, 29, 30 T-31 T-35 T-40 Ts.-46 45 T-47 T-50

T-54 T-54A Ts.-55,56,57 T-57-A Ts.59,58 T-60 T-63 T-65 T-68

T-30A T-54A

MAGNETIC LEGEND

S — SHARP
VS — VERY SHARP
B — BROAD
VB — VERY BROAD
F — FLAT
M — MULTIPLE
200 — AMPLITUDE

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

JESSOP TOWNSHIP AREA

ONTARIO

CINCINNATI-PORCUPINE MINES LIMITED

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

(APPROX.)

CANADIAN AERO Mineral Surveys LTD
OTTAWA & TORONTO, ONTARIO

220

63.1543

C.A.M.S. 5044

JAMIESON

KIDD

JESSOP

MOUNTJOY

MURPHY

AREA BOUNDARY

AREA BOUNDARY

ROAD

ROAD

ROAD

AIRPORT

KIDD CREEK

MURPHY CREEK

POWER LINE

T-28 T-30,T-30A T-35 T-40 T-45 T-50 T-55 Ts.-57,57A T-58 T-60 T-65 T-68

Ts.-28, 29, 30 T-31 T-35 T-40 Ts.-46 45 T-47 T-50

T-30A

T-54 T-54A Ts.-55,56,57 T-37-A Ts.59,58 T-60 T-63 T-65 T-68

T-54A

LEGEND

CONTOUR INTERVAL...50 GAMMAS

500 GAMMA CONTOUR..

100 GAMMA CONTOUR..

25 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

JESSOP TOWNSHIP AREA

ONTARIO

CINCINNATI-PORCUPINE MINES LIMITED

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

(APPROX.)

CANADIAN AERO Mineral Surveys LTD.

OTTAWA & TORONTO, ONTARIO

C.A.M.S. 6061

BASE LINE 0+00 -A

CON. V

CON. IV

P. 56862

BASE LINE 0+00 -B

P. 56866

P. 56867

P. 56865

P. 56868

P. 56864

P. 56863

P. 56856

P. 56854

P. 56851

P. 56847

P. 56843

P. 56839

P. 25658

P. 56855

P. 56852

P. 56848

P. 56844

P. 56840

P. 25531

P. 26137

P. 56853

P. 56849

P. 56845

P. 56841

P. 25530

P. 56857

P. 56861

P. 55891

P. 56850

P. 56846

P. 56842

P. 56860

P. 55892

P. 55887

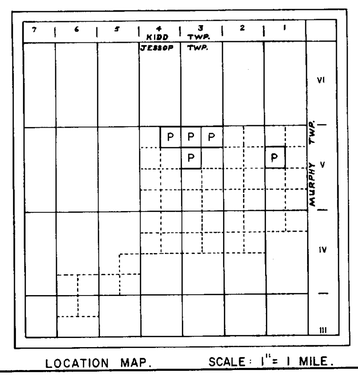
P. 55898

P. 55896

AST.

LOCATION MAP. SCALE: 1"= 1 MILE.

AST.



LOCATION MAP. SCALE: 1" = 1 MILE.

CINCINNATI - PORCUPINE MINES LTD.

ELECTRO MAGNETIC SURVEY

JESSOP TWP.

INSTRUMENT: CRONE J. E. M.

DUAL FREQUENCY: IN LINE METHOD

COILS 300' APART

MAP SCALE: 1" = 400'

LEGEND

Resultant Dip at 1800 c.p.s.

" " " 480 "

DRAWN BY: J.K.LYTLE.

APPROVED BY:

SURVEY DATE: Feb. 18/66. to March. 3/66.