INTRODUCTION

The Draper property, located in the west-central part of Eldorado Township, along the Redstone River, consists of 16 contiguous claims.

The property is essentially a nickel prospect on which electromagnetic and magnetometer surveys were completed in late 1968. The object of the electromagnetic survey, described in this report, is to re-classify the various conductors located in the previous survey. A Ronka EM 16 survey was completed in 1968 and the latest survey utilized a Crone JEM unit.

A number of conductive zones were located by the Crone survey, in part, coincident with the conductors outlined by the Ronka EM 16 survey and, in part, coincident with magnetic anomalies.

LOCATION AND ACCESS

The property, consisting of 16 contiguous unpatented mining claims, numbered P99947 to P99962 inclusive, is located in the west-central part of Eldorado Township, approximately 15 miles south of South Porcupine, Ontario.

A jeep road, from the Buffalo Ankerite property in Deloro Township to the southwest corner of the Draper property, provides access to the claim group.

PREVIOUS WORK

During late 1968, a magnetometer-electromagnetic survey was carried out on the property by Shield Geophysics Limited and

is described in a report by Mr. P. T. George B.Sc., December 19, 1968. A number of conductive zones coincident, in part, with magnetic anomalies are described by George. A programme including diamond drilling, geological mapping and electromagnetic surveying is recommended by Mr. George. The survey herein described represents part of the recommendations.

Prior to the geophysical work by Shield Geophysics, a limited amount of surface prospecting was carried out on a portion of the property by Falconbridge in the early sixties.

Immediately to the east of the property, Falconbridge and Mining Corporation carried out geological, magnetometer and electromagnetic surveys in the early 1960's. Falconbridge drilled 16 holes along a generally east striking sulphide zone. Subsequently, Mining Corporation drilled four additional holes which intersected sulphides containing up to 0.35% nickel. Samples from trenching by Mining Corporation averaged 0.13 oz. silver and 0.32% nickel across 30 feet.

Recently, Inco has staked a large number of claims in the Eldorado-Langmuir-Carman-Shaw Township area including claims tieing on to the east, north, and west boundaries of the Draper property.

GEOLOGY OF THE PROPERTY

According to George (December 19, 1968), the Draper property is underlain by highly deformed rhyolitic and andesitic volcanic rocks and related intravolcanic sediments and iron forma-

tion. These rocks have been intruded by peridotite, granite, and two ages of diabase. The rocks have been folded about easterly striking fold axes and there is evidence of a major north trending fault zone through the property. On the basis of the regional geology, this could well be the southeasterly extension of the Burrows-Benedict fault zone.

A number of sulphide zones were noted on the property by the stakers and geophysical operators involved in the programme. The occurrence of the sulphides and peridotite in the area gives the property considerable potential as a copper-nickel prospect.

ELECTROMAGNETIC SURVEY RESULTS AND INTERPRETATION

A Crone JEM unit was used for the electromagnetic survey. A description of the unit and the method used is found in the Appendix attached to the report. A number of strong to moderately strong conductive zones have been located designated "A" to "I" inclusive.

Conductor "A"

This zone is 800 to 1200 feet long and strikes northwest. It is coincident with magnetic anomalies on Lines 4 West and 12 West.

The strongest conductivity is present on Line 12 West, where the dip angle profiles indicate that the conductor dips south and is near surface. The zone of conductivity is not exposed but is expected to be caused by sulphides, probably with pyrrhotite.

Conductor "B"

This zone is at least 800 feet long and strikes west-northwest. It is coincident with a strong linear magnetic anomaly over most of its length and appears to be terminated to the east by a postulated fault.

According to the dip angle profiles the strongest conductivity is present on Line 16 East. The conductor dips near vertically or steeply south and the top is within 25 feet of surface. Sulphides, perhaps disseminated probably with pyrrhotite, appear to be the cause of the conductivity.

Conductor "C"

This conductor is approximately 1000 feet long and strikes northwest. The west end of the zone is coincident with a magnetic anomaly and the east portion coincides with the south flank of a magnetic anomaly.

Conductivity of moderate strength is indicated to be present on Line 20 East as shown by the dip angle profiles. Here the conductor dips near vertically and is covered by 50 to 75 feet of overburden. The cause of conductivity is uncertain.

Conductor "D"

Crossing the Redstone River, this conductor is at least 800 feet long and strikes east-west. A magnetic anomaly coincides with the conductor axis thereby indicating the likely presence of pyrrhotite and/or magnetite.

Ratios of the dip angle profiles on both Lines 4 East

and 8 East are excellent, indicating strong conductivity. The profiles also indicate that the tops of the conductor is about 50 feet from surface and the conductor axis dips vertically or steeply south. It is expected that sulphides cause the conductivity.

Conductor "E"

This one-line conductor, at the north end of Line 12 west, coincides with a very high magnetic anomaly.

The dip angle profiles indicate that the top of the conductor is 50 to 75 feet below surface and that the conductivity is moderately strong. Sulphides with pyrrhotite are the probable cause of the conductor.

Conductor "F"

This conductor in the northwest sector of the property is at least 600 feet long and strikes near east-west. It is coincident with a linear magnetic anomaly. A trench with massive pyrrhotite-pyrite exposes the conductor near its east end.

As well as indicating very strong conductivity, the dip angle profiles indicate that the conductor dips south and is caused by a wide zone of conductive material, 100 feet or more. The west portion of the conductor is not exposed.

Conductor "G"

Located near the east boundary of the property, this weak conductor coincides with a magnetic anomaly 600 feet long.

The conductor appears to dip south and strikes west-northwest. Pyrrhotite is likely associated with the conductor which is covered with at least 50 feet of overburden.

Conductor "H"

Displaying weak conductivity, this conductor is over 1200 feet long and partially coincident with a magnetic anomaly.

The dip angle profiles suggest a variable dip part to the south and part to the north. Moreover, the exact location of the conductor axis is uncertain because of the small dip angles. Rock exposures are present in the area of the conductive zone.

Conductor "I"

Situated on Line 4 West, near the south boundary, this one-line conductor is in an area of low magnetic relief.

A possible steep dip to the south and 50 to 75 feet of overburden is indicated by the dip angle profiles. Moderate to strong conductivity is indicated by the ratio of high to low frequencies.

CONCLUSIONS

A number of moderate to strong conductive zones, striking generally northwest, have been outlined by the Crone electromagnetic survey. The characteristics of the dip angle profiles indicate that most of the conductors are caused by disseminated to massive sulphides. Where magnetic anomalies coincide with the conductor axes the magnetic sulphide, pyrrhotite, is expected to be present.

A programme of geological mapping, diamond drilling and some additional detailed electromagnetic survey work is required to evaluate the conductive zones.

RECOMMENDATIONS

A tentative schedule for diamond drilling is recommended as follows:

Hole No.	Location	Direction	Dip	Depth	Conductor
69-1	L 12 W 15+50 N	N 25° E	45°	300'	A
69-2	L 4 W 16+50 N	N 25° E	45°	300'	A
69-3	L 16 E 2+00 S	N 25° E	45°	300'	B
69-4	L 20 E 5+50 N	N 25° E	45°	350'	C
69-5	L 8 E 17+00 N	N 25° E	45°	300'	D
69-6	L 12 W 35+50 N	N 25° E	45°	350'	E
69-7	L 24 W 18+00 N	N 25° E	45°	300'	F
69-8	L 16 E 9+50 N	N 25° E	45°	300'	G
		Total Footage		2500'	

The above schedule is laid out with regard to priority of drill target and, therefore, would not correspond with the field schedule which should be set up to assure the shortest and most economical moves between drill holes.

Concerning hole 69-6, to investigate Conductor "E", the Officers of the Company should pay particular attention to the location of the target on the property's boundary. It may not be wise to proceed with the drill investigation of this target at this time.

The cost of 2500 feet of drilling, including assaying and supervision, is estimated at $25,000.

It is also recommended that the property be geologically mapped, with particular attention to the area of Conductor "H" which is probably exposed. Also, some additional detailed electromagnetic survey work should be completed on Conductor I to more accurately delineate its extent.

The cost of the geological and geophysical surveying is estimated at $2000. This work should be completed while the first two holes are being drilled.

Respectfully submitted,

SHIELD GEOPHYSICS LIMITED,

J. E. Steers,

Consulting Geologist.

Timmins, Ontario,

June 19, 1969.

APPENDIX

SURVEY METHOD AND INSTRUMENT DATA

Electromagnetic Survey

The Crone unit used in this survey is comprised of two similar coil units which both transmit and receive on a frequency of 1800 and 480 cps. The coils were maintained at a distance of 200 feet along the survey lines using the in-line method.

In this type of survey the resultant reading is a measurement in degrees and an anomaly is usually a resultant reading greater than plus or minus three degrees. Initially, the survey is conducted using the high frequency unit which is more sensitive. Any anomalous conditions are checked by the low frequency equipment, thereby often eliminating those anomalies which may be caused by conductive overburden. The ability to transmit and receive on both coils eliminates that error resulting from improper coil orientation over irregular terrain.

SHIELD GEOPHYSICS LIMITED

INTRODUCTION

The Draper property consists of 16 contiguous claims (P 99947 to P 99962 inclusive) located in the west-central part of Eldorado Township, astride the Redstone River. The claims are held by R. J. Draper, 199 Leighton Street, South Porcupine, Ontario. The property is approximately 15 miles south of South Porcupine and is accessible via a bush road running from the Buffalo Ankerite property in Deloro Township to the southwest corner of the Draper property.

The claims were staked in September, 1968, on the basis that the geological environment in the area is favourable for the occurrence of copper and nickel mineralization.

Ground magnetic and electromagnetic surveys were carried out on the property on newly cut lines during the period October 1 to December 10, 1968, by Shield Geophysics Limited, 26 Pine Street South, Timmins, Ontario.

PREVIOUS WORK

The only previous work that has been carried out on the property, to the writer's knowledge, was a limited amount of surface work by Falconbridge.

Immediately to the east of the property, Falconbridge and Mining Corporation carried out geological, magnetometer and electromagnetic surveys in the early 1960's. Falconbridge drilled 16 holes along a generally east striking sulphide zone. Subsequently,

Mining Corporation drilled four additional holes which intersected sulphides containing up to 0.35% nickel. Samples from trenching by Mining Corporation averaged 0.13 oz. silver and 0.32% nickel across 30 feet.

Recently, Inco has staked a large number of claims in the Eldorado-Langmuir-Carman-Shaw Township area including claims tieing on to the east, north, and west boundaries of the Draper property.

GEOLOGY OF THE DRAPER PROPERTY

The Draper property is underlain by highly deformed rhyolitic and andesitic volcanic rocks and related intravolcanic sediments and iron formation. These rocks have been intruded by peridotite, granite, and two ages of diabase. The rocks have been folded about easterly striking fold axes and there is evidence of a major north trending fault zone through the property. On the basis of the regional geology, this could well be the southeasterly extension of the Burrows-Benedict fault zone.

A number of sulphide zones were noted on the property by the stakers and geophysical operators involved in the programme. The occurrence of the sulphides and peridotite in the area gives the property considerable potential as a copper-nickel prospect.

GEOPHYSICAL SURVEYS

Immediately following the staking of the property, reconnaissance EM surveys indicated the presence of a number of

excellent conductors coincident with sulphide showings.

Grid lines striking N25°E were cut at 400 foot intervals and detailed ground magnetic and electromagnetic surveys were carried out. A total of 14.2 miles of line were cut.

Magnetometer readings were taken at 50 foot intervals using a Sharpe M.F.-1 fluxgate magnetometer. A total of 1500 stations were established.

Electromagnetic readings were taken at 100 foot intervals (50 foot intervals in areas of potential crossovers) using a Ronka EM 16 electromagnetic receiver. Readings were made with the instrument facing north using the Cutler, Maine, VLF-transmitting station. A total of 1030 stations were established.

The results of the magnetometer and electromagnetic surveys are presented on the maps enclosed with this report.

RESULTS OF THE MAGNETOMETER SURVEY

The magnetometer survey outlined a number of west to northwesterly striking magnetic anomalies that are generally narrow relative to their strike length.

The anomaly in the 2000'N area on lines 16W, 20W and 24W shows a direct correlation with a pyrite and pyrrhotite rich sulphide zone.

The other anomalies are considered to be either sulphide zones or ultrabasic intrusives.

The anomaly pattern would indicate a generally east

striking structural trend in the volcanics with a possible fault zone striking north-northwest through the east part of the property.

There may also be a parallel fault through the west part of the property. This would account for the abrupt change in the magnetic pattern and the general drop in the magnetic readings.

RESULTS OF THE ELECTROMAGNETIC SURVEY

The electromagnetic survey defined a number of west to northwesterly striking conductors.

A number of the conductors have coincident magnetic anomalies associated with them. (A separate symbol has been used on the map for conductors with associated magnetic anomalies and those without magnetic anomalies.) These are believed to be due to pyrrhotite in sulphide zones. (e.g. Conductors A & B)

Other conductors have magnetic anomalies associated with only part of their strike length (e.g. Conductors C, D, E, & F). These conductors may be of economic significance in that they are at least in part due to pyrrhotite with the remainder of the zone probably being conductive sulphides other than pyrrhotite.

Of the remaining conductors, a number occur on the flanks of magnetic anomalies. These may represent conductive zones along the contact of ultrabasic intrusives or may be non-magnetic sulphides associated with iron formation (e.g. Conductors G, H).

Conductor J occurs near the flank of a low amplitude

magnetic anomaly but also shows a degree of topographical correlation.

CONCLUSIONS

A number of the conductors and magnetically anomalous zones on the Draper property warrant further investigation.

Naldrett (1966), in discussing the origin of nickel deposits in the immediate area, stresses the significance of a spatial relationship between sulphide zones and peridotite as a control in the localization of nickel mineralization.

In the light of the known and potential sulphide zones and the potential ultrabasic intrusives on the property, it is felt that the following detailed programme is required.

(a) A vertical loop electromagnetic survey should be undertaken during the winter in order to assist in classifying the conductors detected during the initial survey.

(b) A geological survey should be carried out after breakup.

(c) Conductors A and B are considered to represent sulphides on the basis of the present survey as is Conductor F which correlates with a known sulphide zone. The following drill programme could be conducted prior to the geological and electromagnetic surveys proposed.

Proposed Hole	Location	Bearing	Dip	Length	Conductor
1	L12W 1550'N	N25°E *	45°	330'	A
2	L20W 1800'N	N(true)	45°	280'	F
3	L12E 350'S	N25°E *	45°	270'	B
4	L16E	N25°E *	45°	265'	B

* N25°E is grid north

The estimated cost of this programme is as follows:

(i)	15 miles, vertical loop	$ 1875.00
(ii)	Geological survey	1500.00
(iii)	1200 feet (minimum) of diamond drilling on Conductors A, B, & F	9600.00
	TOTAL	$12975.00

More drilling funds would be required following the evaluation of the vertical loop electromagnetic survey.

Respectfully submitted,

SHIELD GEOPHYSICS LIMITED,

Peter T. George,
Consulting Geologist.

A P P E N D I X

Survey Method and Instrument Data

A Ronka EM 16, number 35, was used for the survey.

This instrument is simply a sensitive receiver covering the frequency of the new VLF-transmitting stations with means of measuring the vertical field components. The VLF-transmitting stations operate for communications with submarines at frequencies between 17.8 and 24.0 Khz. The vertical antenna current of these transmitting stations creates a concentric horizontal magnetic field around them. When these magnetic fields meet conductive bodies in the ground, there will be secondary fields radiating from these bodies. This equipment measures the vertical components of these secondary fields.

The receiver has two inputs, with two receiving coils built into the instrument. One coil has a normally vertical axis and the other is horizontal.

The signal from the coil with vertical axis is first minimized by tilting the instrument. The tilt angle is calibrated in percentages. The remaining signal in this coil is finally balanced out by a measured percentage of signal from the other coil.

After a suitable station is selected, at right angles to the direction of the survey lines, readings are made of the in-phase

and quadrature components where the signal has been minimized to its greatest degree. The VLF-transmitting station at Cutler, Maine has been used for this survey.

The lower end of the handle will, as a rule, point towards the conductor and the instrument is so calibrated that when approaching a conductor, the angles are positive to the in-phase component.

As with any electromagnetic unit, the largest and best conductors give the highest ratio of in-phase and quadrature components.

A Sharpe M.F.-1 fluxgate magnetometer was used in the magnetic survey. This instrument measures the vertical component of the earth's magnetic field in gammas. Base stations for determining the magnetic diurnal variations were established along the main base line at 400 foot intervals. Magnetic readings were taken at 50 foot intervals, along the cross lines.

Shaw Twp - M 311

Adams Twp - M 261

Langmuir Twp - M 292

Douglas Twp - M 274

NO OPEN GROUND

NO OPEN GROUND

NO OPEN GROUND

Kennedy Creek

Redstone River

P. Crayon

THE TOWNSHIP OF CLAIM MAP ELDORADO

DISTRICT OF TIMISKAMING

PORCUPINE MINING DIVISION

SCALE 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	P
CROWN LAND SALE	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	
CANCELLED	

NOTES

400' Surface Rights Reservation around all lakes and rivers

PLAN NO M.276

DEPARTMENT OF MINES

— ONTARIO —

ADAMS TOWNSHIP

ELDORADO TOWNSHIP

KEY MAP
2 inches = 1 mile

SYMBOLS

- Measurement station along picket line
- Electromagnetic readings in degrees
- High frequency
- Low frequency
- Profile scale 1" = 20°
- 1800 cps
- 480 cps
- Claim post
- Conductor axis ; Coincident with magnetic anomaly

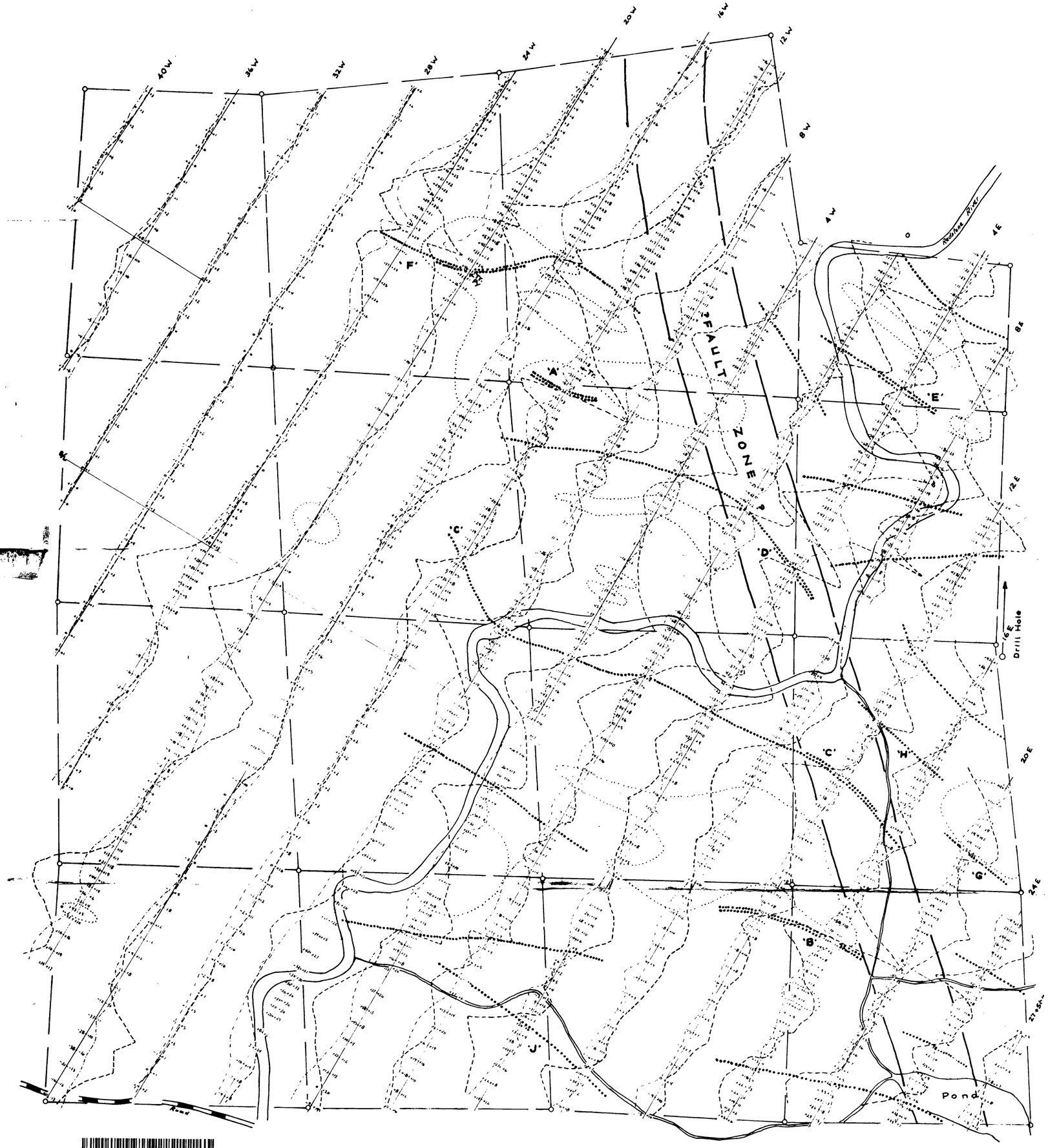
INSTRUMENT Crone EM unit, 1800 & 480 cps
In-line, 200 foot coil separation

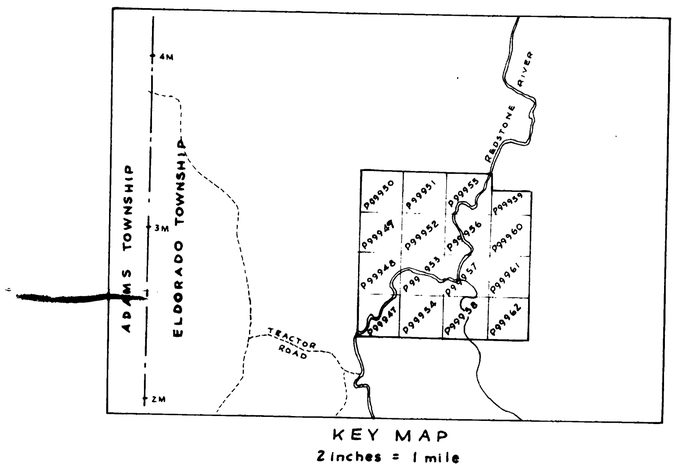
ELECTROMAGNETIC SURVEY
ON THE
R.J. DRAPER PROPERTY
ELDORADO TWP PORCUPINE MINING DIVISION, ONT

BY
SHIELD GEOPHYSICS LIMITED

SCALE
0 300 600 900 1200 1500
FEET

JUNE 1969





KEY MAP
2 inches = 1 mile

N

LEGEND

- Measurement station along picket line
- In phase readings (%) plotted to left
- Quadrature readings (%) plotted to right
- Profile scale : 1" = 50%
- Conductor axis
- Conductor axis coincident with magnetic anomaly
- Claim post
- Area of rock exposure

INSTRUMENT: Ronka EM 16 · No 36 Transmitting station - Cutler, Maine

ELECTROMAGNETIC SURVEY

ON THE

R.J. DRAPER PROPERTY

ELDORADO TWP., PORCUPINE MINING DIVISION, ONTARIO

BY

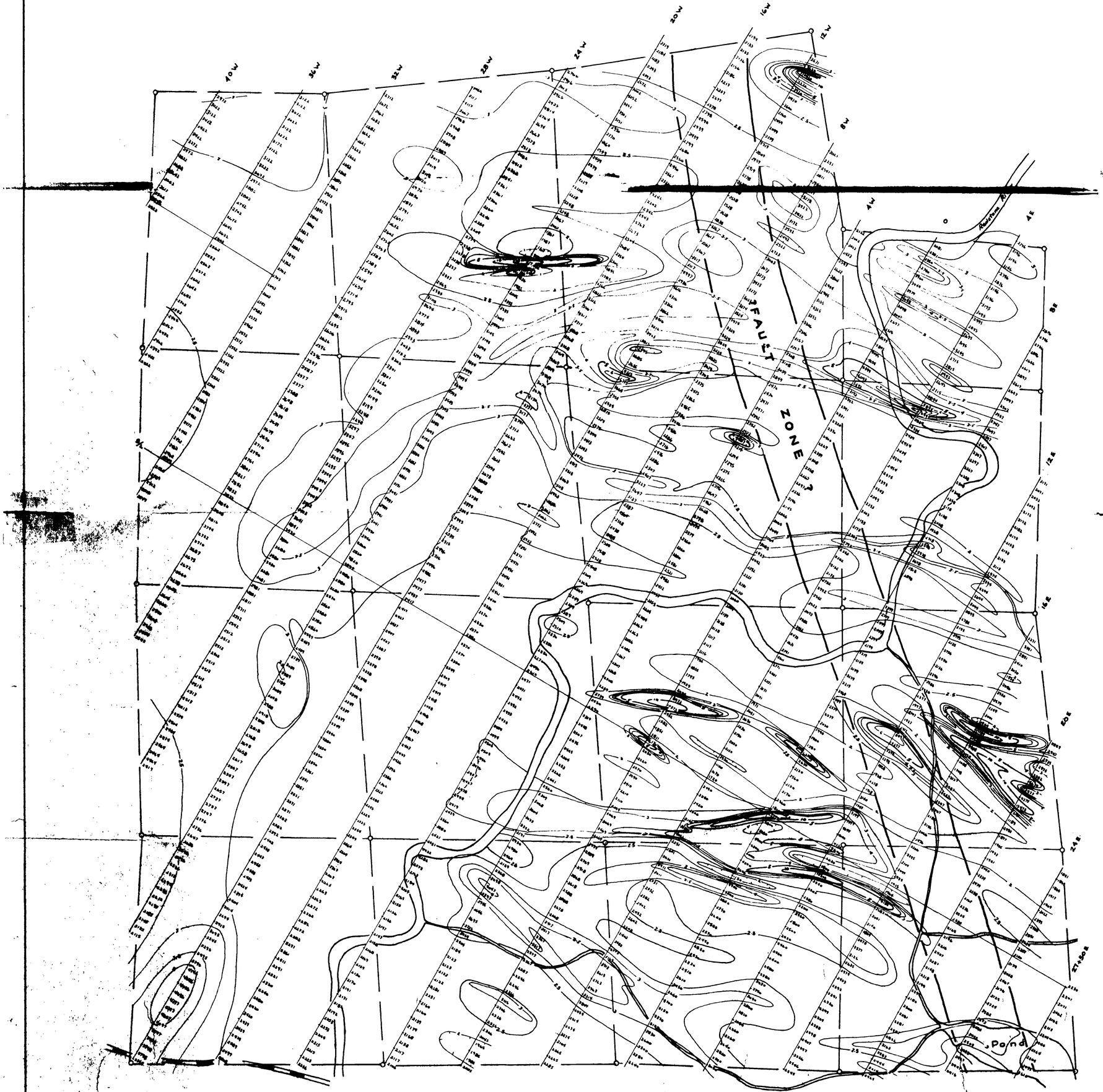
SHIELD GEOPHYSICS LIMITED

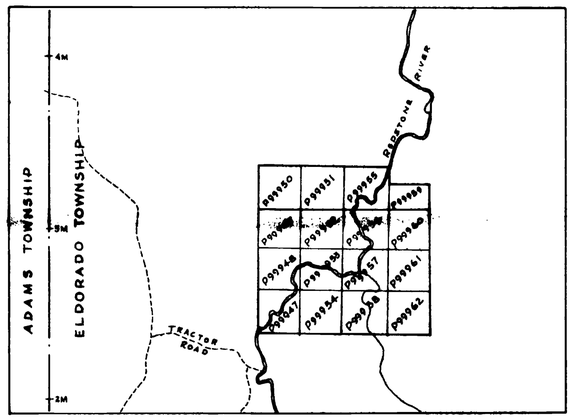
SCALE

0 300 600 900 1200

FEET

DECEMBER 1968





KEY MAP
2 inches = 1 mile

N

LEGEND

- Measurement station along picket line
- 2294 Relative value of the vertical component of the earth's magnetic field in gammas
- Magnetic contour
- Magnetic depression
- Claim post

INSTRUMENT: Sharpe MF-1 fluxgate magnetometer

MAGNETOMETER SURVEY
ON THE
R.J. DRAPER PROPERTY
ELDORADO TWP., PORCUPINE MINING DIVISION, ONTARIO
BY
SHIELD GEOPHYSICS LIMITED

SCALE
0 300 600 900 1200
FEET

DECEMBER 1968

63.2543