REPORT ON

ELECTROMAGNETIC AND MAGNETIC SURVEYS

MAGNETAWAN PROJECT

SPENCE TOWNSHIP
EASTERN MINING DIVISION ONTARIO

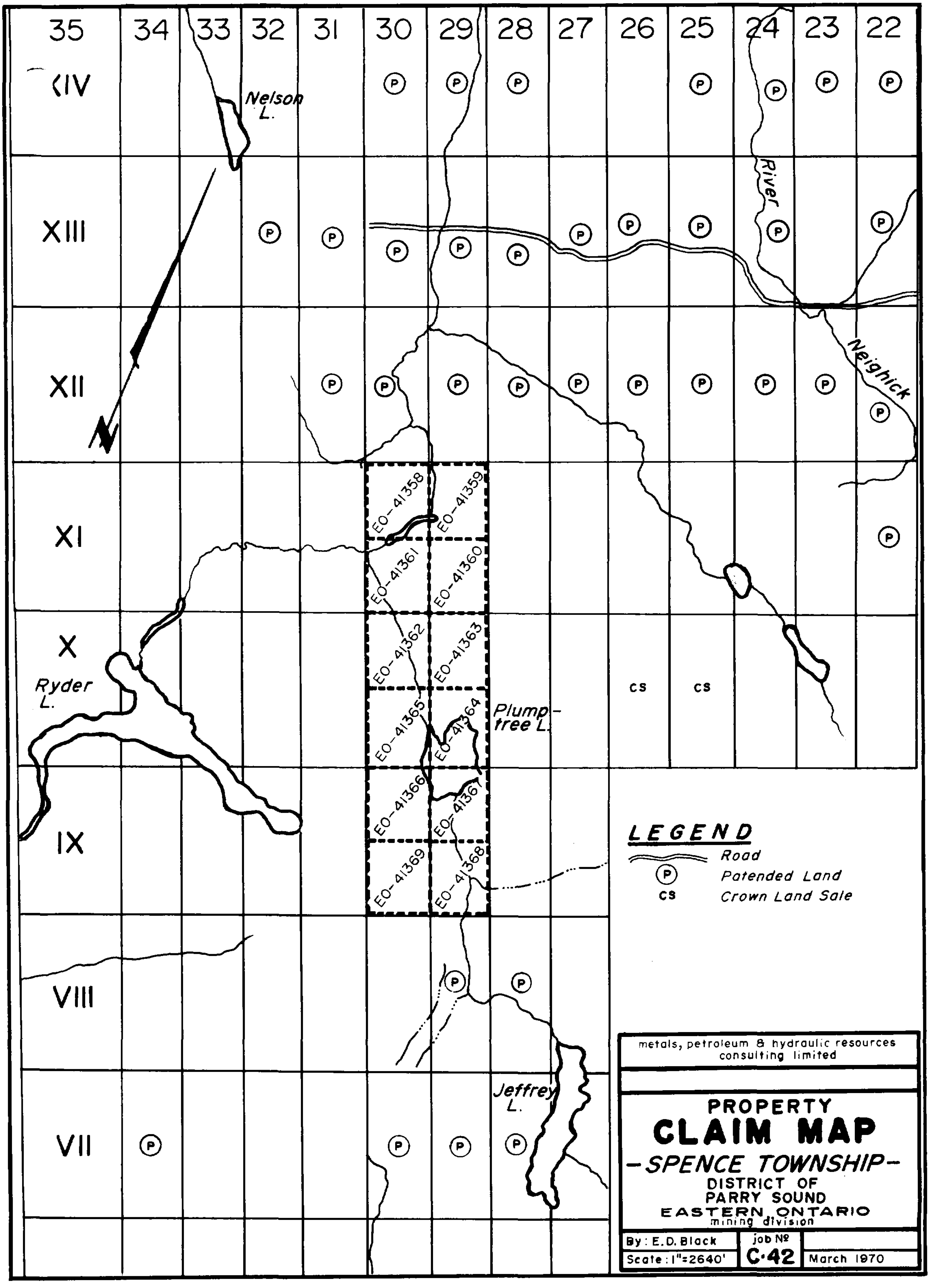
FOR

METALS, PETROLEUM & HYDRAULIC RESOURCES CONSULTING LTD.

BY

ROGER K. WATSON, B.A.Sc., P.Eng.
Consulting Geophysicist

Orillia, Ontario
May 8, 1970



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XIV
XIII
XII
XI
X
IX
VIII
VII
Nelson L.
River
Neighick
Ryder L.
Plump-tree L.
Jeffrey L.
EO-41358
EO-41359
EO-41361
EO-41360
EO-41362
EO-41363
EO-41365
EO-41364
EO-41366
EO-41367
EO-41369
EO-41368
CS
CS
LEGEND
Road
Patended Land
CS Crown Land Sale
metals, petroleum & hydraulic resources consulting limited
PROPERTY
CLAIM MAP
-SPENCE TOWNSHIP-
DISTRICT OF
PARRY SOUND
EASTERN ONTARIO
mining division
By: E.D. Black
Scale: 1"=2640'
job No
C·42
March 1970

1.0 INTRODUCTION

During the period March 5 to 14, 1970, electromagnetic and magnetic surveys were carried out on a group of 12 claims numbered EO-41358 to EO-41369 and located in Spence Township in the eastern mining division of Ontario. The ground is accessable by road from the village of Magnetawan.

The property lies in a greenstone belt west of Magnetawan. Two occurrences of sulphide mineralization have been found and these, together with the generally favourable aspects of a greenstone formation, created the initial interest in the area. The purpose of these surveys was to map the magnetic and VLF electromagnetic fields as a means of prospecting for base metal sulphide minerals. The field work was under the supervision of R. K. Watson, P.Eng. who also acted as magnetometer operator for part of the survey.

2.0 SURVEY SPECIFICATIONS

2.1 Instrumentation

The magnetometer used was a vertical field fluxgate type, Model M-700, manufactured by McPhar Geophysics Ltd., It is a hand held self levelling instrument with a sensitivity of 20 gammas per scale division on the most sensitive scale.

The electromagnetic instrument used was the Geonics model E.M.-16. It measures (a) the direction and (b) the ellipticity (quadrature) of the electromagnetic field vector produced by the United States Navy communication stations located at various points in North America. For this survey the transmitter NAA at Cutler, Maine was used. An attempt was made to use NBA in Panama but the signal was too weak to obtain a proper null.

2.2 Field Procedures

For this survey the lines were laid out by compass and pacing. Each hundred foot station was flagged and a reading was taken at the same spot by both instruments. The lines were accurately located by chaining the baseline and both east and west boundary lines. The line map was made by (a) drawing the baseline using chain and compass information and

2.2 Field Procedures continued

(b) drawing each traverse line by its paced length and its chained position on the baseline and boundary line.

Eight magnetic base stations were established and are shown on the magnetic map. (Sheet 7422-2) The standard base station loop method was used to provide diurnal and instrument drift control. Fifty foot station intervals were used for the magnetic readings and one hundred foot intervals for the electromagnetic readings.

3.0 SURVEY RESULTS

3.1 Electromagnetic Survey

3.1.a Introduction

The VLF e.m. method is relatively new and interpretation of its results lacks the twenty years background of experience which has accumulated for the more conventional e.m. methods. The method in fact operates at approximately 10 times the frequency of conventional methods and it therefore is that much more sensitive. This increase in sensitivity is not completely desirable since it increases the response of conductive overburden and faults filled with conductive solutions but barren of sulphide mineralization. Its main attraction lies in its ease of operation (one man), good depth penetration, and sensitivity to faults partially filled by disseminated sulphide.

Several characteristics of the profiles have been recognized as indicative of sulphide or graphite mineralization. These include (a) a region within a conductive trend crossed by many traverses, where the peak-to-peak cross-over response increases sharply in ampitude and in slope and (b) a good cross-over having a negative out-of-phase cross-over.

E.M. anomalies were selected from the profiles and graded into one of three categories as follows:

3.1.a Introduction continued

Grade 1. (solid oval)

A relatively sharp anomaly which returns to zero within several hundred feet either side of the cross-over and which has a negative out-of-phase response. This type is indicative of a discrete mass of conductive material within the bedrock.

Grade 2. (cross-hatched oval)

This anomaly has the good characteristics of a sharp cross-over which returns to zero within several hundred feet of either side of the cross-over but has little or no positive out-of-phase response. This anomaly occurring in short trends away from swampy ground is of interest and should be investigated further by conventional e.m. methods. Where occurring in long anomalous trends over swampy ground it usually represents a more conductive region of an overburden anomaly.

Grade 3. (open oval)

A very broad anomaly taking many hundreds of feet to return to zero and which has a broad positive quadrature response. This type is typical of that caused by conductive overburden and faults. Anomalies which have most of their response on one side of the cross-over are caused by flat lying overburden. (See lines 0 to 3 on this survey).

3.1.a Introduction continued

The electromagnetic results are plotted as profiles of dip angle and quadrature response. A sub surface conductor is indicated by a "cross-over" of the profile from positive on the left to negative on the right.

3.1.b Interpretation

The E.M. anomalies were selected from the profiles and grouped to form conductive trends. (Sheet 7422-1) As was expected the two large swamp areas provided a well defined response of the grade 3 type. These are shown as anomalous trends A, B, E, F, and g, and are ruled out as potential sulphide zones.

Anomalies C, D, H and the south part of B are all of grade 1 and are of further interest.

Anomaly B is a swamp anomaly at the north end but extends southward for six hundred feet onto solid ground where its quality changes to grade 1. It lies along the earstern flank of a zone of magnetic activity which has been interpreted as a magnetite belt.

Anomaly C is a well defined grade 1 anomaly on line 7 and continues south with weakening intensity to line 10. It lies in an area of moderately active intensity but does not appear to have any direct magnetic correlation.

3.1.b Interpretation continued

Anomaly D is seen on only one line and has a rather broad western flank indicating a western dip of the causative body. No direct magnetic response is seen.

Anomaly H is seen on two lines and has a direct magnetic response on line 16. It lies within a small zone of magnetite interpreted from the magnetic data.

These four anomalies are considered to have basemetal sulphide potential and are felt worthy of further investigation. This work should be done with one of the more conventional low frequency types of E.M. systems.

3.2 Magnetic Survey

3.2.a Introduction

The magnetic readings are related to the amount of magnetic minerals in the bedrock underlying the property. This data has three main uses: (a) to prospect directly for iron deposits in the form of magnetite, (b) to map rock types and structures, and (c) to qualify e.m. anomalies by determining the presence or absence of coincident magnetic response.

3.2.a Introduction continued

The magnetic results have been shown in contoured form at a contour interval of 500 gammas. The negative values have no particular significance: the zero datum is an arbitrary value near the centre of the full range of readings.

3.2.b. Interpretation

There is considerable magnetic activity over most of the claim group ranging from extremes of +4995 gammas to -7650 gammas. The most prominent magnetic relief forms a belt striking North 30 degrees West through the west side of the property. This is interpreted as a belt of a relatively high concentration of magnetite and its outline has been marked on the magnetic map. (Sheet 7422-2)

The magnetite content in this belt is variable. Its strongest point is on line 20, 100 feet East of the centre line. Assuming a dike shaped source, an analysis of the anomaly here shows a body having a width of 50 feet, a depth of 20 feet, and a magnetite content of 16% by volume. The rest of the belt clearly contains less magnetite than is at this point and so can be considered as having little or no potential as an economic iron deposit.

A displacement of the belt near line 17 is interpreted as a fault.

4. CONCLUSIONS AND RECOMMENDATIONS

The electromagnetic survey detected a number of anomalies, most of which are attributed to conductive overburden. However four anomalies have characteristics of bedrock conductors and are felt worthy of further investigation by a more discriminating type of e.m. method. This work should take the following steps:

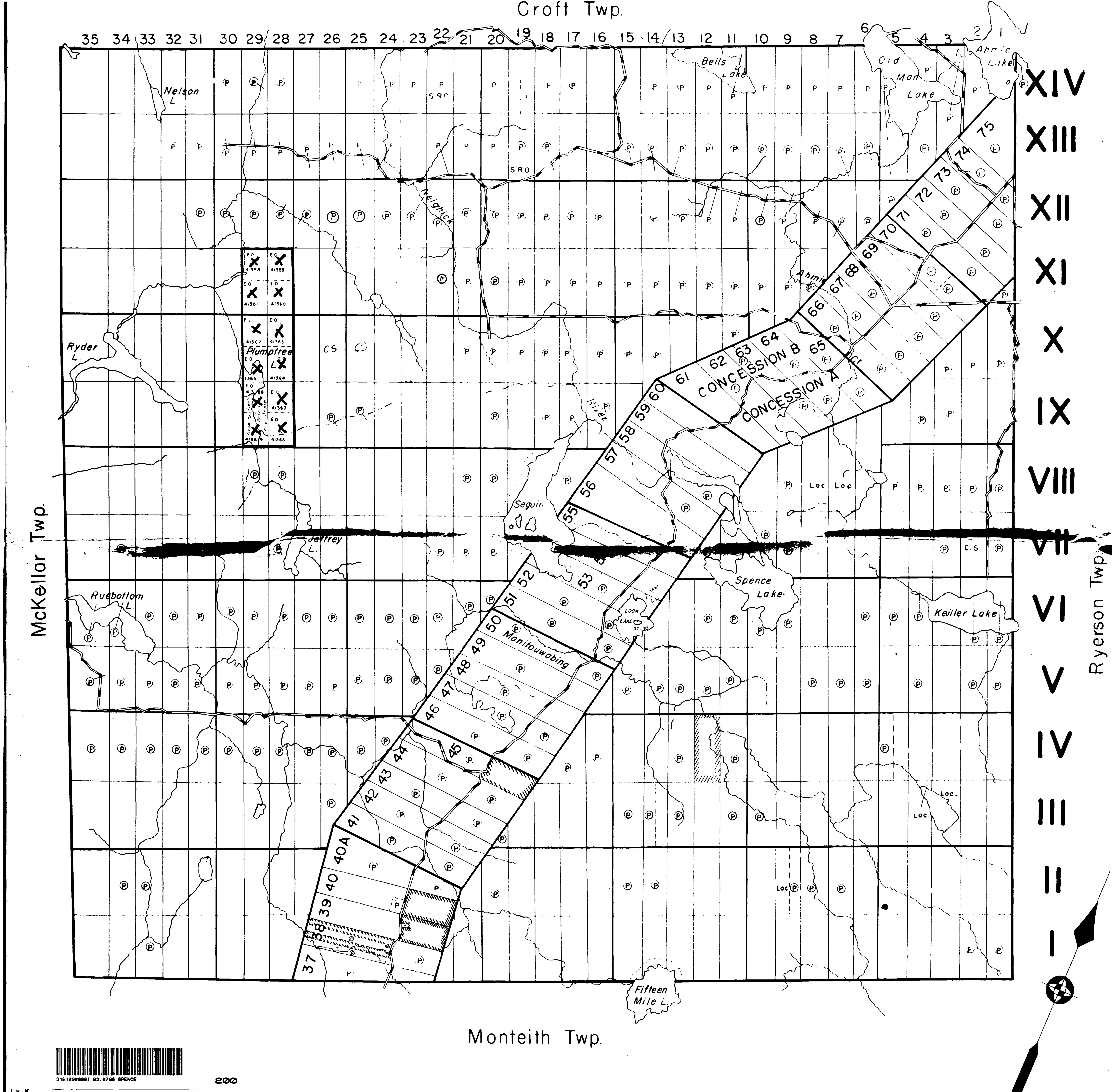
1. Cut picket lines east of the centre line between lines 6 and 12 and between 15 and 18, and west of the centre line between lines 5 and 8. The lines should be 200 feet apart and marked at 100 foot intervals.
2. Survey these lines with (a) a conventional e.m. equipment, preferably a type that measures in-phase and quadrature response, and (b) a magnetometer.

The magnetic survey detected a belt of relatively strong magnetic activity, most of which lies in the western half of the property. The amount of magnetite is judged not sufficient to make the property of interest as an iron producer.

REGISTERED PROFESSIONAL ENGINEER
R. K. WATSON
PROVINCE OF ONTARIO

Roger K. Watson

Roger K. Watson, B.A.Sc., P.Eng.
Consulting Geophysicist



THE TOWNSHIP OF

CLAIM MAP

SPENCE

DISTRICT OF PARRY SOUND

EASTERN ONTARIO MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

PATENTED LAND	
CROWN LAND SALE	C
LEASES	(L)
LOCATED LAND	Lo
LICENSE OF OCCUPATION	L
MINING RIGHTS ONLY	M.R.
SURFACE RIGHTS ONLY	S.R.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C

NOTES

This Map Is Not To Be Used For Survey Purposes.

400' Surface rights reservation around all lakes & rivers.

Surface Rights Only Reserved In Area Shown Thus: ... Act File 132696

PLAN NO.- M.199

DEPARTMENT OF MINES

— ONTARIO —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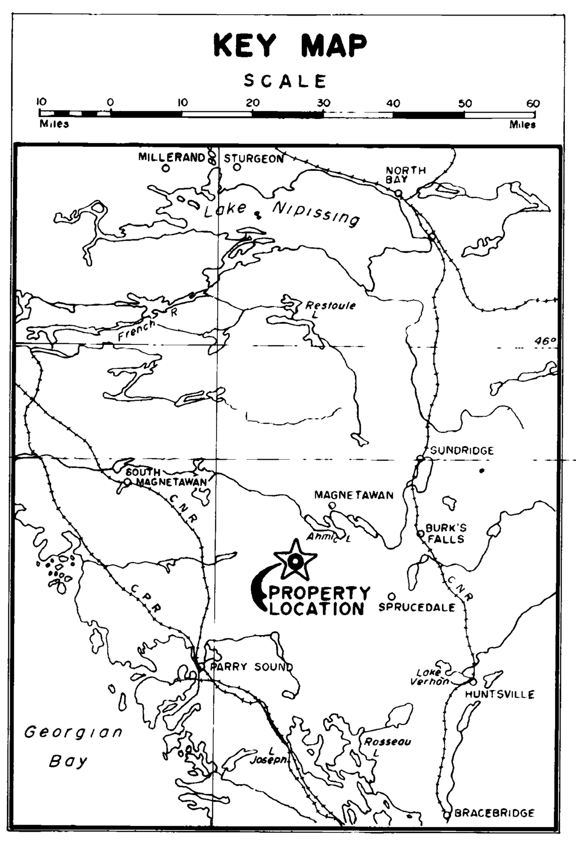
EO-41365
EO-41366
BS No1
BS No2
BS No3
BS No4
BS No7A
BASE LINE
Magnetic North
True North
KEY MAP
SCALE
10 0 10 20 30 40 50 60
Miles
MILLERAND
STURGEON
NORTH BAY
Lake Nipissing
French R
Restoule L
46°
SUNDRIDGE
SOUTH MAGNETAWAN
C.N.R
MAGNETAWAN
Ahmic L
BURK'S FALLS
PROPERTY LOCATION
SPRUCEDALE
C.P.R
C.N.R
PARRY SOUND
Lake Vernon
HUNTSVILLE
Georgian Bay
L Joseph
Rosseau L
BRACEBRIDGE
LEGEND
Claim Line, Claim Post and Claim Number
EO-41369
Witness Post
L-5 Compass Line
Swamp
Lake
Creek
GEOPHYSICAL LEGEND
Dip angle response degrees of coil tilt 1"=20°
Traverse lines and Direction
Quadrature response Degrees of phase shift. 1"=20°
Relatively high concetration of magnetite
Fault interpreted from magnetite pattern.
Grade 1 conductive Anomaly
Grade 2 conductive Anomaly
Grade 3 conductive Anomaly
A Anomalous Trend & Number
BS No6 Magnetic Base Control Station and Station Number
metals, petroleum & hydraulic resources consulting limited
MAGNETAWAN PROJECT 2010
V.L.F.
ELECTROMAGNETIC SURVEY
SPENCE TOWNSHIP
Eastern Mining Division – ontario
BY: R.K.W.
job No C·42
SHEET: 7422—1
SCALE: 1"=200 feet
DATE: MARCH 1970
REGISTERED PROFESSIONAL ENGINEER
R. K. WATSON
PROVINCE OF ONTARIO
63.2798



LEGEND

- Claim Line, Claim Post and Claim Number. (EO-41366)
- Witness Post
- Compass Line (L-5)
- Swamp
- Lake
- Creek

GEOPHYSICAL LEGEND

- +160 / -250 — Traverse lines with magnetic reading
- Gamma Contours (5000)
- Relatively high concetration of magnetite
- Fault interpreted from magnetic pattern

metals, petroleum & hydraulic resources consulting limited

MAGNETAWAN PROJECT

Map Showing

VERTICAL FIELD MAGNETIC SURVEY

SPENCE TOWNSHIP

Eastern Mining Division - Ontario

BY: R.K W	Job № C·42	SHEET: 7422-2
SCALE 1"=200 feet		DATE: MARCH 1970

R. K. WATSON

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