32D05SW0009 2.10571 CLIFFORD 010

GEOLOGICAL REPORT

ON

GRID C-14

CLIFFORD TOWNSHIP, ONTARIO

LARDER LAKE MINING DIVISION

DISTRICT OF TIMISKAMING

Latitude: 48° 17' N
Longitude: 79° 80' W

By: John Kovala

Latitude: 48° 17' N

TABLE O[F CONTENTS]

INTRODUCTION AND SUMMARY OF RESULTS

This report describes the results of a geological survey conducted over a continuous block of 18 claims located in Clifford Twp. by the author.

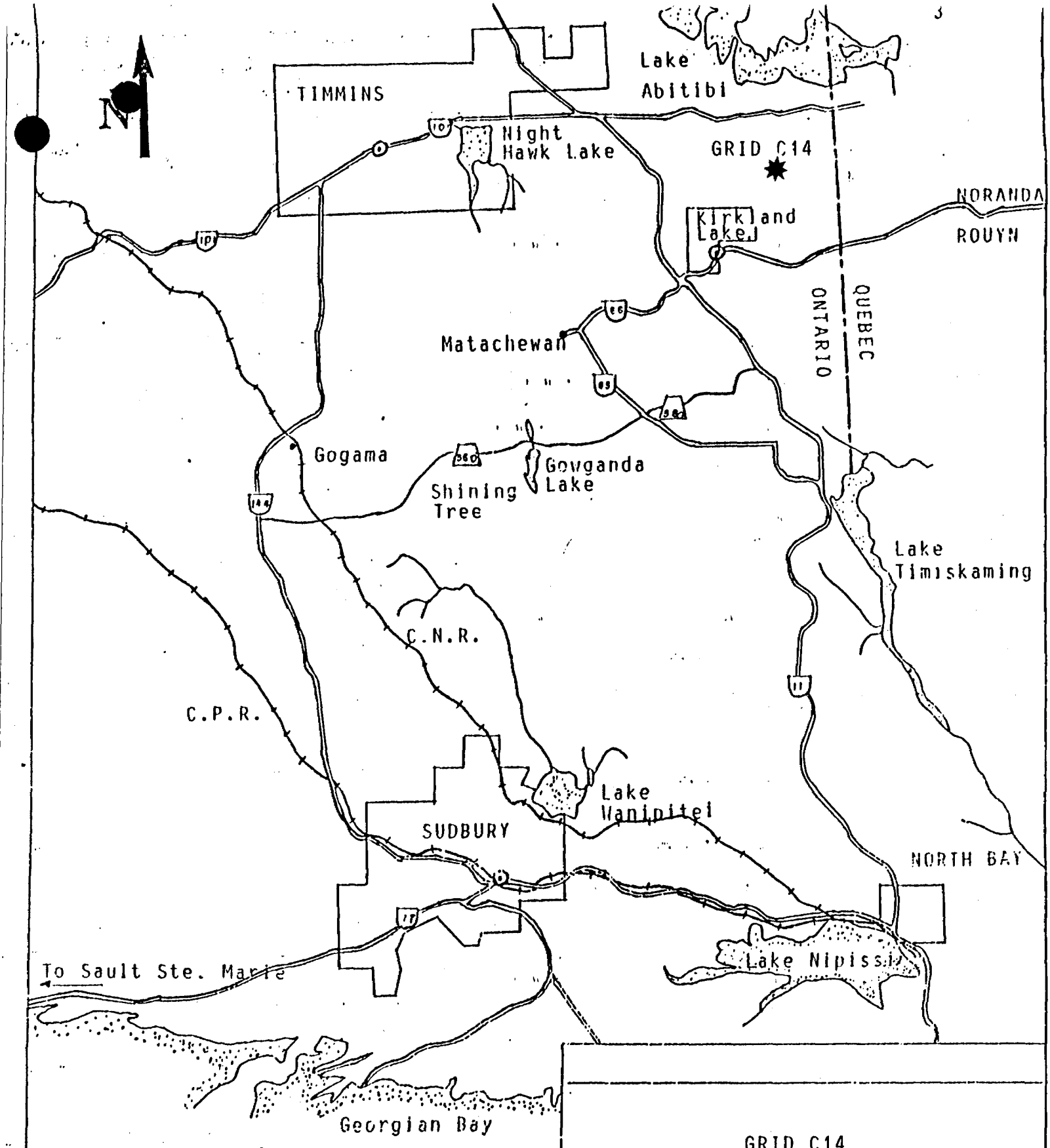
Geological mapping at a scale of 1:5,000 was conducted over a total of 26.7 kilometers of north-south grid lines spaced at 125 m.

Based on the geological mapping no interesting veining sulphide mineralization or alteration has been located. As a result no geological targets with any economic interest have been outlined.

LOCATION AND ACCESS

The property is located 20 km northeast of Kirkland Lake, Ontario on the southern boundary of Clifford Twp., N.T.S. 32 D/5, latitude 48° 17′ N, longitude 79° 80′ W. Figures 1 and 2 illustrate the properties location at scales of 1:1,600,000 and 1:500,000 respectively.

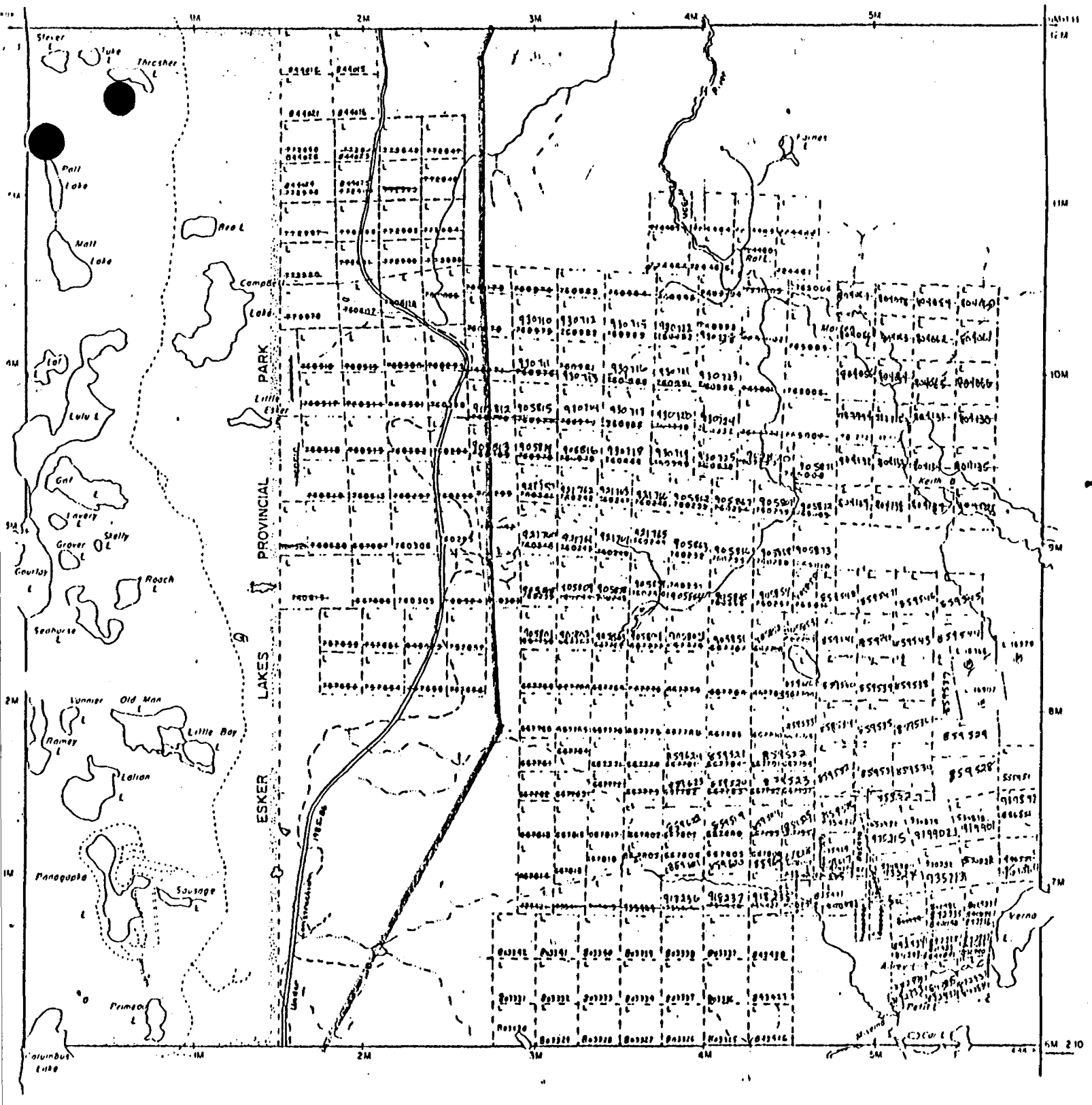
Access to the property is gained by following a sandy bush road that turns off of the Esker Lakes Park Road. This sand road is followed for a distance of approximately 5 kilometers to the southern boundary of the property.



GRID C14
LOCATION MAP

Date	Scale
OCT 1987	1:1,600,000

JOHN KOVALA	Fig. 1



TOWNSHIP OF

CLIFFORD

DISTRICT OF
COCHRANE

LARDER LAKE
MINING DIVISION

GRID LOCATION MAP

C 14

FIG. 2

PROPERTY DESCRIPTION

Property C-14 covers 18 continuous unpatented mining claims located in Clifford Township, Larder Lake Mining District of Timiskaming. The 18 claims are listed below:

Claim Numbers:

L803325, L803326, L803327, L803328, L803329, L803330,
L803331, L803332, L803333, L803334, L803335, L803336,
L803337, L803338, L803339, L803340, L803341, L803342

Total = 18 claims

TOPOGRAPHY AND VEGETATION

The property is covered by pleistocene to recent deposits of basal till clay aeolian sand dunes and swamp through which about 5% bedrock is exposed.

Most of the property is covered by elongate sand dunes separated by low lying flat swampy ground. The sand dunes form elongate northwest to southeast ridges 2 to 10 m high with steep north dipping slopes.

Till deposits and clay are exposed on the east part of the property. They are found generally on higher ground and near areas of outcrop.

Vegetation consists mainly of pine, spruce and small isolated clusters of birch and poplar. Tag alders are abundant in wet swampy areas.

Selected areas on the western quarter of the property have been logged. Logging activities have been restricted to the elongate sand ridges.

PREVIOUS WORK

The only evidence of previous work is in the form of blasted pits restricted to the central eastern portion of the property in zones of pyrite mineralization.

Assessment work files indicate that Canadex Mining Corporation has carried out a magnetic and VLF-EM survey and a portion of the survey covers the six eastern claims.

Mining Corporation of Canada has drilled 5 holes in the area. Assessment work files have no exact locations for the drill holes but to date none have been located on the 18 claim group mapped.

SURVEY PROCEDURE

Geological mapping was conducted over the entire grid at a scale of 1 to 5,000 along north-south metric grid lines spaced 125 m. apart and with stations located at 25 m intervals.

RESULTS OF GEOLOGICAL MAPPING

Regional Geology

Regionally the property is located in the central - western part of the Blake River Group volcanics, a synclinorium that opens to the east. The rocks of the Blake River Group consist mainly of calc alkaline basalt andesite minor Mg-rich tholeiitic lava, calc allkalic dacite, rhyolite and tuff (OGS Map 2484).

In the central portion of the synclinorium occurs a domal anticline intruded by granodiorite. The map area is located 2 miles south of the axis of the domal anticline over a complimentary W.N.W. syncline. The syncline is centred by felsic volcanics and flanked to the N.N.E. and S.S.W. by intermediate volcanics. A large quartz gabbro intrusive is located along the southeastern boundary of the property.

Property Geology

Map 1 located at the back of this report presents the results of the geological mapping survey. Outcrop exposure in the map area is approximately 5%.

Felsic volcanics are found centrally on the property. These rocks occupy a 600 to 800 m wide area striking W.N.W. It has been suggested L.S. Jensen (1975) that felsic volcanics occupy the centre of a syncline with a W.N.W. axis. No top directions have been found

to confirm this.

In this report rhyodacite and dacite have been categorized as felsic volcanics. The felsic volcanics have been subdivided into; massive, amgydaloidal, feldspar porphyry, quartz porphyry, tuff, luppilli tuff, tuff breccia and agglomerate.

In the area between L17+50 to L21+25E and 4+00N to 6+00N the rocks are dominantly massive felsic volcanics and felsic tuff. They are fine grained light yellowish to green and weather to white. 1 to 2% pyrite occurs disseminated, often weathering out causing rusty streaks. In places the rock is intensely fractured in 3 directions causing it to break up into small blocks.

Between L12+50E to L17+50E and 8+00N to 12+00N occur intercalated felsic tuff, tuff breccia, agglomerate and massive feldspar porphyry and amygdaloidal to massive non-porphyritic non-amygdaloidal felsic volcanics.

Flows varied in thickness from 2 to 30 m. Contacts, lappilli beds in felsic tuff and elongate direction of fragments in agglomerate all strike between 125° and 135°. Tuff breccia and agglomerate occur intercalated and contain grey to grey-green porphyritic fragments 5 to 25 cm in diameter in a grey prophyritic matrix. Feldspar phenocrysts in the matrix and fragments are 1 to 3mm in diameter. Minor yellow sericite occurs in the matrix. A subparallel primary alignment of fragments at 125° to 135° was noted.

Felsic tuff occurs as thin < 5m beds. The rock is often finely bedded cherty and yellowish to pale green in colour. At L16+00/9+12N rusty bands 1 to 4 cm wide containing pyrite and 1 to 3 mm feldspars strike at 135°.

Massive, porphyritic and amygdaloidal volcanics tend to be darker green in colour and weather to a green white.

Intermediate volcanics andesite and dacite can be found on the N.N.E. and S.S.W. flanks of the rhyolite. To the S.S.W. no flow textures were noted. The rocks are massive aphanitic medium grey green in colour often containing feldspar phenocrysts and/or amygduals. Large quartz carbonate masses from 2 to 30 cm in diameter were noted at L0+00/5+50N. A feldspar porphyry dyke 5 m wide at L7+50E/0+775N has a strike of 85°.

N.N.E. of the felsic volcanics occurs a variety of rock types stratigraphically from south to north, tuff, intermediate volcanics, gabbro and syenite intrusives, felsic volcanics and basalt. A strike of 105° was obtained from tuffs located at the southern end of the cluster of outcrops.

A large stock of quartz gabbro occupies the area from L12+50E to 23+50E and south of 3+50N. The rock is medium to dark green massive and medium grained. There is very little textural variation across the body. No contacts with the volcanics were observed.

Economic Geology

Minor disseminated pyrite was observed in the area of L21+25/5+00 to 6+00N in felsic volcanic rocks. Trace amounts of pyrite were observed with thin quartz carbonate veins. Across the property there is a lack of any interesting veining sulphide mineralization and alteration. As a result of the mapping no geological targets of any economic interest have been outlined.

CONCLUSIONS

Based on the geological mapping, no geological targets of any economic potential have been located. The cause of VLF-EM conductors has not been determined based on the geological mapping. Some VLF-EM anomalies may be due to topographic effects.

It is recommended that an IP survey be conducted over selected VLF anomalies possibly followed by drilling if any IP targets of interest are located.

John Kovak

VLF EM-16 SURVEY REPORT

ON

GRID C-14

CLIFFORD TWP., ONTARIO

LARDER LAKE MINING DIVISION

DISTRICT OF TIMISKAMING

N.T.S.: 32 D/5
Latitude: 48° 17'N
Longitude: 79° 80'W

By: John Kovala

TABLE (

INTRODUCTION

A VLF-EM 16 was carried out over a continuous group of 18 unpatented mining claims located on the southern boundary of Clifford Township, about 20 kilometers northeast of Kirkland Lake. In April and May, 1987 the survey was conducted over a total of 26.7 kilometers of metric north-south grid lines.

The Cutler, Maine transmitter (24.0 kHz) NAA was read at 25 meter intervals along the north-south grid lines with a Geonics EM-16 VLF unit.

PROPERTY

The survey area covers 18 continuous unpatented mining claims located in Clifford Township, Larder Lake Mining Division, District of Timiskaming. The 18 claims are listed below:

Claim Numbers:

L803325, L803326, L803327, L803328, L803329, L803330,
L803331, L803332, L803333, L803334, L803335, L803336,
L803337, L803338, L803339, L803340, L803341, L803342

Total = 18 claims

LOCATION AND ACCESS

The property surveyed is located 20 kilometers northeast of Kirkland Lake in the south central part of Clifford Township at longitude 79° 80′ W and Latitude 48° 17′ N (N.T.S. 32-D-5). Figure 1 and Figure 2 illustrate the properties location at scales of 1:1,600,000 and 1:500,000 respectively.

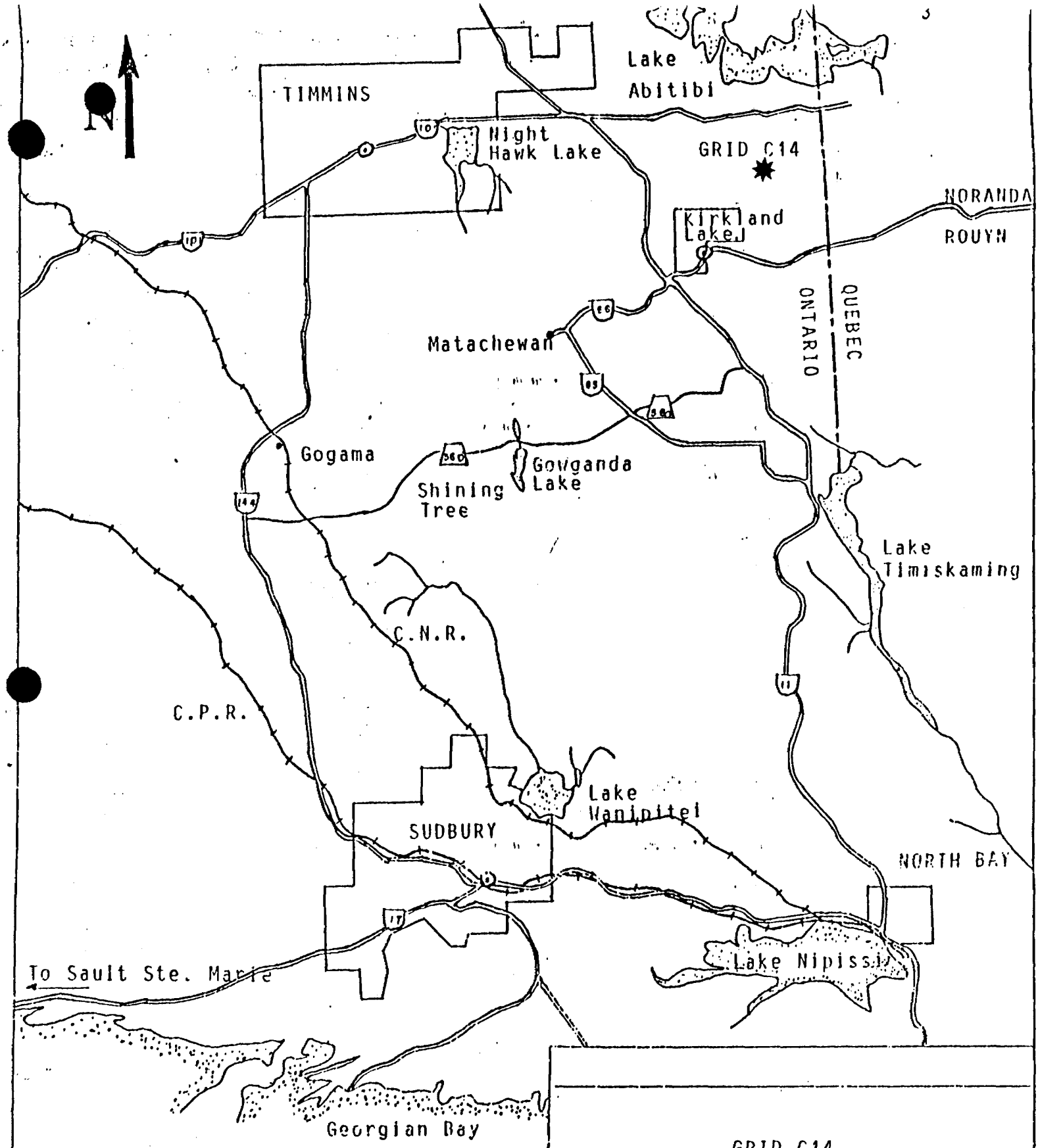
Access to the property is gained by following a sandy bush that turns east off of the Esker Lakes Park. This sand road is followed for a distance of approximately 5 kilometers.

TOPOGRAPHY AND VEGETATION

The property is covered by pleistocene to recent deposits of basal till, clay, aeolian sand dunes and swamp through which 5% bedrock is exposed.

Much of the property is covered by elongate sand dunes separated by low lying flat swampy ground. The sand dunes form elongate W.N.W. to E.S.E. ridges 2 to 10 m high with steep north dipping slopes.

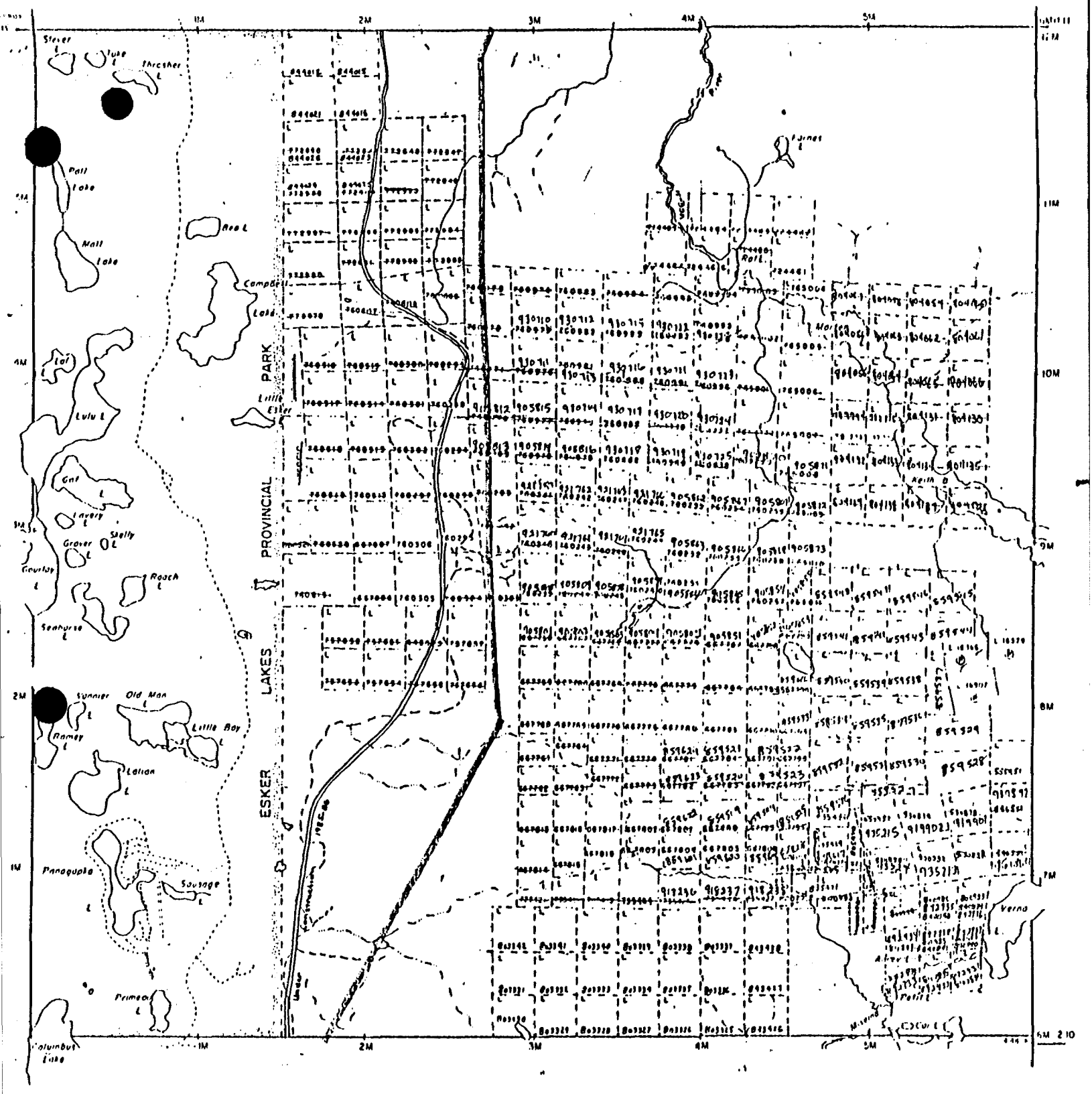
Till deposits and clay are exposed on the east part of the property in areas of higher ground and near outcrop.



GRID C14
LOCATION MAP

Date	Scale
OCT 1987	1:1,600,000

JOHN KOVALA	Fig. 1



TOWNSHIP OF

CLIFFORD

DISTRICT OF
COCHRANE

LARDER LAKE
MINING DIVISION

GRID LOCATION MAP

C 14

FIG. 2

Vegetation consists mostly of pine, spruce and small isolated clusters of birch and poplar. Tag alders are abundant in wet swampy areas.

PREVIOUS WORK

Evidence of previous work in the form of pits is restricted to the eastern central portion of the property. Pyrite mineralization has been observed in these pits.

Assessment work files indicate that Canadex Mining Corporation has carried out a magnetic and VLF-EM survey in this area. A portion of their survey covers the 6 eastern claims.

Mining Corporation of Canada have drilled 5 holes in this area. Assessment work files have no exact location for the drill holes but none have been located on any of the 18 claims.

GENERAL GEOLOGY

The central portion of the property is underlain by a felsic volcanic unit that is 600 to 800 m wide with a west-northwest axis. It is flanked to the north-northeast and south-southwest by intermediate volcanic consisting of dacite and andesite.

A large quartz gabbro intrusive occupies the southeastern portion of the claim block.

Small intrusives bodies and dykes on the property include; feldspar porphyry, syenite, gabbro and fine grained rhyolite.

SURVEY METHOD

The VLF-EM survey was performed with a Geonics EM-16 unit. Stations were read at 25 meter intervals over north-south lines spaced 125 meters apart covering the entire 18 claim group.

The Cutler Maine transmitter station 24.0 (kHz) was used with the operator facing north.

SURVEY RESULTS

The VLF-EM survey has outlined numerous anomalies on the property. It is apparent from the contoured Fraser Filter presentation of the survey results that there are three main conductor trends across the property; south-east, east-west and north-east. These anomalies are interpreted as three possible directions of faulting.

In some cases the anomalies occur at the northern edge of

outcrops indicating that the outcrop may be fault band. Anomalies occurring at the north edge of outcrops in lower ground may be due to topographical responses.

The south-east trending anomalies are subparallel to the strike of the stratigraphy and may occur at or near the contacts between felsic and intermediate volcanics.

An east-west anomaly that cuts across the entire south central portion of the property has been interpreted as a fault. The anomaly is continuous and crosses three rock types.

CONCLUSIONS AND RECOMMENDATIONS

Three main trends of VLF-EM anomalies have been identified; southeast, east, west and northeast. The anomalies suggest possible faulting in three directions. Many of the discontinuous anomalies occurring in low lying areas proximal to outcrop may be interpreted as topographic responses.

The southeast trending anomalies occurring parallel to subparallel to stratigraphy may follow stratigraphic contacts between felsic and intermediate volcanics.

IP over selected anomalies followed by drilling of targets

located with the IP survey is recommended.

John Kwak

L.M. 375(

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

2.10571

Mining Act

32D05SW0009 2.10571 CLIFFORD

900

Do not use shaded areas below.

Type of Survey(s)	Township or Area
Geophysical (VLF-EM) and Geology	Clifford Township

Claim Holder(s)	Prospector's Licence No.
LAC Minerals Ltd.,	T-664

Address: 91 Duncan Ave., Kirkland Lake, Ontario P2N 1Y2

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
LAC Minerals Ltd. VLF Geology	15 04 87 (Day / Mo. / Yr.) to 30 05 87 / 03 06 87 / 08 09 87	26.98 Km

Name and Address of Author (of Geo-Technical report)
John Kovala, 91 Duncan Ave., Kirkland Lake, Ontario P2N 1Y2

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic: VLF Cutler	20
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	20
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

Mining Claims Traversed (List in numerical sequence)

Prefix	Number	Expend. Days Cr.
L	803325	
	803326	
	803327	
	803328	
	803329	
	803330	
	803331	
	803332	
	803333	
	803334	
	803335	
	803336	
	803337	
	803338	
	803339	
	803340	
	803341	
	803342	

Prefix	Number	Expend. Days Cr.

RECEIVED
SEP 21 1987
MINING LANDS SECTION

RECEIVED
SEP 21 1987
PORCUPINE MINING DIV.

Total number of mining claims covered by this report of work: 18

Expenditures (excludes power stripping)

Type of Work Performed	
Performed on Claim(s)	

Calculation of Expenditure Days Credits

Total Expenditures $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Credits Recorded	Date Recorded	Mining Recorder
720	Sept. 21/87	Acting J. Bottineau
	Date Approved as Recorded	Branch Director
	17 Dec 87	

Date	Recorded Holder or Agent (Signature)
Sept. 1/87	Chris Pegg

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Chris Pegg, 91 Duncan Ave., Kirkland Lake, Ontario P2N 1Y2

Date Certified	Certified by (Signature)
Sept. 1/87	Chris Pegg

1362 (81/9)

ELLIOTT TWP. M-347

BISLEY TWP. M-328

BEN NEVIS TWP. M-325

ARNOLD TWP. M-321

79°53'20"

APPROX 48°21'45"

1M 2M 3M 4M 5M 6M+LI 12M

11M 10M 9M 8M 7M 6M-2.10

5M 4M 3M 2M 1M

Stever L. Tuke L. Thrcsher L. Pall Lake Bea L. Mall Lake Campbell Lake Lal L. Lulu L. Gat L. Lavery L. Grover L. Skelly L. Gourlay L. Roach L. Seahorse L. Vannier Old Man Little Boy Ramey L. Lafton Panagapka Sausage Primeau Columbus Lake

PROVINCIAL PARK

Little Esker

ESKER LAKES

Construction Under 198E.06

River Magpie Farnes L. Rat L. Marten Keith R. Verna Airey L. Fetil L. Miscamo Car L.

L 16379 L 16365 L 16907

Columbus Lake

2D05SW0009 2.10571 CLIFFORD

200

NOTES

400 surface rights reservation along the shores of all lakes and rivers

	Order No	Date	Disposition
SEC 36/80	W15/85	April 10/85	MR & SR
Re-opened		Oct 31/85 - 3:55pm	

DATE OF ISSUE
OCT 23 1987
LANDS BRANCH
MINING RIGHTS BRANCH

LEGEND

PATENTED LAND
PATENTED LAND MINING RIGHTS ONLY
LEASE
LICENSE OF OCCUPATION
CROWN LAND SALE
LOCATED LAND
CANCELLED
MINING RIGHTS ONLY
SURFACE RIGHTS ONLY
HIGHWAY & ROUTE No.
ROADS
TRAILS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES

Used only with survey ... or where space is limited.

Barrick Power Line
(Application Pending under Public Lands Act)

TOWNSHIP OF

CLIFFORD

DISTRICT OF
COCHRANE

LARDER LAKE
MINING DIVISION

SCALE: 1 INCH 40 CHAINS (1/2 MILE)

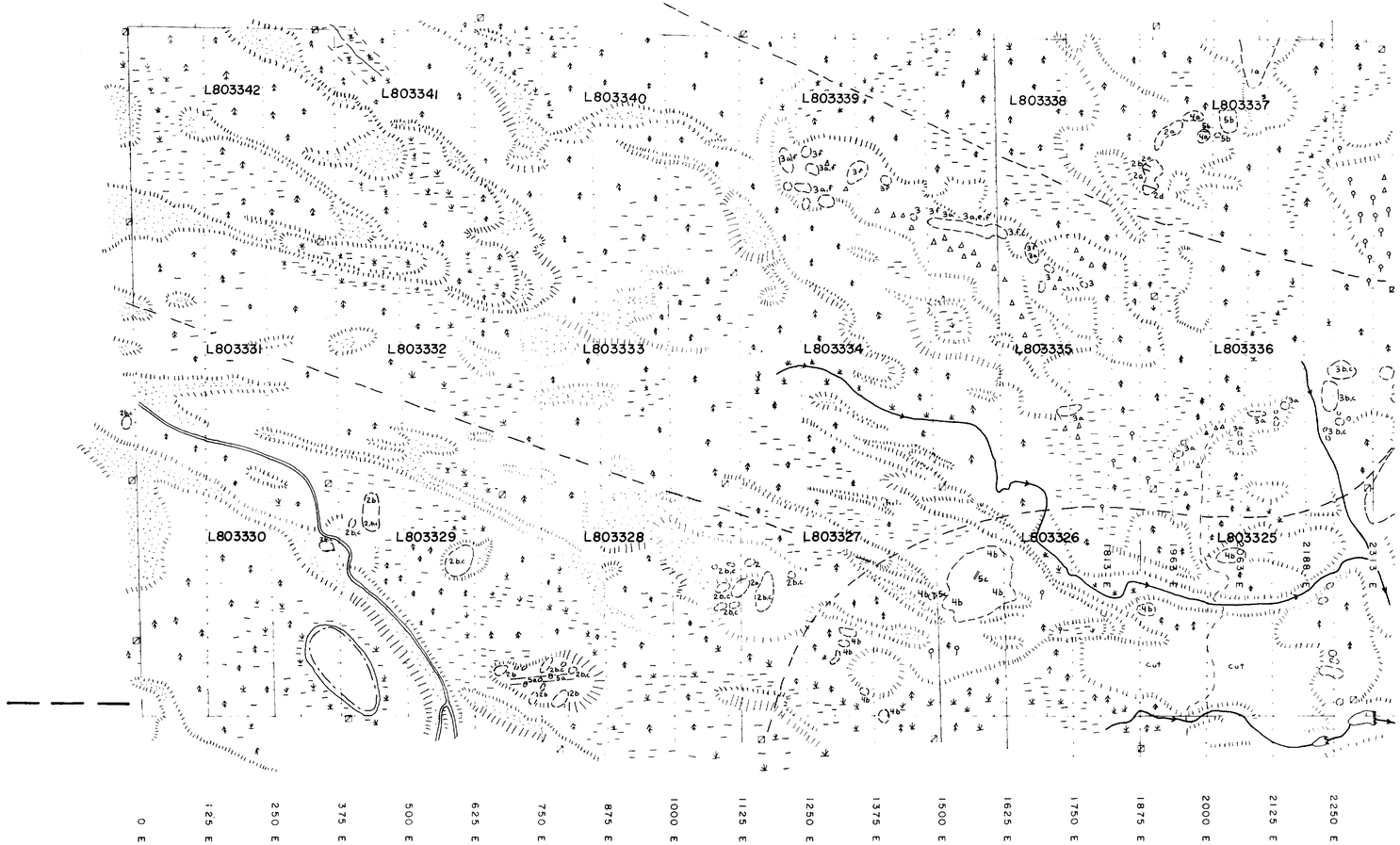
DR. R.W. NOBLE	PLAN NO. M-338
DATE DEC 9, 71	

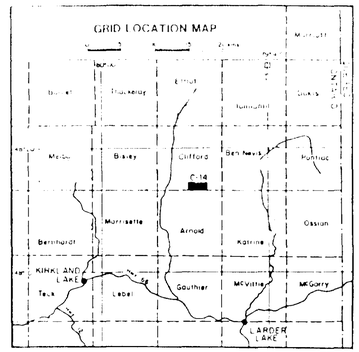
ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

GRID C 14
CLIFFORD TOWNSHIP
Larder Lake Mining Division, Ontario

GEOLOGY

Scale 1 : 5000
1 inch = 400 feet
100 0 100 200 300 400 500 METRES





LEGEND

MIDDLE TO LATE PRECAMBRIAN (ARCHEAN)

5 Felsic Intrusive Rocks
- 5a Feldspar Porphyry
- 5b Syenite
- 5c Rhyolite

Mafic to Intermediate Intrusive Rocks

4
- 4a Gabbro
- 4b Quartz Gabbro

Volcanic Rocks

3 Felsic Volcanic Rocks
- 3 Unsubdivided
- 3a Massive rhyodacite and rhyolite
- 3b Amygdaloidal rhyodacite and rhyolite
- 3c Feldspar porphyry rhyodacite and rhyolite
- 3d Quartz porphyry rhyodacite and rhyolite
- 3e Tuff and lappilli: tuff
- 3f Tuff breccia and agglomerate

2 Intermediate Volcanic Rocks
- 2 Unsubdivided
- 2a Massive andesite and dacite
- 2b Amygdaloidal andesite and dacite
- 2c Porphyritic andesite and dacite
- 2d Andesite and dacite tuff and lappilli tuff

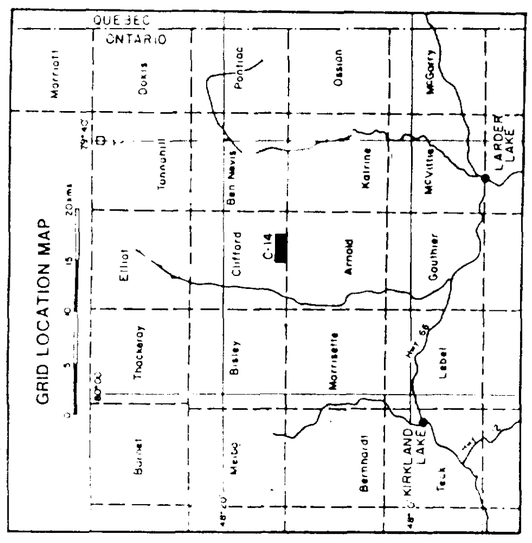
1 Mafic Volcanic Rocks
- 1 Unsubdivided
- 1a Massive basalt and andesitic basalt

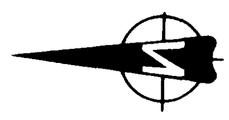
SYMBOLS

- Ridge or Slope
- Muskeg or Swamp
- Open Area
- Open Swamp or Muskeg
- Creek
- Forest
- Road
- Claim Post
- Drift Features, sand dune
- Glacial Erattic
- Boundary of outcrop
- Geological Boundary defined
- Geological Boundary Assumed
- Strike and dip of top unknown
- Strike and dip of tops known
- Flow Contact
- Strike and dip of schistosity
- Joints Inclined
- Joints Vertical
- Fault
- S Sulphide Mineralization

2.10571

J. Kwak Nov/87





GRID C14

CLIFFORD TOWNSHIP

Larder Lake M[illegible] Ontario

VLF EM Survey

INPHASE AND QUADRATURE VALUES

Scale 1 : 5000

0 100 200 300 400 500

METRES

LEGEND

Transmitter: NAA (24.0 Khz)

Instrument: Geonics EM-16

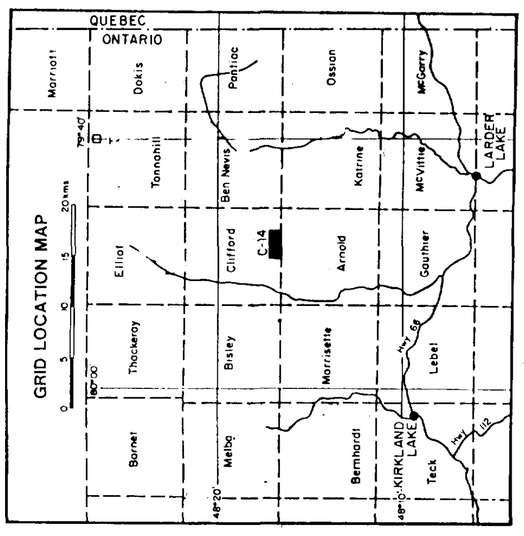
OPERATOR

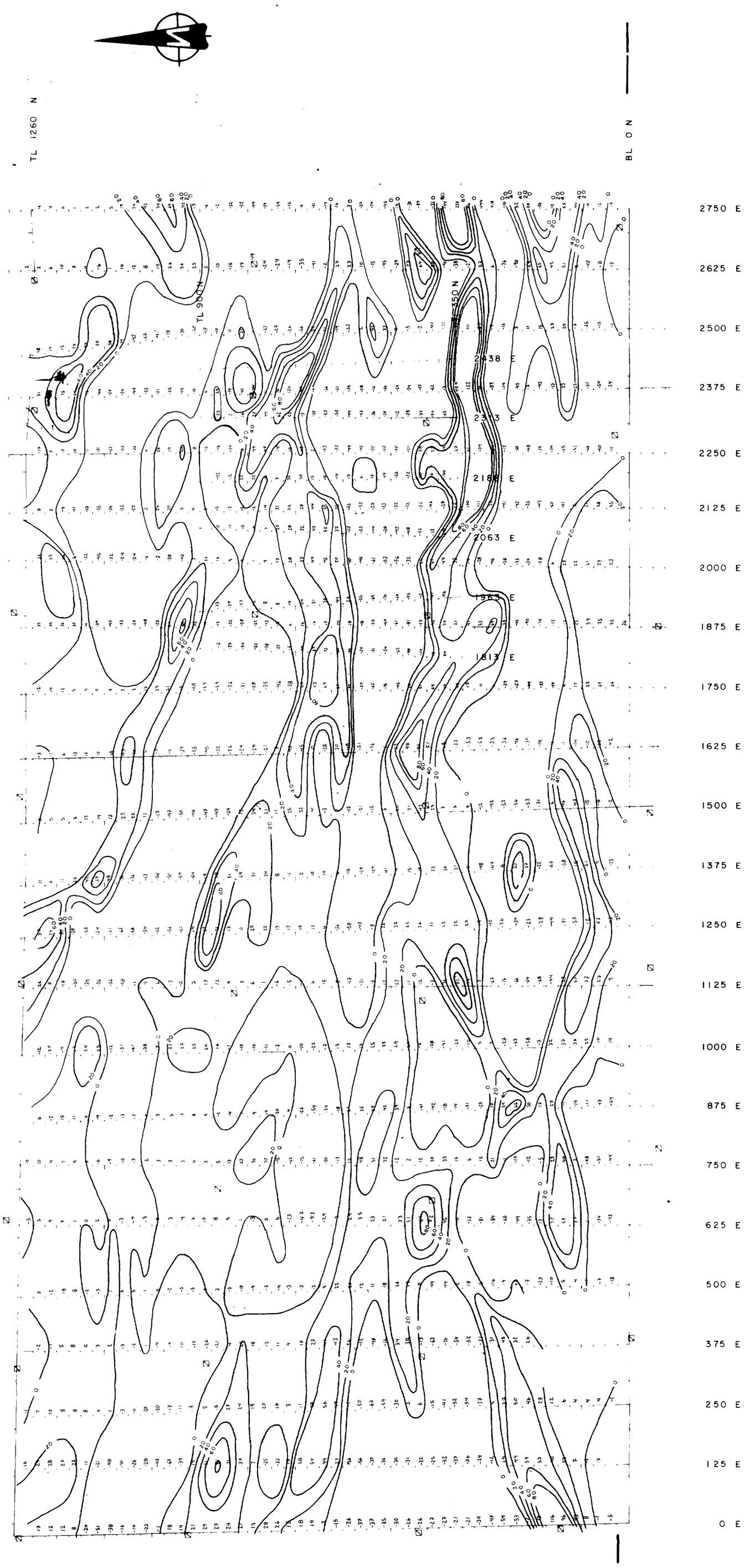
Tx

John Kovala June 1987

2.10571

J. Kovala Nov 87





GRID C14

CLIFFORD TOWNSHIP

Larder Lake M.D., Ontario

VLF-EM SURVEY

(FRASER FILTER PRESENTATION)

Scale 1 : 5000

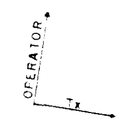
0 100 200 300 400 500

METRES

LEGEND

Transmitter NAA (24.0 Khz)

Instrument: Geonics EM-16



John Kovala June 1987