2.1053

010

GEOPHYSICAL AND GEOLOGICAL SURVEYS

NAUTILUS EXPLORATIONS LIMITED

POWELL TOWNSHIP

MATACHEWAN AREA

ONTARIO

September 29, 1972

J. D. McCANNELL

The Directors,
Nautilus Explorations Limited,
350 Bay Street,
Suite 203,
Toronto, Ontario.

The following report describes the results of a geophysical survey conducted over your Company's group of fifteen mining claims located in Powell Township, Matachewan area, Timiskaming District, Ontario. This work was carried out during the last two weeks of August and the first week of September 1972.

The program consisted of an electromagnetic survey over the entire claims group using a V.L.F. instrument. A portion of the property was also covered by a magnetometer survey. The readings in both cases were taken at 100-foot intervals along north-south picket lines spaced approximately 400-feet apart.

No conducting zones that could be considered anomalous were indicated by the electromagnetic survey. There was however, some indication of a weak conductor striking through the central parts of claims 329545 and 329554. The magnetometer survey showed high readings in this immediate area. This zone lies directly on strike with a carbonate shear carrying small amounts of pyrite and chalcopyrite and located about 2,500 feet to the west in claim 329549. No exposures of bedrock were observed in the area of this zone of weak conductivity and high magnetic readings.

The entire claims group was recently geologized in detail, and several old trenches were located which were apparently excavated during the early 1930's when considerable explorations work was directed to the search for gold in the Matachewan area. It is recommended that Nautilus Explorations Limited proceed with a program of diamond drilling on this claims group, based on the

combined results of the geophysical and geological work. The three main areas of interest at this time, are the east-west shear zone along the north boundary of the claims group, the strong carbonate shear zone in the north-east corner of claim 329549 and the zone of weak conductivity and high magnetic readings in claim 329554. A minimum of one thousand feet of diamond drilling is recommended as the initial phase of this work, the cost of which should not exceed ten thousand dollars.

PROPERTY LOCATION AND ACCESS

The property described in this report comprises a group of fifteen contiguous mining claims located in Powell Township, District of Timiskaming, Ontario. The immediate area of Powell Township is generally referred to as the Matachewan area.

The town of Matachewan, located at the southeast corner of Powell and southwest corner of Cairo Townships, is thirty miles west of Kirkland Lake. Matachewan can be reached via highway 66 from Kirkland Lake or Highway 65 from New Liskeard. The claims group is located six miles northwest of the town of Matachewan and is readily accessible via Highway 566 which follows along the north boundary of the property.

The claims included in the group are further described as follows: 329543 to 329545 and 329547 to 329558 inclusive.

TOPOGRAPHY

The topography of the claims group is characterized by fairly flat drift covered terrain with scattered low hills. Outcrop is fairly sparse except in the extreme south part of the property. The area is mostly covered with small secondary growth timber and

much dense underbrush. There are two small ponds on the claims group and several small creeks. A fairly large creek flows in an easterly direction through the north part of the claims group.

GENERAL GEOLOGY

The general geology of Powell Township is shown in considerable detail on the Powell and Cairo Townships sheet, map no. 2110, published by the Ontario Department of Mines in 1967 on the scale of 1 inch to 1/2 mile. This sheet accompanies Geological Report 51, Geology of the Matachewan Area.

The rocks underlying Powell Township are all of Precambrian age and include a wide range of volcanic, sedimentary and intrusive formations. The oldest rocks are classified as Keewatin Volcanics and include both acid and basic type flows with associated pyroclastics.

The volcanic rocks are overlain by two different ages of sedimentary rocks and include Gowganda formations of the Cobalt group and Pre-Huronian Timiskaming sediments. These Volcanic and sedimentary rocks have been subjected to a wide range of intrusive activity.

The Timiskaming sediments overlie the Volcanic rocks and include conglomerate greywacke, argillite quartzite and arkose. The volcanic and early sedimentary formations have been intruded by dikes, sills and plugs of Haileyburian diorite and serpentinized basic rocks, Algoman granite and Matachewan diabase.

The Gowganda sediments are confined mostly to the south part of Powell Township and overly the Keewatin Volcanics and Timiskaming sediments. They include agrillite, quartzite, arkose and conglomerate. These younger sediments as well as the

older sediments and volcanic rocks are cut by narrow dikes of Nipissing diabase.

Several faults are shown on map 2110 to traverse the general Matachewan area with the major structures striking in a general north-south direction. Numerous gold and sulphide occurrences are also shown on this geological map. This mineralization appears to favour the Volcanic formations but some also occur in the sedimentary and intrusive rocks. The sulphide mineralization consists largely of pyrite and pyrrhotite with some chalcopyrite, galena, sphalerite and molybdenite. The area has produced a considerable quantity of gold, but no economic deposits of base metals have been reported to date.

The claims group discussed in this report is shown on map no. 2110 to be largely underlain by volcanic formations, with a contact between these rocks and algoman granite extending in an east-west direction through the extreme south part of the property. Some narrow dikes of Matachewan diabase have also been mapped on this ground. Two small sulphide occurrences consisting of pyrite and pyrrhotite with minor amounts of chalcopyrite have been observed on the claims group, one in the north part of claim 329547 and the other in the south part of claim 329552.

The claims group was mapped in considerable detail during the last half of September 1972. This work was carried out under the supervision of the writer. The 400-foot north-south line grid established for the geophysical survey work was used for control in the geological mapping program.

Rock exposures were found to be quite sparse within the area of the property. The main rock type encountered on the ground

was argillite. This rock was observed to be dark greenish gray coloured schistose and resembling andesite but quite soft with a clay appearance on the weathered surface and almost always showing bedding. Some of the finely bedded horizons are more highly metamorphosed and have reached the phyllite stage. In other places the argillite was observed to be buff coloured with considerable carbonate. Some scattered small exposures of a somewhat similar looking dark grayish green rock but showing weakly defined pillow structures probably represent narrow bands of andesite flow rock.

Near the north boundary of the property the formations show a strong east-west striking schistosity. Rock exposures are very sparse on this part of the claims group and there is considerable evidense of trenching along this east-west strike. These trenches were all in overburden and were excavated thirty or forty years ago. There is no indication as to what type of rock, if any, was encountered in these trenches or the reason for this exploration work. The only conclusion the writer could make, was that this immediate area was being checked for possible gold deposition because of the east-west shearing and the intersection of this structure with the north-west striking Powell Creek Fault.

Two small exposures of a highly carbonated shear zone were observed in the north-west corner of the claim 329549. This shearing strikes N 70° E and dips vertically to steep south. The rock is silicified and carried small amounts of pyrite, specularite, chalcopyrite and magnetite. A few specks of visible gold were noted in a small specimen but an assay of a grab sample

showed only a low gold content. The two exposures are about 100 feet apart along strike and occur in a draw about 100 feet wide which forms a topographic lineament conforming with the strike of the shearing.

GEOPHYSICAL SURVEY

An electrogmagnetic survey was conducted over the entire fifteen claims discussed in this report during the period August 12th to September 7th, 1972. A limited amount of magnetometer work was carried out in conjuction with the electromagnetic survey.

An east-west base line was established along the south boundary of the north row of claims in the group. North-south traverse lines were then turned off normal to this base line at 400-foot intervals to provide control for the geophysical work. A total of 19 miles of line was cut and chained and 17 miles of line surveyed by the electromagnetic method using a Ronka EM-16 instrument. Observations were made at 100-foot intervals along the north-south lines utilizing the V.L.F. station at Cutler, Maine. The magnetometer survey was conducted along 6 miles of north-south traverse lines with the readings also being taken at 100-foot intervals. Where more detail was required the traverse lines were spaced at 200-foot intervals.

The electromagnetic survey results did not suggest any definite conducting zones on the claims group. Some weak conductivity on claims 329545 and 329554 could have some significance as it is associated with high magnetic readings.

The magnetometer survey was confined to limited parts of the claims group but apart from the high readings obtained in

the two above mentioned claims, the readings were quite uniform and low. One reading in the anomalous area was 4,200 gammas, about ten times background.

CONCLUSIONS AND RECOMMENDATIONS

There are three areas of interest on the claims group that warrant further investigation by diamond drilling. Two of these areas are based on geological evidence and one on geophysical and geological. The first of these zones, is the east-west shearing in the vicinity of the northwest striking Powell Creek Fault. This zone is very close to the north boundary of the claims group and infact some of the old trenches are on the claim lines. It is recommended that Nautilus Explorations Limited stake a row of six claims along the north boundary of the present group to provide more protection before diamond drilling in this part of the property.

The second zone of interest is the carbonate shear in the north-west corner of claim 329549. The shearing, where exposed, in two outcrops is at least twenty feet wide and could be as much as one hundred feet wide. Small amounts of chalcopyrite and some free gold were observed at this location.

The third zone, is the magnetic anomaly and weak conductivity in claims 329545 and 329554. No outcrop was located in this immediate area, but the zone is located about 2,500 feet to the east and slightly north from the strong carbonate shear in claim 329549 and on strike with this shearing.

Diamond drilling is recommended to further investigate all three of these zones with the initial contract being for a

minimum of 1000 lineal feet of drilling. The overall cost of this initial drilling contract is estimated at ten thousand dollars.

Respectfully submitted

James D. McCannell, P. Eng.,
Consulting Geologist.

Toronto, Ontario
September 29, 1972.

File 2.1053

2.1053

ONTARIO
Ministry of Natural Resources

42A02SW0397 2.1053 POWELL

900

Telephone 416:965-6918

February 21, 1973

Mr. P. Logee
Mining Recorder
Box 984
4 government Road East
Kirkland Lake, Ontario

Dear Sir:

Re: Mining Claims L 329543 et al, Powell Township,
File 2.1053

The Geophysical (Electromagnetic) and Geological assessment work credits as shown on the attached statement have been approved as of the date above. Please inform the recorded holder and so indicate on your records.

Yours very truly,

Fred W. Matthews
Supervisor
Projects Unit

Oj/mw

cc: Mr. J. D. McCannell

cc: Nautilus Explorations Ltd.

cc: Resident Geologist
Kirkland Lake, Ontario

File 2.1053

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

RECEIVED
OCT 26 1972
PROJECTS SECTION

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey: Electromagnetic & Geological
Township or Area: Powell Township
Claim holder(s): Nautilus Explorations Limited
Suite 203 - 350 Bay Street, Toronto
Author of Report: James D. McCannell
Address: 350 Bay Street, Toronto, Ont.
Covering Dates of Survey: August 12 - Sept. 29, 1972 (linecutting to office)
Total Miles of Line cut: 19

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
--Electromagnetic	40
--Magnetometer	
--Radiometric	
--Other	
Geological	20
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____ (enter days per claim)

DATE: Oct 24 1972 SIGNATURE: _____ Author of Report or Agent

PROJECTS SECTION

Res. Geol. _____ Qualifications 63.2502

Previous Surveys 63.2989 Not for assessment credits LD

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

OFFICE USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix) (number)

L-329543
L-329544
L-329545
L-329547
L-329548 1/3 not covered (EM)
L-329549
L-329550
L-329551
L-329552
L-329553
L-329554
L-329555 1/3 (EM)
L-329556 1/3 (EM)
L-329557
L-329558

TOTAL CLAIMS 15

If space insufficient, attach list

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 885 Number of Readings 885

Station interval 100 feet

Line spacing 400 feet

Profile scale or Contour intervals 1 inch = 40%
(specify for each type of survey)

MAGNETIC

Instrument

Accuracy - Scale constant

Diurnal correction method

Base station location

ELECTROMAGNETIC

Instrument Ronka EM-16

Coil configuration

Coil separation

Accuracy + or - 1°

Method: ☒ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency 17.8 kHz Cutler, Maine
(specify V.L.F. station)

Parameters measured In Phase Out of Phase

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION -- RESISTIVITY

Instrument

Time domain Frequency domain

Frequency Range

Power

Electrode array

Electrode spacing

Type of electrode

ONTARIO

...S SECTION

MINISTRY OF NATURAL RESOURCES

FILE: 2.1053

TECHNICAL ASSESSMENT WORK CREDITS

Recorder Holder ..... Nautilus Explorations Limited .....

Township or Area ..... Powell Township .....

Type of Survey and number of Assessment Days Credits per claim	
GEOPHYSICAL	
Electromagnetic	40 days
Magnetometer	..... days
Radiometric	..... days
Induced Polarization	..... days
.....	.....
GEOLOGICAL	20 days
GEOCHEMICAL	..... days

Man days ☐ Airborne ☐

Special Provision ☒ Ground ☒

Mining Claims
L. 329543 to 45 inclusive
329547 to 58 "

NOTICE OF INTENT TO BE ISSUED

☐ Credits have been reduced because of partial coverage of claims.

☐ Credits have been reduced because of corrections to work dates and figures of applicant.

☐ NO CREDITS have been allowed for the following mining claims as they were not sufficiently covered by the survey:

_____

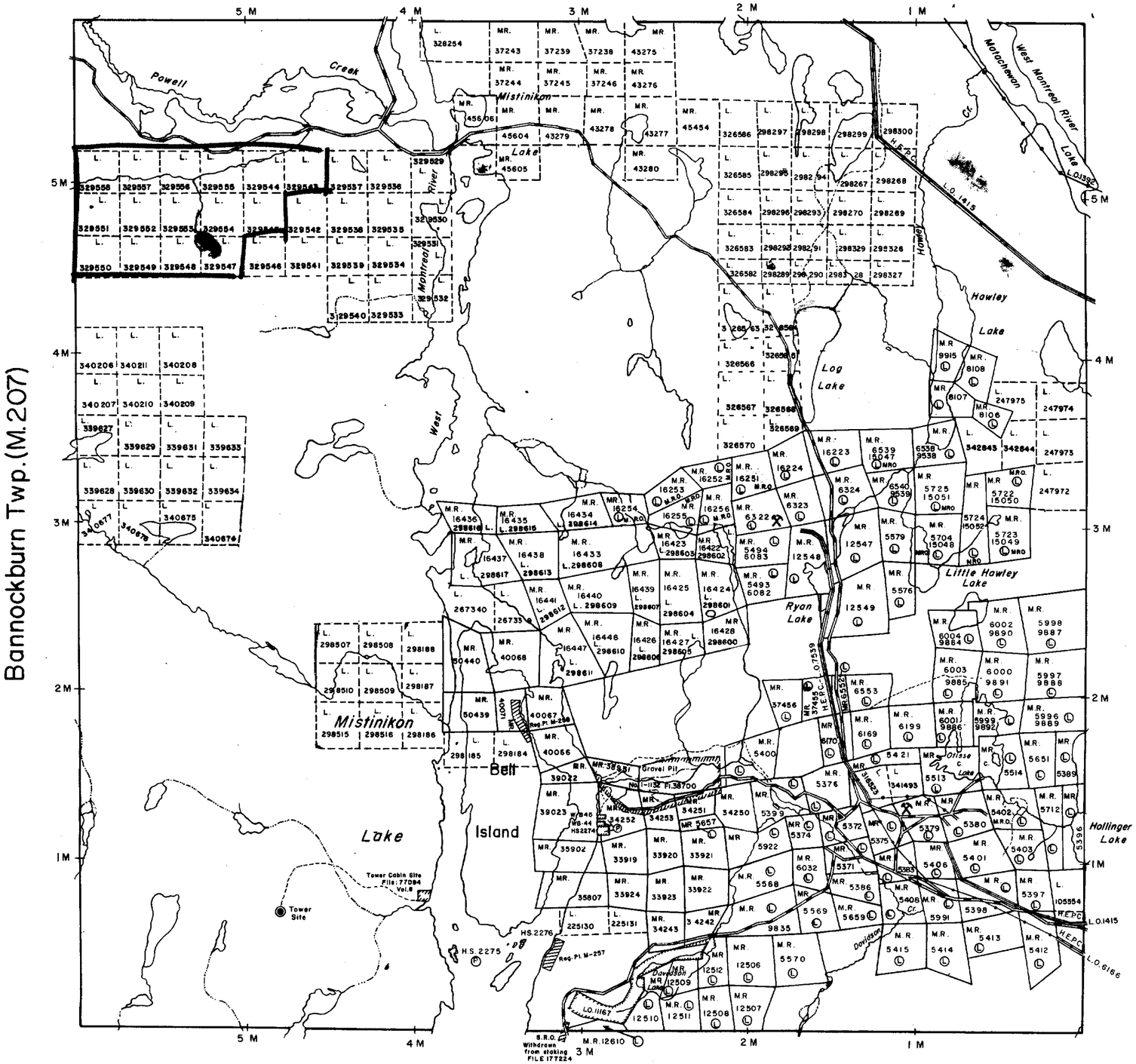
_____

_____

_____

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical – 80; Geological – 40; Geochemical – 40;

Baden Twp. (M.205)



Bannockburn Twp.(M.207)

Cairo Twp. (M. 210)

Yarrow Twp. (M.260)

THE TOWNSHIP OF

POWELL

DISTRICT OF TIMISKAMING

LARDER LAKE 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	C.

NOTES

400' Surface Rights Reservation along the shores of all lakes and rivers.

L.O. 7601 Covers Flooding Rights In This Twp To Below Contour 870'.00 To H.E.P.C. File: 12290 Vol. 2.

L.O. 11167 Shown thus: ---- File: 90970.

DATE OF ISSUE
OCT 30 1972
ONT. DEPT. OF MINES AND NORTHERN AFFAIRS

2.1053

PLAN NO. M.241

ONTARIO DEPARTMENT OF MINES AND NORTHERN AFFAIRS

BASE LINE NO.1

BASE LINE NO.2

BASE LINE NO.3

L-76-W L-72-W L-68-W L-64-W L-60-W L-56-W L-52-W L-48-W L-44-W L-40-W L-36-W L-32-W L-28-W L-24-W L-20-W L-16-W L-12-W L-8-W L-4-W L-0

329543 329544 329545 329547 329548 329549 329550 329551 329552 329553 329554 329555 329556 329557 329558

Jack Pine SAND

Birch Poplar

Jack Pine Birch

Jack Pine Spruce

Birch Poplar Sugar Maple Balsam Fir

STEEP SLOPE

HILL

WOODED SWAMP

APPROXIMATE CONTACT

VOLCANICS SYENITE

LEGEND

CENOZOIC

- Mud, peat, stream deposits
- Boulder clay, gravel, sand, clay

ARCHEAN — KEEWATIN | TIMISKAMING | ALGOMAN | MATACHEWAN | PRE-TIMISKAMING

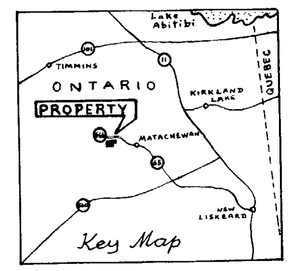
4 MAFIC INTRUSIVE ROCKS
- 4. Diabase

3 GRANITIC PLUTONIC ROCKS
- 3a. Granite
- 3b. Syenite
- 3c. Diorite

2 SEDIMENTARY ROCKS
- 2a. Argillaceous Graywacke

1. VOLCANIC ROCKS
- 1a. Massive andesite
- 1b. Schistose andesite
- 1c. Chlorite schist
- 1d. Carbonatized volcanic
- 1e. Trachyte

- OUTCROP
- SCHISTOCITY, INCLINED, VERTICAL
- CROSS-BEDDING SHOWING DIRECTION OF TOPS
- P.S. PILLOW STRUCTURE
- CLAIM POST, CLAIM LINE
- PICKET LINE
- CREEK
- INTERMITTENT STREAM, DRAINAGE PATTERN
- SWAMP OR MARSH, WET AREAS
- SLOPE
- BEAVER DAM
- PIT, SHOWING
- TRENCH
- Au GOLD
- S SULPHIDES



N W E S

GEOLOGICAL PLAN

NAUTILUS EXPLORATIONS LTD

POWELL TOWNSHIP
MATACHEWAN AREA
TEMISKAMING DISTRICT
ONTARIO

SCALE: 1" = 200'	DATE: SEPTEMBER, 1972
RES. GEOLOGIST: H. DOWHALUK	CONS. GEOLOGIST: J.D. McCANNELL

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Sources of Information

1. Lovell, H.L., MATACHEWAN AREA, Geol. Report 51, Ont. Dept. of Mines, 1967

NAUTILUS EXPLORATIONS LTD.

POWELL TOWNSHIP ~ ONTARIO

ELECTROMAGNETIC SURVEY

(E.M.-16 SURVEY)

MAGNETOMETER SURVEY

LEGEND
Scale of Profiles: 1 inch - 40 %
In Phase
Out of Phase
Magnetometer Readings
CONTOURS: 200 Gamma Contour Interval
Readings taken Facing North
BASELINE # 1
BASELINE # 2
BASELINE # 3
TIE LINE
L 0+00
L 4+00W
L 8+00W
L 12+00W
L 16+00W
L 20+00W
L 24+00W
L 28+00W
L 32+00W
L 36+00W
L 40+00W
L 44+00W
L 48+00W
L 52+00W
L 56+00W
L 60+00W
L 64+00W
L 68+00W
L 72+00W
L 76+00W
329543
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329545
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329548
329549
329550
329551
329552
329553
329554
329555
329556
329557
329558
Creek
Pond
DAM
Beaver Pond
Flooded Area
Lake
Trail
Highway
MATACHEWAN
Powell Creek Fault
BANNOCKBURN TOWNSHIP
POWELL TOWNSHIP
FEET
200 0 200 400 600 800
J. D. McCANNELL
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
Sept. '72