REPORT on

STRIPPING and SAMPLING PROGRAM

102 GROUP

POWELL TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

M. Leahy

December, 1991

TABLE OF CONTENTS

INTRODUCTION

Location:

The property herein described consists of 66 contiguous unpatented mining claims in north west Powell Twp. and north east Bannockburn Twp., Larder Lake Mining Division, Ontario. The claims are numbered as follows:

L-971909	L-1046969	L-1048624	L-1048635	L-1048700	L-1048711
L-971910	L-1046970	L-1048625	L-1048636	L-1048701	L-1048712
L-971911	L-1046971	L-1048626	L-1048637	L-1048702	L-1048713
L-979107	L-1046972	L-1048627	L-1048638	L-1048703	L-1048714
L-979108	L-1046973	L-1048628	L-1048639	L-1048704	L-1048715
L-979109	L-1046974	L-1048629	L-1048694	L-1048705	L-1048716
L-979110	L-1046975	L-1048630	L-1048695	L-1048706	L-1048717
L-979111	L-1048620	L-1048631	L-1048696	L-1048707	L-1048718
L-979112	L-1048621	L-1048632	L-1048697	L-1048708	L-1048719
L-1046949	L-1048622	L-1048633	L-1048698	L-1048709	L-1048720
L-1046950	L-1048623	L-1048634	L-1048699	L-1048710	L-1048721

Access:

Access is via Highway 565, an all-weather gravel road, which traverses the North part of the property. The town of Matachewan lies about 10 miles to the east along Highway 565. The Montreal River (Mistinikon Lake) lies immediately to the east and the Temagami land caution lies to the south and east.

History:

The property was first worked by Nautilus Exploration in 1972. Covering part of the Powell portion of the present property, the group was mapped, had Mag and VLF surveys performed and was subject to several shallow diamond drill holes with inconclusive results. In 1984, Johns Manville did a small program of Mag and VLF EM-16 surveys, geological mapping and sampling on The Galer area in Bannock-

History, cont'd.:

burn township. After lying dormant for several years, part of the Nautilus area was staked by M. Leahy and F. Kiernicki and optioned to Can-Mac Exloration, in 1987. A modest stripping program at that time resulted in the discovery of a gold showing just north of the syenite intrusion in altered chemseds and basalts with assays as high as 0.66 oz/Au/ton. The property was next optioned by Newmont Exploration of Canada, in 1988, who conducted a Mag survey over a now enlarged group of 102 claims, induced polarization over the original 17 claims worked by Can Mac, and seven diamond drill holes. Only anomalous gold values were encountered in drilling and the option was allowed to lapse in 1989. A modest stripping program was then conducted by F. Kiernicki and M. Leahy, in 1990. This program resulted in extending the known gold zone to the west and the discovery of a massive sulfide zone about 2,000 feet east of the gold showing. Only anomalous base metal values were obtained from this new sulfide showing but previously untested airborne EM conductors to the east along strike have aroused more interest as base metal targets. In 1991, as a result of the Robertson Twp. volcanogenic massive sulfide discovery, renewed interest in the area resulted in the optioning of 37 of the 102 claims covering the eastern 1/3 of the property. These 37 claims include the massive sulfide showing and the airborne EM conductors. The remaining 66 claims remain unoptioned and were the subject of yet another stripping program in 1991, by M. Leahy and F. Kiernicki.

GEOLOGY

The Powell property is situated in the Matachewan area within the southwest Abitibi greenstone belt. Matachewan is a former gold mining camp which had two medium sized producers; the Young- Davidson and Matachewan Consolidated mines produced a total of 9 million tons grading a little over 0.1 oz/Au/ton. The Ryan Lake Mine, just west of Matachewan, produced over 4,753,650 pounds of copper. 1,309 oz of gold and 34,589 oz of silver. The Matarrow base metal mine shipped 40,000T to the Matachewan Consolidated mill. Extender Minerals operates a small Barite mine on the shore of Mistinikon Lake. The property is predominantly underlain by a series of E-W striking mafic volcanic flows which dip steeply and face north. Narrow lenses of argillite and chemseds occur along the north edge of a magnetic felsic stock. The Main Showing is within chemseds and altered basalts within 300 feet of the north edge of the stock and just south of the 'carbonate' zone. Alteration in this area consists of carbonate, sericite, chlorite, silica and pyrite rich zones. Gold is found with pyrite in shear zones cutting altered basalts and sediments.

PURPOSE OF 1991 PROGRAM

The 1991 trenching program was intended to map the north contact of the stock and to search for extensions of the known gold zone to the east. Trenching was done because I.P. and magnetic surveys did not respond to the gold zone.

TRENCHING and SAMPLING PROGRAM

A John Deere 792 excavator with a toothless 1.5 yard bucket was used to expose bedrock at six sites along the favourable horizon. Trenches vary in depth from 0.5M - 3M averaging 1.5M.

1. Main Showing: Can Mac trenches A & B were connected from the main showing west for 50M. Twelve samples were taken from shears running E-W. This area was washed before mapping and sampling. (Plan B).

2. L250E: A new trench was dug exposing the stock, a band of mafic flows and the 'carbonate' zone. Two samples were taken. (Plan A).

3. L50E: A new trench was dug exposing the stock, mafic flows and the 'carbonate' zone. Seven samples were taken. (Plan A).

4. L0: A new trench was dug exposing mafic flows and the 'carbonate' zone. Three samples were taken. (Plan A).

5. 160W: A new trench was dug exposing the 'carbonate' zone. Two samples were taken. (Plan A).

6. 240W: A new trench was dug exposing the stock, mafic flows and the 'carbonate' zone. Nineteen samples were taken. (Plan C).

RESULTS OF PROGRAM

With the exception of the main showing area assay results were disappointing. The north end of the 240W trench looked so good (silicified, pyritized, fractured) that it was sampled, assayed and check assayed then resampled to ascertain the complete absence of gold. This zone closely resembles the main showing area where, in places, gold is found in highly silicified and pyritized rocks. Some low but anomalous values were found elsewhere but no follow-up was done since only the main showing was washed and the remaining trenches were partly covered with loose dirt.

CONCLUSIONS

The 1991 program succeeded in mapping the area north of the stock for a strike length of 1 km, demonstrating the persistence of strong alteration zones and anomalous gold values along this horizon. Washing the main showing area revealed a strengthening and widening of the gold bearing shear zones where they join together at 650 E + 675 S. No work has been done east of the main showing because of an overburden filled bedrock depression prevented continuous stripping in that direction. Can-Mac trench C was not dug far enough south to cut the strike extension of the main showing.

RECOMMENDATIONS

1. Wash and do further sampling of 1991 trenches.
2. Extend main showing trench eastward across bedrock depression.
3. Dig new trenches east of main showing at 100M intervals for 500M.
4. Extend Can-Mac trench C south to stock across favourable horizon.

Michael Leahy
Dec 91

Appendix I

REFERENCES

1. Nautilus Explorations Ltd., Kirkland Lake Resident Geologist's Assessment Files, Mag, VLF, Mapping, DD, 1972.

2. Johns Manville Canada Inc., Kirkland Lake Resident Geologist's Assessment Files, Mag, VLF, Map, 1981.

3. Can-Mac Exploration, Kirkland Lake Resident Geologist's Assessment Files, Stripping, 1988.

4. Newmont Exploration of Canada, Kirkland Lake Resident Geologist's Assessment Files, Mag, I.P., DD, 1989.

5. F. Kiernicki, Kirkland Lake Resident Geologist's Assessment Files, Stripping, 1990.

6. H. Lovell Property examination, Kirkland Lake Resident Geologist's Files. Mapping, 1990.

7. Geology of Matachewan Area. GR51 ODM, Map 2110. Lovell, 1967.

8. Airborne Mag and EM Survey, ODM Preliminary Map 1022, Powell Twp., 1975.

9. Structural Interpretation by W. Powell, Queen's University, 1989.

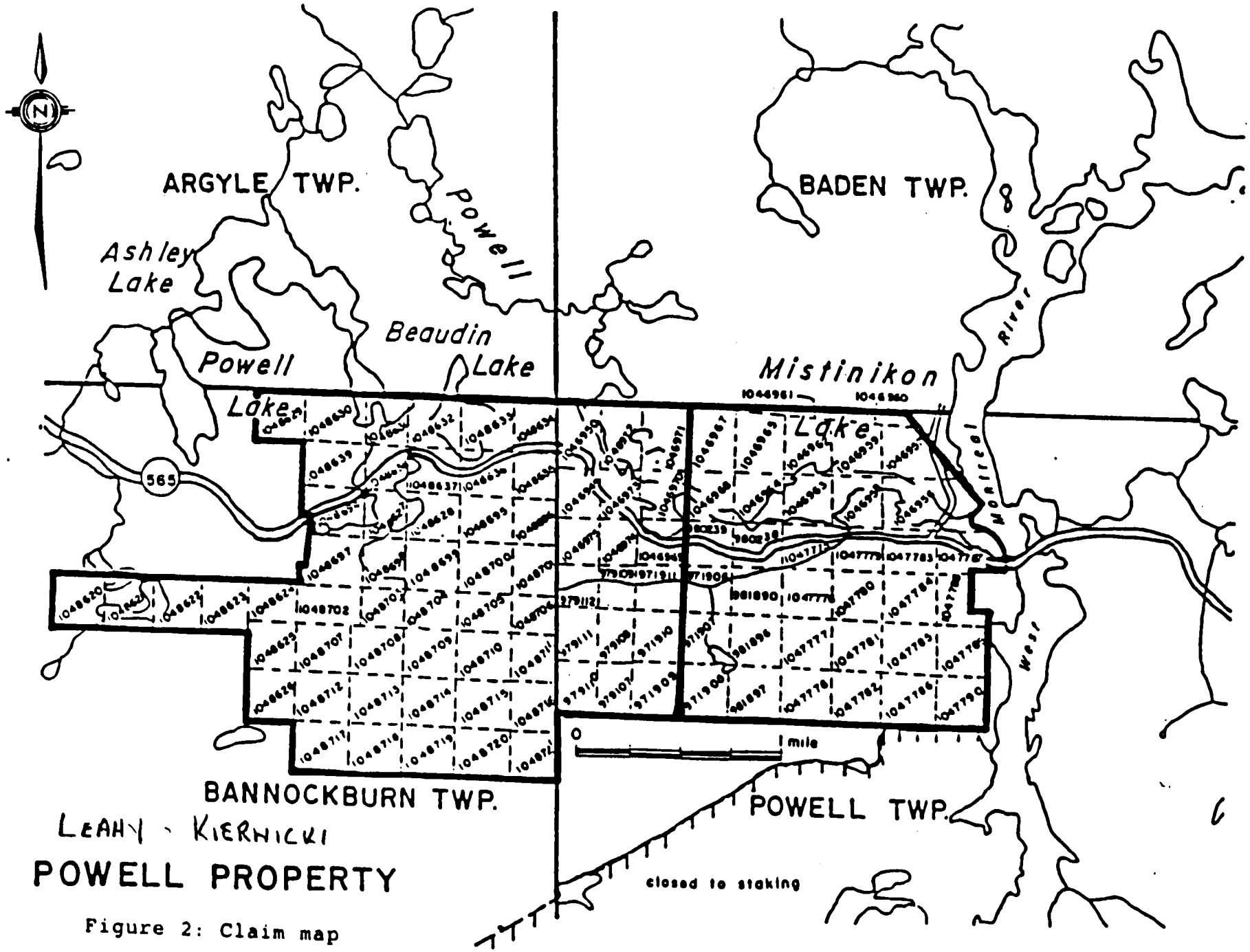


Figure 2: Claim map

A

TRENCH PLAN

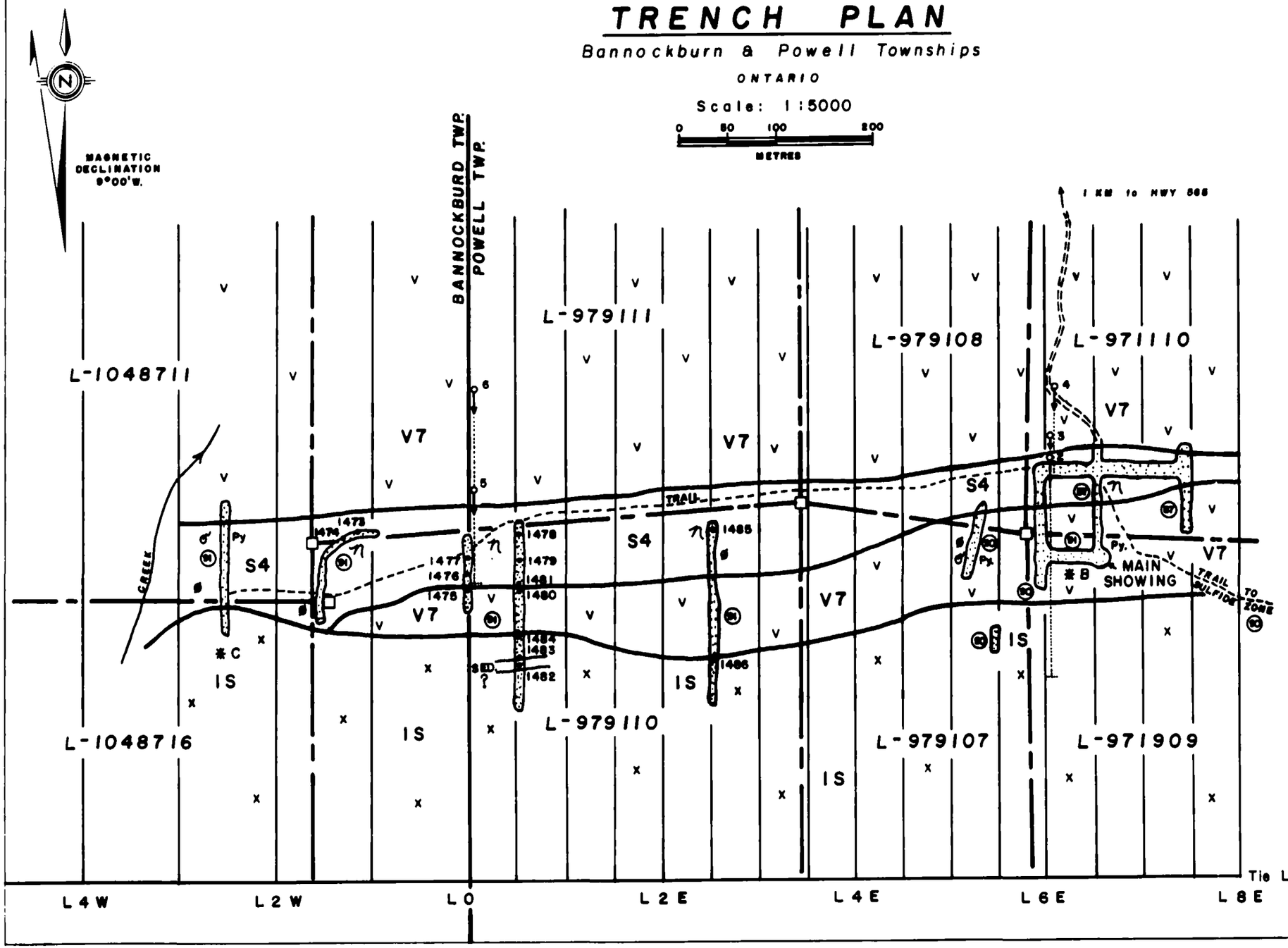
Bannockburn & Powell Townships

ONTARIO

Scale: 1:5000

0 50 100 200

METRES



LEGEND

V7 – Basalts & Sediments

S4 – Argillite & Chemseds.

IS – Syenite

Ø – Chloritized

σ – Silicified

ℸ – Carbonatized

Py. – Pyrite

1473 Sample Number and Location

NEWMONT D.D.H.'s

*B See Sample Plan B/C

(91) Year Work done

Geological Contact

Trail

Road

Claim Post

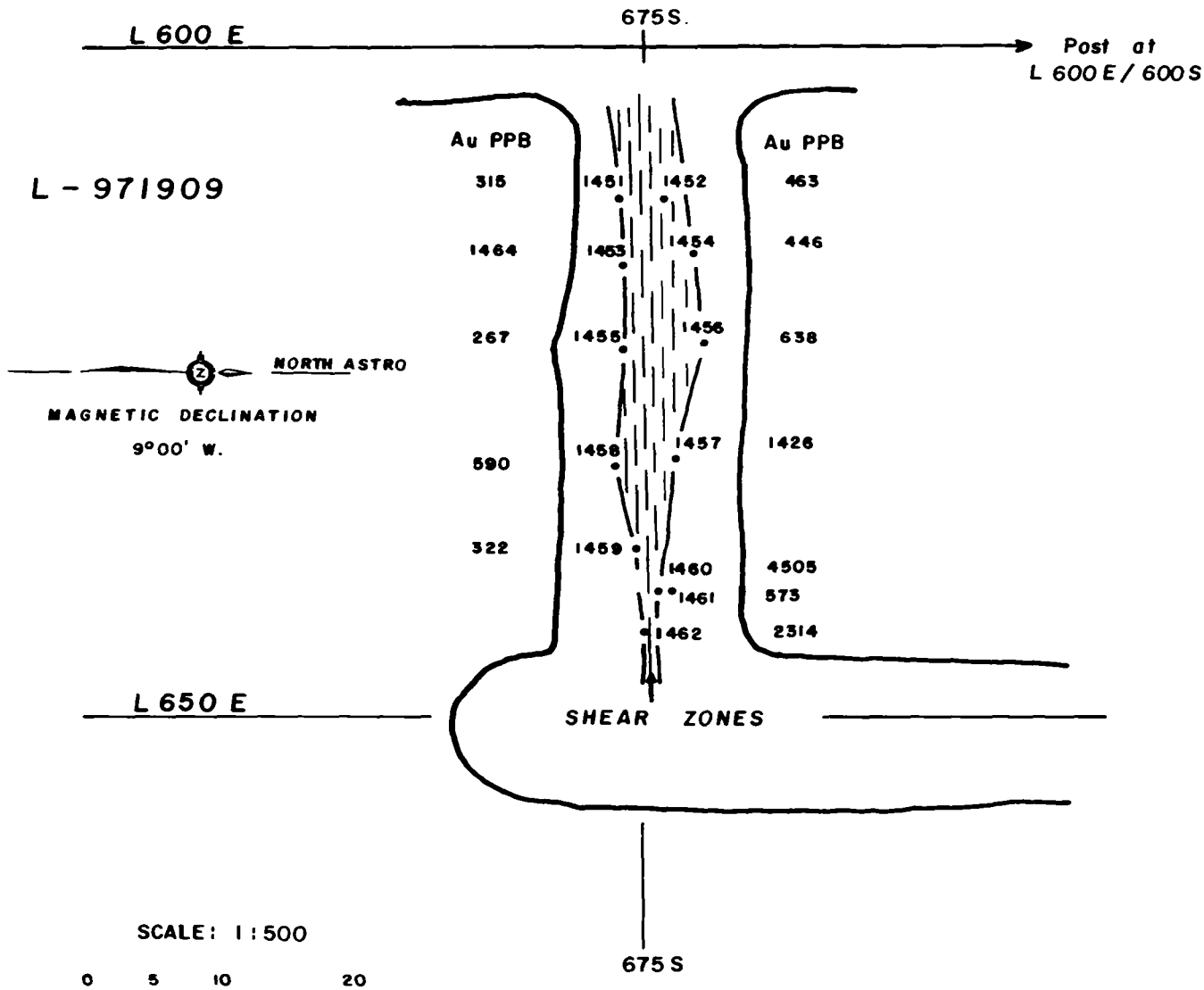
Michael Leahy 91

B

PLAN of 1991 STRIPPING

"MAIN SHOWING"

POWELL PROJECT



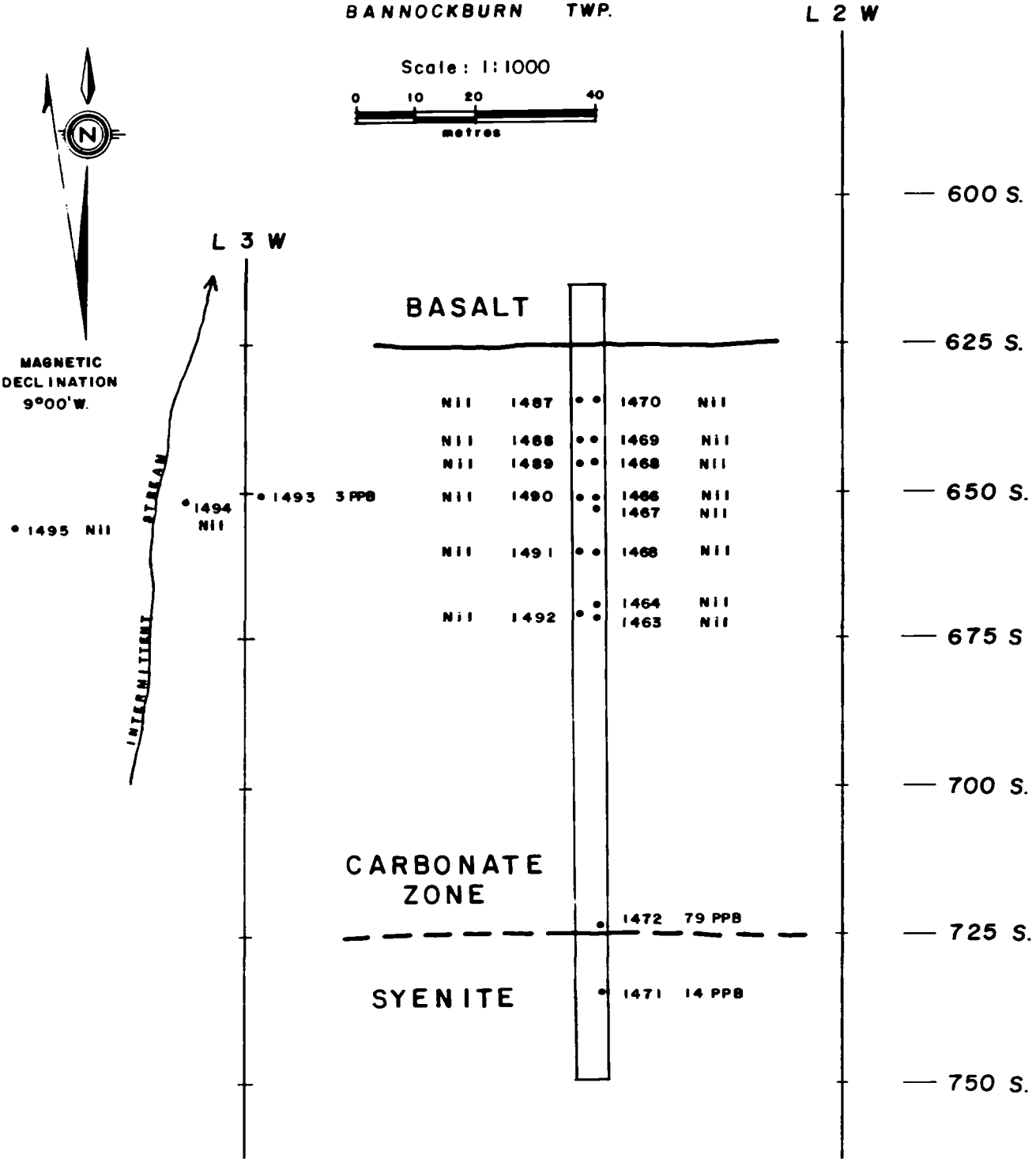
Michael Leahy 91

C

PLAN of 1991 STRIPPING & SAMPLING

240 W. TRENCH

BANNOCKBURN TWP.



SAMPLE LOCATION → 1492 79PPB (Au) ← ASSAY

SAMPLE No.

Michael Leahy 91

POWELL TOWNSHIP

SAMPLE DESCRIPTIONS, 1991

SAMPLE NO.	LOCATION	DESCRIPTION		Au PPB
1451	676S + 610E	1' shear, rusty, carbonatized chemsed.	<1% py	315
1452	675S + 610E	rusty, sheared, carbonatized chemsed.	1% py	463
1453	675S + 616E	sheared, carbonatized chemsed.	>1% py	1464
			check	1646
1454	675S + 614E	cherty, carbonatized, red & gray banded chemsed.	1 - 2% py	446
1455	675S + 622E	rusty shear gouge	1% py	267
1456	675S + 622E	gray, cherty, carbonatized chemsed.	1% py	638
1457	675S + 625E	cherty, carbonatized chemsed.	>1% py	1426
1458	675S + 628E	rusty, carbonatized chemsed.	1% py	590
1459	675S + 636E	gray, cherty, carbonatized chemsed.	2% py	322
1460	675S + 639E	dark, cherty, rusty, carbonatized chemsed.	2 - 5% py	4505
			check	4183
1461	675S + 639E	gray, carbonatized, cherty chemsed.	<1% py	573
1462	675S + 642E	rusty, sheared, carbonatized chemsed.	1% py	2314
			check	2403
1463	240W + 671S	red & gray, rusty, carbonatized, sheared chemsed.	1% py	NIL
1464	240W + 669S	red & gray, rusty, carbonatized, sheared chemsed.	1 - 2% py	NIL
1465	240W + 659S	rusty, gray, silicified chemsed.	2 - 5% py	NIL
1466	240W + 651S	dark gray, silicified, fractured chemsed.	1 - 2% py	NIL
1467	240W + 653S	gray, silicified, brecciated chemsed., QCV	2 - 5% py	NIL
1468	240W + 645S	dark gray, silicified, fractured chemsed.	1 - 2% py	NIL

POWELL TOWNSHIP
SAMPLE DESCRIPTIONS, 1991

SAMPLE NO.	LOCATION	DESCRIPTION		Au PPB
1469	240W + 641S	dark gray, banded, rusty, carbonatized, sheared chemsed.	1 - 2% py	NIL
1470	240W + 635S	black, cherty, fractured, carbonatized, chemsed.	<1% py	NIL
1471	240W + 736S	pink syenite		14
1472	240W + 723S	contact zone: syenite and carbonatized chemsed.		79
1473	650S + 112W	carbonatized, sericitized, brecciated chemsed.	<1% py	38
1474	650S + 125W	gray, carbonatized, sericitized chemsed.	spec. & py	51
1475	L0 + 700S	carbonatized shear on contact with massive basalt and syenite		NIL
1476	L0 + 685S	dark green, carbonatized, sericitized chemsed., coarse py blebs		41
1477	L0 + 677S	rusty, sheared, carbonatized chemsed. OV spec., py blebs		58
1478	L50E + 650S	black, silicified, carbonatized chemsed.	1% py	24
1479	L50E + 680S	rusty green & brown, banded, carbonatized, sheared chemsed.		7
1480	L50E + 696S	rusty, crumbly shear gouge & mud seam		NIL
1481	L50E + 700S	rusty rubble from carbonate/basalt contact shear		103
1482	L50E + 780S	gray, silicified sedimentary band within syenite body	<1% py	7
1483	L50E + 775S	gray, silicified sediment & syenite contact	1% py	125!
		check		1029
1484	L50E + 750S	contact shear between pink syenite & massive basalt		NIL
1485	~~210E~~ 250E + 660S	red & gray banded, carbonatized chemsed.	1% py	NIL
1486	250E + 770S	contact between syenite & massive basalt		NIL

POWELL TOWNSHIP
SAMPLE DESCRIPTIONS, 1991

SAMPLE NO.	LOCATION	DESCRIPTION		Au PPB
1487	240W + 635S	gray, silicified, carbonatized, fractured chemsed.	1% py	NIL
1488	240W + 641S	dark gray, banded, rusty, carbonatized, silicified chemsed.	2 - 5% py	NIL
1489	240W + 645S	"	<1% py	NIL
1490	240W + 653S	"	<1% py	NIL
1491	240W + 659S	"	<1% py	NIL
1492	240W + 670S	"	<1% py	NIL
1493	300W + 650S	black & red banded, carbonatized chemsed.	1% py	3
1494	310W + 650S	gray, silicified carbonatized chemsed., QV	1% py	NIL
1495	340W + 650S	black & red banded, silicified, carbonatized chemsed.	1% py	NIL

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

1W-4324-RG1

Company: M. LEAHY
Project:
Attn: M. LEAHY

Date: NOV-01-91
Copy 1. 139 CARTER AVE,KIRKLAND LAKE,ONT P2N2A1

We hereby certify the following Geochemical Analysis of 9 ROCK samples submitted OCT-31-91 by .

Sample Number	Au ppb
E-1487	Nil
E-1488	Nil
E-1489	Nil
E-1490	Nil
E-1491	Nil
E-1492	Nil
E-1493	3
E-1494	Nil
E-1495	Nil

Certified by Donna Jackson

P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705)642-3244 FAX (705)642-3300

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

1W-4283-RG1

Company: M. LEAHY

Date: OCT-29-91

Project:

Copy 1. 139 CARTER AVE,KIRKLAND LAKE,ONT P2N2A1

Attn: M. LEAHY

We hereby certify the following Geochemical Analysis of 28 ROCK samples submitted OCT-25-91 by M. LEAHY.

Sample Number	Au ppb	Au check ppb	Au 2nd ppb
E-1451	315		
E-1452	463		
E-1453	1464	1646	
E-1454	446		
E-1455	267		
E-1456	638		
E-1457	1426		
E-1458	590		
E-1459	322		
E-1460	4505	4183	4114
E-1461	573		
E-1462	2314	2403	
E-1471	14		
E-1472	79		
E-1473	38		
E-1474	51		
E-1475	Nil		
E-1476	41		
E-1477	58		
E-1478	24		
E-1479	7		
E-1480	Nil		
E-1481	103		
E-1482	7		
E-1483	1251	1029	
E-1484	Nil		
E-1485	Nil		
E-1486	Nil		

Certified by Donna Gardner

P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705)642-3244 FAX (705)642-3300

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

1W-4269-RG1

Company: MIKE LEAHY

Date: OCT-28-91

Project:

Copy 1. 139 CARTER, KIRKLAND LAKE

Attn:

We hereby certify the following Geochemical Analysis of 8 ROCK samples submitted OCT-25-91 by .

Sample Number	Au ppb
1463	Nil
1464	Nil
1465	Nil
1466	Nil
1467	Nil
1468	Nil
1469	Nil
1470	Nil

Certified by Donna Gardner

P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705) 642-3244 FAX (705) 642-3300

CERTIFICATE

THIS IS TO CERTIFY:

1. I am a graduate in Prospecting Techniques from the Northern College of Applied Arts and Technology, Haileybury campus, 1976 and have completed the Haileybury School of Mines, Geophysical Field School, 1990, and the Interpretation of Ground and Airborne Geophysical Data Course, 1991. I have been active as a prospector and exploration contractor since 1974.

2. I am a member in good standing of the P.D.A., past president of the N.P.A., and director of O.M.E.F., and C.I.M.M.

3. I reside and hold office at 139 Carter Ave., Kirkland Lake, Ontario, P2N 2A1.

4. I have an interest in the property.

5. My report is based upon having personally participated in each program herein described, a review of published information on the property, consultation with local geologists and upon my familiarity and experience as a prospector in the Kirkland Lake camp.

Michael Leahy
Dec 91

REPORT ON

DIAMOND DRILLING PROGRAM

on

GRANITE PROPERTY

PACAUD TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

by Michael Leahy
November, 1991

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Introduction

The property herein described consists of eleven contiguous unpatented mining claims in lots 5 and 6 and concessions IV and V, Pacaud Township, Larder Lake Mining Division, Ontario. The village of Boston Creek lies about one mile northeast of the property and about ten miles south of the town of Kirkland Lake. The claims are numbered as follows:

L-1048783	L-1048784
L-1048785	L-1048786
L-1048787	L-1048788
L-1048798	L-1048799
L-1048800	L-1048801
L-1167631	

Access

Highway 564 passes within about one mile of the north boundary of the property. The ONR passes through the northeast corner of claim # L-1048788. A diamond drill road, passable by ATV only, was bulldozed from highway 564 southeasterly to the south end of the property. Boston Creek traverses the northeast quarter of the property then follows the east boundary southward on its way to the Blanche River.

History

Little exploration work of any kind has ever been performed anywhere in the Round Lake Batholith. The nearest mining property of note, within the Batholith, is the Hurd - Laskowski showing about three miles southwest of the property were gold was discovered in 1975.

In 1980, part of Pacaud township was covered by an OGS sponsored airborne input Survey which revealed a strong electromagnetic response about one mile southwest of the village of Boston Creek. Claims were staked at that time to cover the anomalies but due to a severe plotting error on the OGS map, (P. 2273-1979), they were not identified by follow-up ground reconnaissance surveys. A gold occurrence

History, cont'd.

was discovered at that time by prospecting nearby and was blasted open by the author and associates, in 1980. Gold values were low, however, and the ground was allowed to lapse.

The present property was acquired by the author in 1988, and a combined airborne Mag and VLF survey was performed on the claims, by H. Ferderber Geophysics Ltd., in the fall of that year. This survey revealed several electromagnetic conductors, one of which coincided with the property plotted input conductor discovered in 1980, (Map P.2273-1980, revised). Another VLF conductor was also located near the gold showing blasted in 1980, which is near the centre of the four southwest claims of the present property.

In 1990 a program of Mag, VLF and HLEM surveys was conducted on the property and two diamond drill holes were put down to test geophysical anomalies. Results were negative with only a barren weak shear in hole L-1-90 and no real explanation for the anomaly targeted by L-2-90.

Geology

The property is entirely underlain by granitic rocks of the Round Lake Batholith. Rock types, according to Lafleur, (1986), are poikiloblastic, (microcline), granodiorite and tonalite, (quartz diorite).[1] Rocks are mostly fresh to weakly foliated with a few narrow mafic dikes (4" - 4') and some weak shearing.[2] A strong NNE trending fault (inferred) traverses the six easterly claims just west of Boston Creek. A EW and an ENE trending fault traverse the four southwest claims of the property. Gold is known to occur along an EW trending mud seam bound by quartz veins weakly mineralized with pyrite on the four southwest claims.

The Round Lake Batholith could contain Belmoral, Silidor or Renabie type gold deposits. Gold at Belmoral is associated with intersecting faults similar to the Laskowski showing. The environment for the Silidor model (sheared mafic dike) also exists in the Round Lake Batholith.

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1 1. Microcline distribution in the Batholith is zoned with the greatest concentrations (20% +) near the northeast corner of Pacaud Township

2 2. The rocks are also cut by numerous aplite dikelets and a few narrow barren quartz veins.

1991 Program

Since hole # L-2-90 failed to explain the co-incident VLF-INPUT-HLEM anomaly it was extended from 340' to 595' to eliminate the possibility of cutting beneath a conductive zone dipping east, away from the collar. The drilling intersected massive granodiorite with only minor alteration and no sulfide mineralization.

Conclusions and Recommendations

The electromagnetic conductivity detected by four separate EM surveys has a very strong overburden source caused by the high resistivity (granite) - low resistivity (clay) interface along the edge of the Boston Creek valley. Although the HLEM signature was not interpreted as a definite graphite or sulfide source it was drilled anyway in hopes of intersecting a subtly conductive Belmoral-Silidor type gold zone. Any further work on the property should be restricted to the known gold zone about one half mile to the west from which gold values as high as 0.09 oz Au/ton have been recorded. A modest program of mapping, mag and VLF-EM surveys over four claims and follow-up stripping would be justified since recent work (1991) about two miles west within the Round Lake Batholith have yielded more encouraging results.

Michael Leahy

Dec 91

References

1. "Geology of Boston Township and Part of Pacaud Townhship",
ODM Vol LXVI, Part 5, M57 and accompanying map 1957-A.

2. Airborne Mag & EM (Input) Survey, 1980, OGS map P-2273.
(revised, 1980).

3. "Airborne Mag & VLF-EM Survey", 1989. by H. Ferderber Geophysics.

4. "The Round Lake Batholith and its Satellitic Intrusions in the Kirkland
Lake Area", 1954, PhD Thesis, University of Toronto, by K.D. Lawton.

5. "The Archean Round Lake Batholith, Abitibi Greenstone Belt:
a Synthesis". 1986, MSc Thesis, University of Ottawa, by Jean Lafleur.,
including preliminary map.

Appendix IV

CERTIFICATE

THIS IS TO CERTIFY:

1. I am a graduate in Prospecting Techniques from the Northern College of Applied Arts and Technology, Haileybury campus, 1976 and have completed the Haileybury School of Mines, Geophysical Field School, 1990, and the Interpretation of Ground and Airborne Geophysical Data Course, 1991. I have been active as a prospector and exploration contractor since 1974.

2. I am a member in good standing of the P.D.A., past president of the N.P.A., and director of O.M.E.F., and C.I.M.M.

3. I reside and hold office at 139 Carter Ave., Kirkland Lake, Ontario, P2N 2A1.

4. I have an interest in the property.

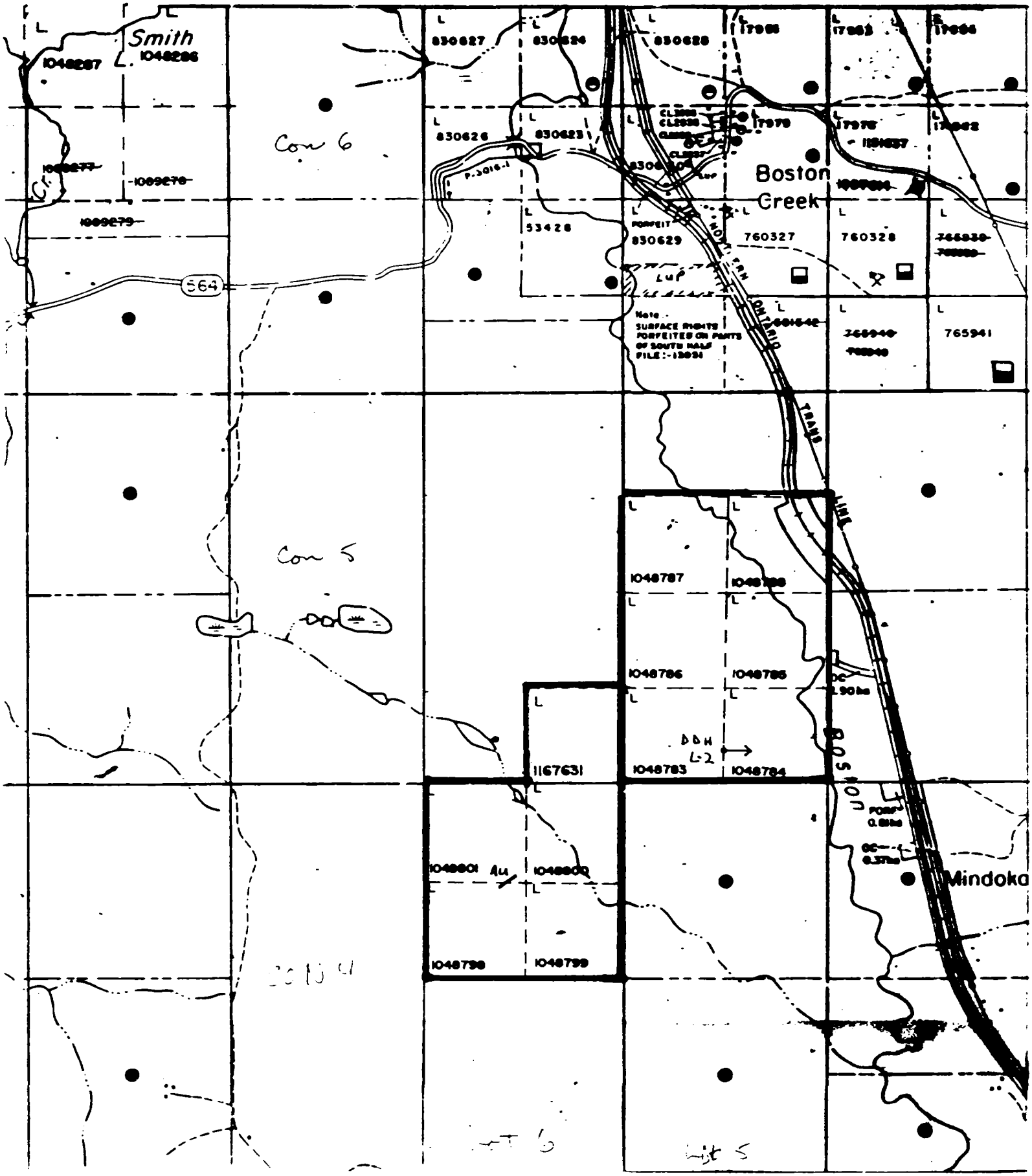
5. My report is based upon having personally participated in each program herein described, a review of published information on the property, consultation with local geologists and upon my familiarity and experience as a prospector in the Kirkland Lake camp.

Michael Lacky
Dec 91

PACAUD

[redacted] TOWNSHIP

1" = 1/4 Mile



D. D. H. SECTION

PACAUD PROPERTY 1990

HOLE No. L-90-02

(1991 Extension 340'-590')

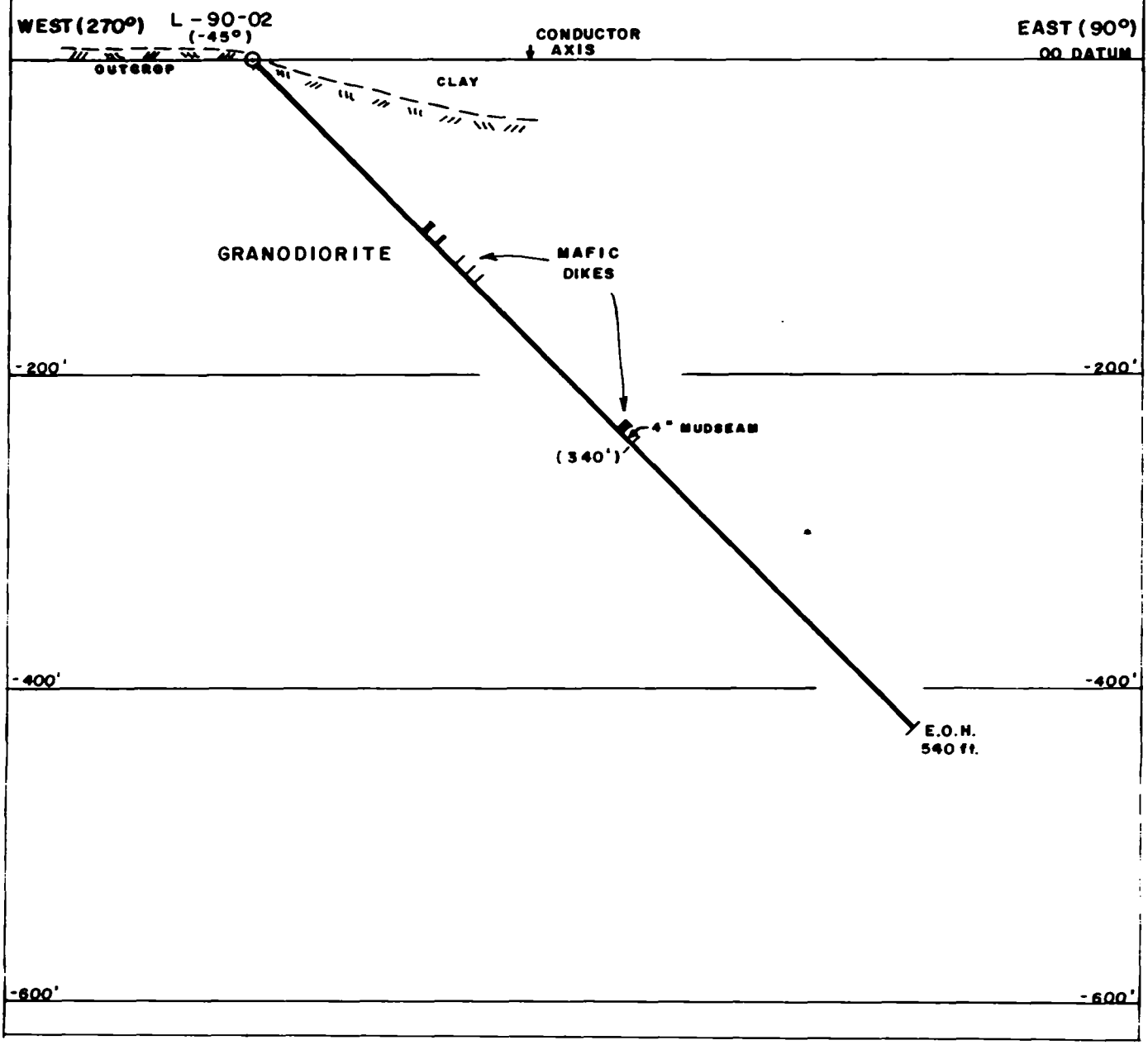
SCALE: 1" = 100'

0 50 100 200

DATE: December, 1991

COLLAR LOCATION: L 4 N / 0+80 W

BEARING of HOLE: 90°00' E.



REPORT ON RECONAISSANCE

VLF-EM16 SURVEY

BANNOCKBURN TOWNSHIP

LARDER LAKE MINING DIVISION

ONTARIO

by M. Leahy

December, 1991

TABLE OF CONTENTS

INTRODUCTION

Location:

The property herein described consists of six contiguous unpatented mining claims in eastern Bannockburn Township, Larder Lake Mining Division, Ontario. The town of Matachewan lies about thirteen miles to the west. The claim numbers are as follows:

L-1168874	L-1168875
L-1168876	L-1168877
L-1168878	L-1168879

Access:

The claims are accessible by an all-terrain vehicle trail leading south from a gravel pit along Highway 566, about thirteen miles west of Matachewan. The trail, which is about 1.5 miles long, had to be cleared of deadfall and brush for much of the way. It ends at the northwest corner of a small lake, seven hundred feet east of the property boundary.

History:

Although airborne surveys have been flown over the area, there is no record of ground work in the Resident Geologist's office in Kirkland Lake. The most recent survey flown in 1974, (ODM Preliminary Map No. 1021), detected a weak EM conductor which was the subject of the present ground VLF survey.

GEOLOGY

The claims are underlain by steeply dipping Metavolcanics consisting of Tholeiitic basalts overlain partly by flat-lying Huronian sediments. The volcanic rocks form part of the south limb of a large syncline covering several townships. The syncline consists of Larder Lake group equivalent metavolcanics overlain by Tholeiitic Kinojevis volcanics with Blake River group equivalent Calc-alkalic volcanics filling in the centre of the syncline. This sequence is typical of the Abitibi super-group of which this package is but a small part.

VLF EM-16 SURVEY

On October 8, 1991, a VLF-EM survey was conducted over the centre of the group, (four claims: L-1168874, 875, 876, 877) in an effort to locate and better define the airborne EM conductor. The claim line running south from the #1 post of L-1168877 was read for 1/2 mile to the south boundary; pace and compass traverses were read at six hundred foot spacings on either side of the claim line; Cutler, Maine was used as transmitter at 24.0 kHz and all readings were taken facing north. A total of sixty eight readings were taken and profiles were plotted on a map with a scale of 1:4,800 or 1" = 400'.

RESULTS OF VLF EM SURVEY

The limited coverage provided by the survey succeeded in locating and defining the airborne conductor. The profiles indicate a wide weak electrolytic zone of conductivity along the contact between the overlying highly resistive Huronian sediments to the south and the more conductive metavolcanic units to the north. The possibility of the conductivity being caused by a metallic bedrock source is negligible.

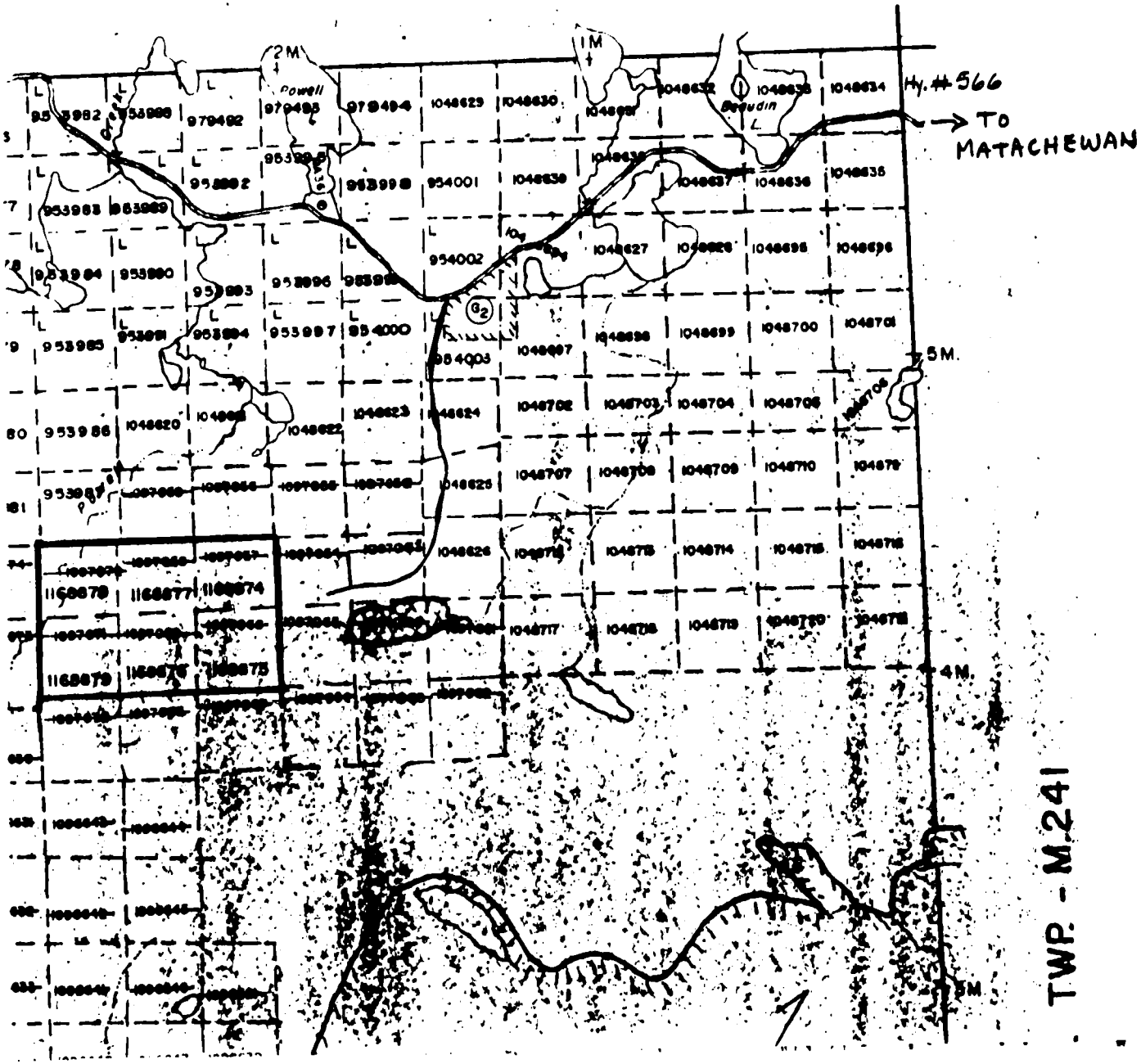
CONCLUSIONS and RECOMMENDATIONS

Since the conductor is probably caused by 'overburden' effect, no further work can be justified at this time.

Michael Leahy

Dec 91

P. - M.203



THE TOWNSHIP OF

BANNOCKBUR

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH = 40 CH

DISPOSITION OF CROWN LA

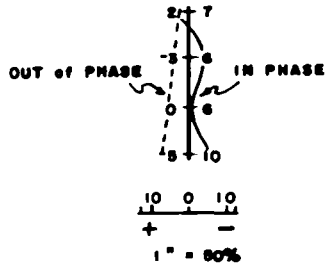
PATENT, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LEASE, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LICENCE OF OCCUPATION

ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED

BANNOCKBURN

V.L.F. EM-16 SURVEY

LEGEND

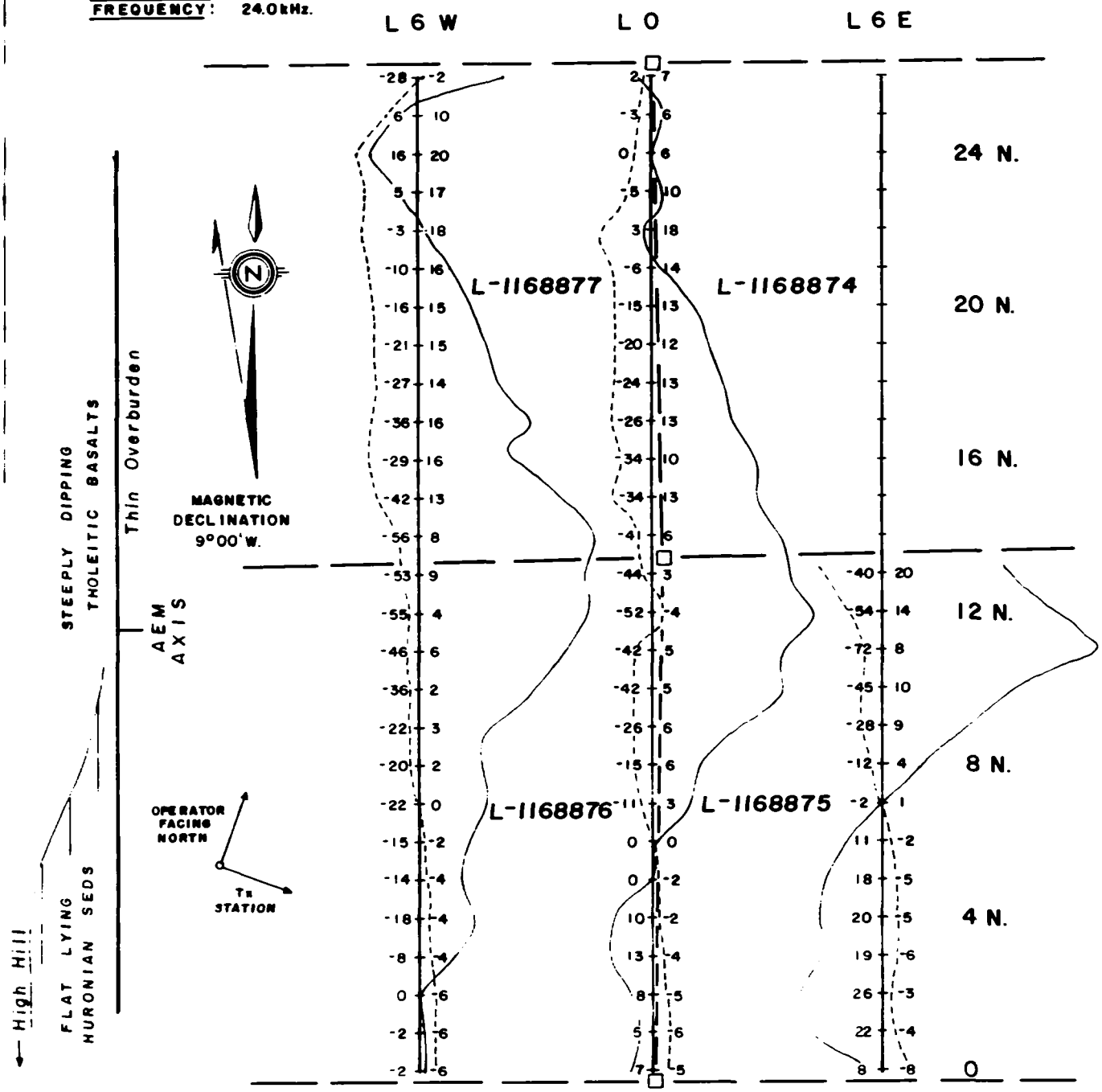


Scale

200 0 200 400 600

1" = 400'

INSTRUMENT: Ronka VLF EM-16
Tx. STATION: Cutler, Maine
FREQUENCY: 24.0kHz.



Michael Leahy 91

EM16

77

VLF Electromagnetic Unit

Pioneered and patented exclusively by Geonics Limited, the VLF method of electromagnetic surveying has been proven to be a major advance in exploration geophysical instrumentation.

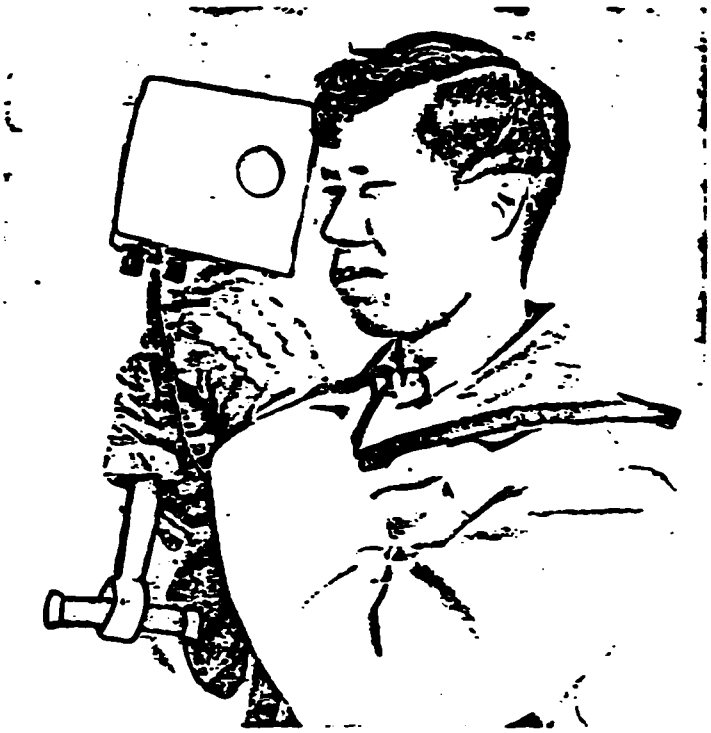
Since the beginning of 1965 a large number of mining companies have found the EM16 system to meet the need for a simple, light and effective exploration tool for mining geophysics.

The VLF method uses the military and time standard VLF transmissions as primary field. Only a receiver is then used to measure the secondary fields radiating from the local conductive targets. This allows a very light, one-man instrument to do the job. Because of the almost uniform primary field, good response from deeper targets is obtained.

The EM16 system provides the *in-phase* and *quadrature* components of the secondary field *with the polarities indicated.*

Interpretation technique has been highly developed particularly to differentiate deeper targets from the many surface indications.

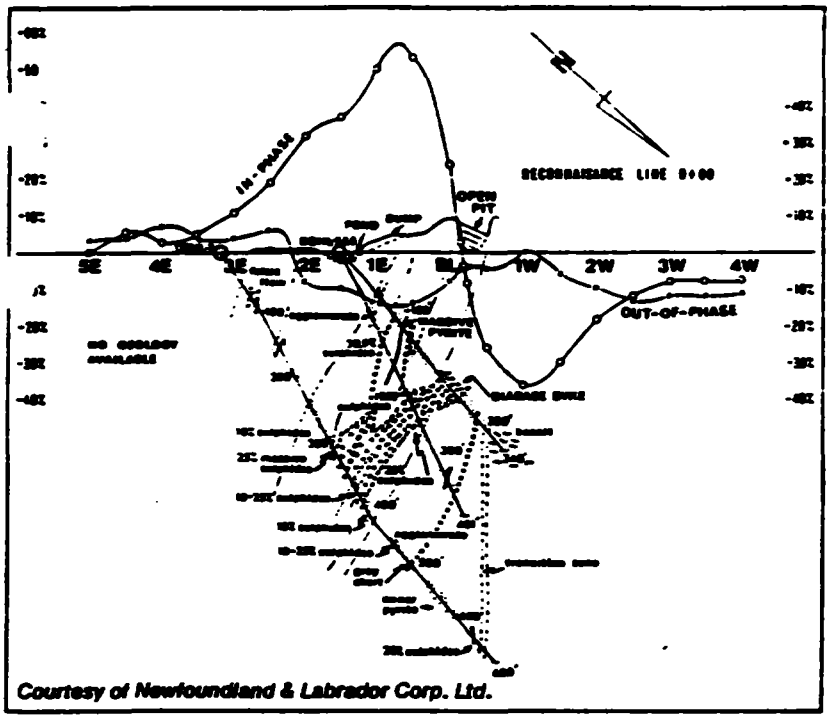
Principle of Operation
The VLF transmitters have vertical antennas. The magnetic signal component is then horizontal and concentric around the transmitter location.



Specifications

Source of primary field	VLF transmitting stations.
Transmitting stations used	Any desired station frequency can be supplied with the instrument in the form of plug-in tuning units. Two tuning units can be plugged in at one time. A switch selects either station.
Operating frequency range	About 15-25 kHz.
Parameters measured	(1) The vertical in-phase component (tangent of the tilt angle of the polarization ellipsoid). (2) The vertical out-of-phase (quadrature) component (the short axis of the polarization ellipsoid compared to the long axis).
Method of reading	In-phase from a mechanical inclinometer and quadrature from a calibrated dial. Nulling by audio tone.
Scale range	In-phase ± 150%; quadrature ± 40%.
Readability	± 1%.
Reading time	10-40 seconds depending on signal strength.
Operating temperature range	—40 to 50° C.
Operating controls	ON-OFF switch, battery testing push button, station selector, switch, volume control, quadrature, dial ± 40%, inclinometer dial ± 150%.
Power Supply	6 size AA (penlight) alkaline cells. Life about 200 hours.
Dimensions	42 x 14 x 9 cm (16 x 5.5 x 3.5 in.)
Weight	1.6 kg (3.5 lbs.)
Instrument supplied with	Monotonic speaker, carrying case, manual of operation, 3 station selector plug-in tuning units (additional frequencies are optional), set of batteries.
Shipping weight	4.5 kg (10 lbs.)

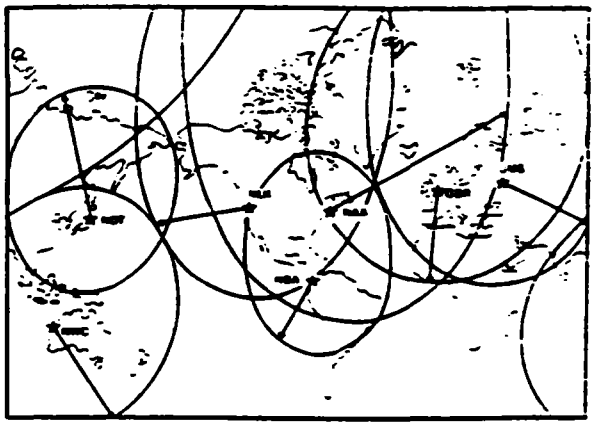
GEONICS LIMITED
Designers & manufacturers of geophysical instruments
2 Thorncliffe Park Drive
Toronto/Ontario/Canada
M4H 1H2
Tel: (416) 425-1821
Cables: Geonic's



Courtesy of Newfoundland & Labrador Corp. Ltd.

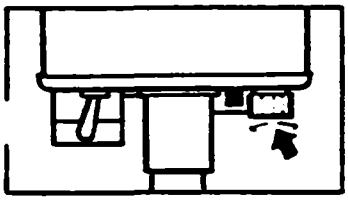
EM 16 Profile over Lockport Mine Property, Newfoundland

Additional case histories on request.



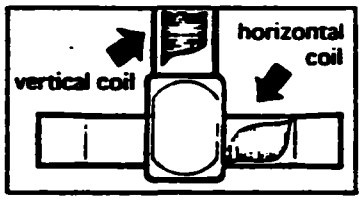
Areas of VLF Signals

Coverage shown only for well-known stations. Other reliable, fully operational stations exist. For full information regarding VLF signals in your area consult Geonics Limited. Extensive field experience has proved that the circles of coverage shown are very conservative and are actually much larger in extent.



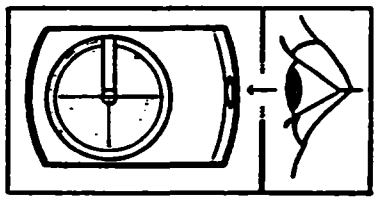
Station Selector

Two tuning units can be plugged at one time. A switch selects either station.



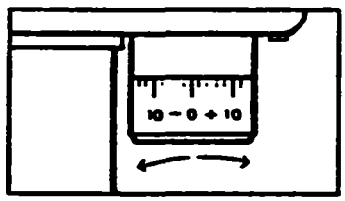
Receiving Coils

Vertical receiving coil circuit in instrument picks up any vertical signal present. Horizontal receiving coil circuit, after automatic 90° signal phase shift, feeds signal into quadrature dial in series with the receiving coil.



In-Phase Dial

shows the tilt-angle of the instrument for minimum signal. This angle is the measure of the vertical in-phase signal expressed in percentage when compared to the horizontal field.



Quadrature Dial

is calibrated in percentage markings and nulls the vertical quadrature signal in the vertical coil circuit.

By selecting a suitable transmitter station as a source, the EM 16 user can survey with the most suitable primary field azimuth.

The EM 16 has two receiving coils, one for the pick-up of the horizontal (primary) field and the other for detecting any anomalous vertical secondary field. The coils are thus orthogonal, and are mounted inside the instrument "handle".

The actual measurement is done by first tilting the coil assembly to minimize the signal in the vertical (signal) coil and then further sharpening the null by using the reference signal to buck out the remaining signal. This is done by a calibrated "quadrature" dial.

The tangent of the tilt angle is the measure of the vertical in-phase component and the quadrature reading is the signal at right angles to the total field. All readings are obtained in per centages and do not depend on the absolute amplitude of the primary signals present.

The "null" condition of the measurement is detected by the drop in the audio signal emitted from the patented resonance loudspeaker. A jack is provided for those preferring the use of an earphone instead.

The power for the instrument is from 6 penlight cells. A battery tester is provided.

CERTIFICATE

THIS IS TO CERTIFY:

1. I am a graduate in Prospecting Techniques from the Northern College of Applied Arts and Technology, Haileybury campus, 1976 and have completed the Haileybury School of Mines, Geophysical Field School, 1990, and the Interpretation of Ground and Airborne Geophysical Data Course, 1991. I have been active as a prospector and exploration contractor since 1974.

2. I am a member in good standing of the P.D.A., past president of the N.P.A., and director of O.M.E.F., and C.I.M.M.

3. I reside and hold office at 139 Carter Ave., Kirkland Lake, Ontario, P2N 2A1.

4. I have an interest in the property.

5. My report is based upon having personally participated in each program herein described, a review of published information on the property, consultation with local geologists and upon my familiarity and experience as a prospector in the Kirkland Lake camp.

Michael Leahy
Dec 91