



32E13NE0033 2.8112 LOWER DETOUR LAKE

010

Westmin Resources Limited
South Detour Claim Group
VLF-EM Survey
Assessment Report

NTS 32 E/13
Lower Detour Lake Area M 2603

Claims covered:

P.779415-P.779418 incl.
P.780735
P.780737-P.780744 incl.
P.780754-P.780756 incl.

April 30, 1985.

Paul R. J. Nicholls

RECEIVED
MAY 15 1985
MINING LANDS SECTION

Surveys completed during February 1984.

1.0 Introduction:

The following report pertains to ground electromagnetic data collected by Westmin Resources Limited (25 Adelaide Street East, Suite 1400, Toronto, Ontario, M5C 1Y2) in 1984 on the South Detour claims, Porcupine Mining District, Ontario. A picket line grid was cut over the Claims in 1984. The surveys were completed in February 1984. A total of 30.60 kilometres of VLF-EM surveying are covered by this report.



FIGURE: 1

2.0 Location and Access:

The South Detour claim block is located near the Ontario/Quebec border (NTS 32 E/13) approximately 150 kilometres north of Cochrane, Ontario and La Sarre, Quebec and 10 kilometres southeast of the Detour Lake Gold Mine (Figure 1).

Access to the property is by float-equipped fixed-wing aircraft in the summer, and by drill roads from the Detour Lake Mine in the winter.

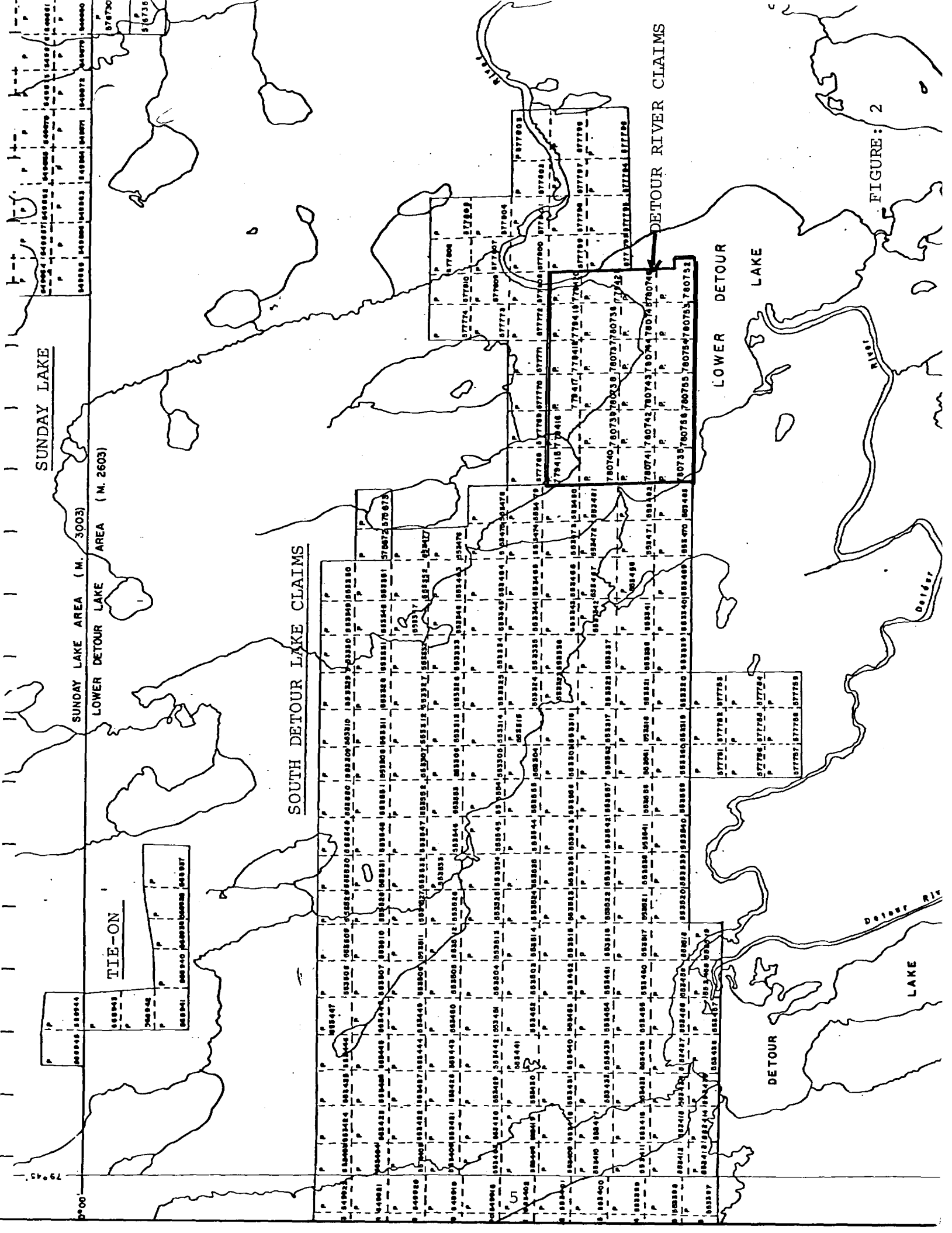
3.0 Property Status and Work Program:

The Detour River claim group consists of 24 unpatented mining claims (Figure 2) owned by Westmin Resources Limited (formerly Western Mines Limited) of 25 Adelaide Street East, Suite 1400, Toronto, Ontario, M5C 1Y2.

During February 1984, VLF-EM surveys were conducted on the property. These surveys were completed on picket lines cut by Guy Thibault of Timmins in 1984.

The following people were involved in completing the surveys:

P. R. J. Nicholls, Stouffville, Ontario.	Geologist	Feb. 1984	VLF Operator
L. Davidson, Toronto, Ontario.	Assistant	Feb. 1984	VLF Operator



SUNDAY LAKE

SUNDAY LAKE AREA (M. 3003)
LOWER DETOUR LAKE AREA (M. 2603)

TIE-ON

SOUTH DETOUR LAKE CLAIMS

DETOUR RIVER CLAIMS

LOWER DETOUR LAKE

DETOUR LAKE

FIGURE: 2

The VLF-EM was conducted on cut grid lines spaced 100 metres apart and readings were taken at 25 metre intervals along the lines. For the survey a Geonics EM-16 instrument was used with Seattle, Washington as the transmitting station.

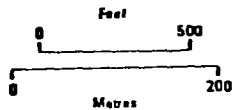
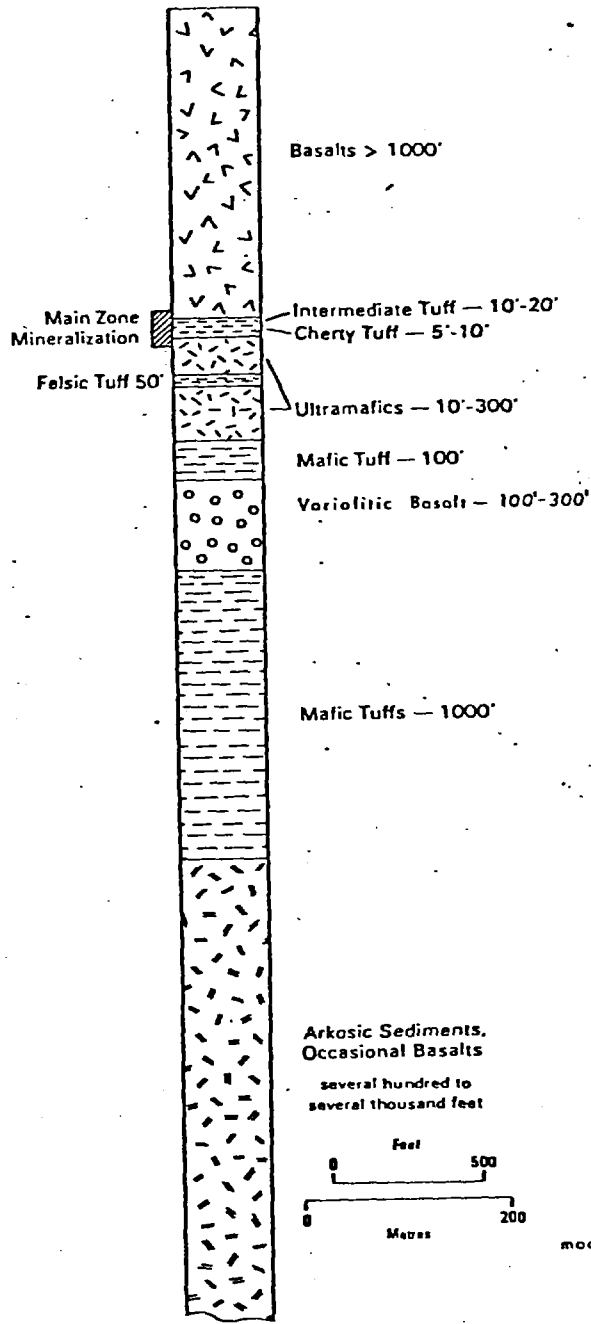
The data was plotted as profiles on a 1:5,000 base map. The claims covered by the VLF-EM survey are as follows:

P.779415-P.779418 incl.
P.780735
P.780737-P.780744 incl.
P.780754-P.780756 incl.

4.0 Regional Geology:

The Detour Project Area is located in the northern part of the Archean Abitibi greenstone belt of the Superior Structural Province. This part of the greenstone belt is folded into a major east-west striking anticline. The core of the anticline is a thick sequence of turbiditic wackes. The northern limb of the anticline is composed primarily of basalts with two known sub-volcanic intrusives. While the southern limb appears to be more complex with two major volcanic units and minor units of volcanic conglomerate, graphitic sediments, and ultramafic rocks.

Arkosic sediments and felsic volcanics represent the basal sequence and are overlain by mafic tuffaceous rocks and minor sediments (300 metres). The mafic tuffs are overlain by a sequence of variolitic mafic volcanics (90 metres) of ultramafic flows and tuffs overlies the mafic tuffs and is in turn overlain by a thin continuous cherty tuff horizon. The uppermost unit is a thick sequence of basalts. The Au deposit is centred on the cherty tuff horizon (Figure 3).



modified after Johns, 1982

	Westmin Resources Limited EASTERN CANADA MINING DIVISION	
	Stratigraphic Section Detour Mine Area, Ontario Figure 3	
Work by	Scale	
Date	NTS	

VLF-EM Survey Results:

The VLF-EM results (Figure 4) indicate numerous weak to moderate conductors (10 - 20% peak to trough amplitudes). Most of these conductors are broad in nature and this combined with low amplitudes suggests that they may reflect variations in the overburden thickness. The anomalies may represent troughs or a thickening of overburden. Some of the VLF-EM anomalies show a good reverse quadrature response and may be related to bedrock conductors. Many of the conductors should be further evaluated by Max-Min II surveys in order to define the true bedrock conductors.

Respectfully submitted



Paul R. J. Nicholls, P.Eng.



EM 16

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.	Reading time	10-40 seconds depending on signal strength.
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 temperature range	-40 to 50° C.
Operating frequency range	About 15-25 kHz.	Operating controls	ON-OFF switch, battery testing push button, station selector, switch, volume control, quadrature, dial $\pm 40\%$, inclinometer dial $\pm 150\%$.
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).	Power Supply	6 size AA (penlight) alkaline cells. Life about 200 hours.
Method of reading	In-phase from a mechanical inclinometer and quadrature from a calibrated dial. Nulling by audio tone.	Dimensions	42 x 14 x 9 cm (16 x 5.5 x 3.5 in.)
Scale range	In-phase $\pm 150\%$; quadrature $\pm 40\%$.	Weight	1.6 kg (3.5 lbs.)
Readability	$\pm 1\%$.	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

1745 Meyerside Drive, Unit 8
Mississauga/Ontario/Canada
L5T 1C5
Tel: (416) 676-9580
Cables: Geonics

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



32E13NE0033 2.8112 LOWER DETOUR LAKE

900

#16.
W-85-06-163
Minin_s

Type of Survey(s) Geophysical (VLF-EM)		Township or Area Lower Detour Lake Area	
Claim Holder(s) Westmin Resources Limited		Prospector's Licence No. T-778	
Address 25 Adelaide Street East, Suite 1400, Toronto, Ontario M5C 1Y2			
Survey Company Westmin Resources Limited	Date of Survey (from & to) 24 Day 2 Mo. 84 Yr. 30 Day 2 Mo. 84 Yr.		Total Miles of line Cut
Name and Address of Author (of Geo-Technical report) P.R.J. Nicholls, 25 Adelaide Street East, Suite 1400, Toronto, Ont. M5C 1Y2			

Credits Requested per Each Claim in Columns at right

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

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

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P.	779415				
	779416				
	779417				
	779418				
	780735				
	780737				
	780738				
	780739				
	780740				
	780741				
	780742				
	780743				
	780744				
	780754				
	780755				
	780756				

RECEIVED
MAY 2 1985
MINING LANDS SECTION

RECORDED
MAY 2 1985
Receipt No. *ch*

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.

Total number of mining claims covered by this report of work. **16**

Date **30 April 1985** Recorded Holder or Agent (Signature) *Shirley Jarman*

For Office Use Only

Total Days Cr. Recorded **320** Date Recorded **May 2/85** Mining Recorder *[Signature]*

Date Reported as Recorded **85.5.3** Month Director *[Signature]*

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
P.R.J. Nicholls, 25 Adelaide St. East, #1400, Toronto, Ontario M5C 1Y2

Mining Act

COPY

Type of Survey(s) **Geophysical (VLF-EM)** Township or Area **Lower Detour Lake Area**

Claim Holder(s) **Westmin Resources Limited** Prospector's Licence No. **T-778**

Address **25 Adelaide Street East, Suite 1400, Toronto, Ontario M5C 1Y2**

Survey Company **Westmin Resources Limited** Date of Survey (from & to) **24 Day 2 Mo. 84 Yr. 30 Day 2 Mo. 84 Yr.** Total Miles of line Cut

Name and Address of Author (of Geo-Technical report) **P.R.J. Nicholls, 25 Adelaide Street East, Suite 1400, Toronto, Ont. M5C 1Y2**

Credits Requested per Each Claim in Columns at right

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

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

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
P.	779415				
	779416				
	779417				
	779418				
	780735				
	780737				
	780738				
	780739				
	780740				
	780741				
	780742				
	780743				
	780744				
	780754				
	780755				
	780756				

RECEIVED
MAY 1 1985

MINING LANDS SECTION 16

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures ÷ 15 =

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 Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Branch Director

Date **30 April 1985** Recorded Holder or Agent (Signature) *[Signature]*

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 **P.R.J. Nicholls, 25 Adelaide St. East, #1400, Toronto, Ontario M5C 1Y2**

Date Certified **30 April 1985** Certified by (Signature) *[Signature]*



GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL
TECHNICAL DATA STATEMENT

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(s) Geophysical (VLF-EM)
Township or Area Lower Detour Lake Area
Claim Holder(s) Westmin Resources Limited
25 Adelaide St.E, Toornto, Ont.
Survey Company Westmin Resources Limited
Author of Report P.R.J.Nicholls
25 Adelaide Street East, #1400,
Address of Author Toronto, Ontario M5C 1Y2
Covering Dates of Survey 24-30 Feb.1984, 30 Apr.1985
(linecutting to office)
Total Miles of Line Cut 30.60 km

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
P.	779415
P.	779416
P.	779417
P.	779418
P.	780735
P.	780737
P.	780738
P.	780739
P.	780740
P.	780741
P.	780742
P.	780743
P.	780744
P.	780754
P.	780755
MINING LANDS SECTION 780756	
TOTAL CLAIMS <u>16</u>	

If space insufficient, attach list

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>	Geophysical	DAYS per claim.
ENTER 40 days (includes line cutting) for first survey.	-Electromagnetic	<u>20</u>
	-Magnetometer	_____
	-Radiometric	_____
	-Other	_____
ENTER 20 days for each additional survey using same grid.	Geological	_____
	Geochemical	_____

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

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

DATE: 1 May 1985 SIGNATURE: Paul P. Nicholls
Author of Report or Agent

Res. Geol. _____ Qualifications S.E.G.I.C.

<u>Previous Surveys</u>			
File No.	Type	Date	Claim Holder

RECEIVED

MAY 1985
MINING LANDS SECTION 780756

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations 1242 Number of Readings 2484
Station interval 25 m Line spacing 100 m
Profile scale 1 cm = 20%
Contour interval N/A

MAGNETIC

Instrument _____
Accuracy – Scale constant _____
Diurnal correction method _____
Base Station check-in interval (hours) _____
Base Station location and value _____

ELECTROMAGNETIC

Instrument Geonics 16
Coil configuration N/A
Coil separation N/A
Accuracy ± 1%
Method: Fixed transmitter Shoot back In line Parallel line
Frequency about 15-25 kHz Seattle-Washington
(specify V.L.F. station)
Parameters measured in phase, quadrature

GRAVITY

Instrument _____
Scale constant _____
Corrections made _____
Base station value and location _____
Elevation accuracy _____

**INDUCED POLARIZATION
RESISTIVITY**

Instrument _____
Method Time Domain Frequency Domain
Parameters – On time _____ Frequency _____
– Off time _____ Range _____
– Delay time _____
– Integration time _____
Power _____
Electrode array _____
Electrode spacing _____
Type of electrode _____

Mining Lands Section

File No 2.8112

Control Sheet

TYPE OF SURVEY

GEOPHYSICAL

GEOLOGICAL

GEOCHEMICAL

EXPENDITURE

MINING LANDS COMMENTS:

L.D.

lad

J. Heuser

Signature of Assessor

85-05-24

Date

1985 05 21

File: 2.8112

Mining Recorder
Ministry of Natural Resources
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

We received reports and maps on May 15, 1985 for a Geophysical (Electromagnetic) Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims P 779415, et al, in the Area of Lower Detour Lake.

This material will be examined and assessed and a statement of assessment work credits will be issued.

We do not have a copy of the report of work which is normally filed with your office prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone:(416)965-4888

A. Barr:mc

cc: Westmin Resources Limited
25 Adelaide Street East
Suite 1400
Toronto, Ontario
M5C 1Y2
Attention: Mr. P. Nicholls



Westmin Resources Limited
Suite 1400, 25 Adelaide Street East
Toronto, Ontario, Canada
M5C 1Y2
416 364-8116 Telex: 06-22072

Registered Mail

May 13, 1985.

Land Management Branch,
Ministry of Natural Resources,
Mining Land Section,
Whitney Block, Room 6643,
Queen's Park,
Toronto, Ontario.
M7A 1W3.

Dear Sir: Re: VLF-EM Survey, South Detour Claim Group,
Lower Detour Lake Area, Claims P.779415-418,
P.780735, P.780737-744, P.780754-756.

Please find enclosed in duplicate the above mentioned report, technical data statement and a copy of the form report of work that has been forwarded to the Mining Recorder office in Timmins.

I hope you will find everything in order.

Yours truly,

WESTMIN RESOURCES LIMITED

A handwritten signature in cursive script, appearing to read "S. Kuprejanov".

(Mrs.) S. Kuprejanov,
Administrative Geologist.

SK/hmc
Encls.

RECEIVED

MAY 15 1985

MINING LANDS SECTION

8.8.12

✓
779415

✓
16

✓
17

✓
18

✓
780735

✓
37

✓
38

✓
39

✓
40

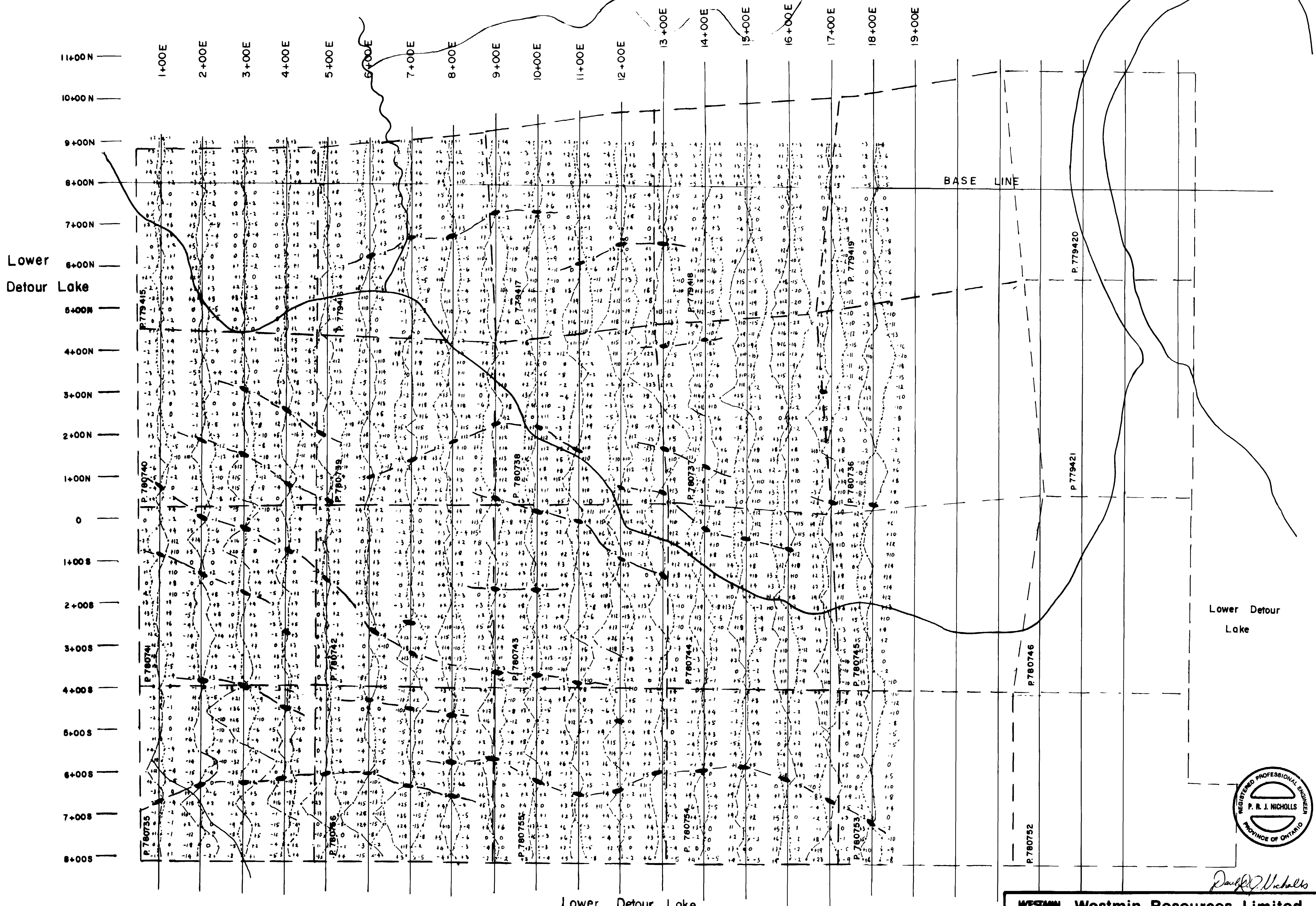
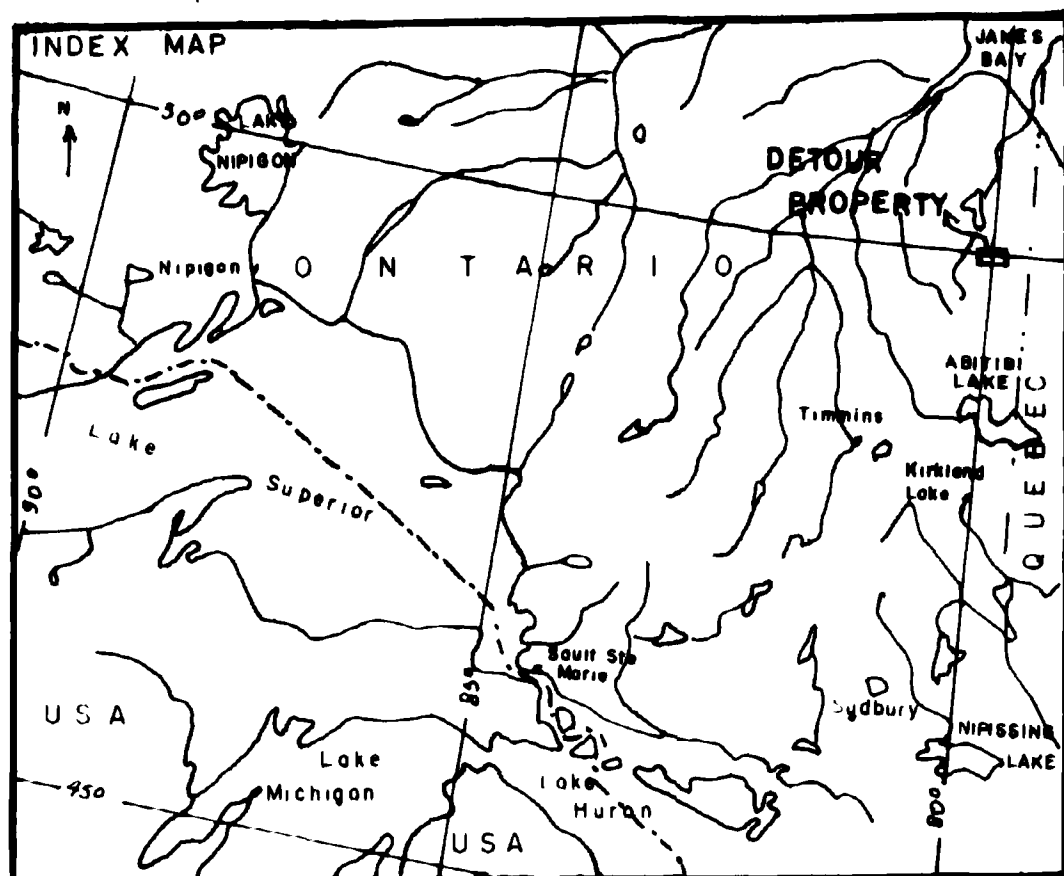
✓
41

✓
42

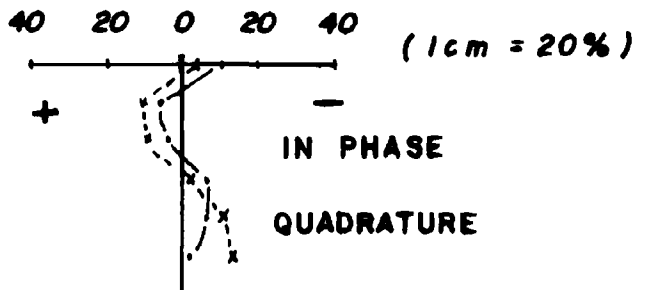
✓
43

✓
44

h

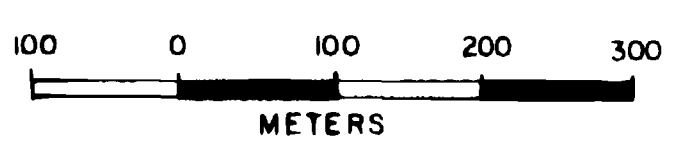


LEGEND



Conductor axis

Transmitter Station: SEATTLE WASHINGTON



Paul R. Nicholls

Westmin Resources Limited
EASTERN CANADA MINING DIVISION

SOUTH DETOUR PROJECT
DETOUR RIVER BLOCK
1984
VLF - EM SURVEY

Date FEBRUARY 1984

Scale 1:5000
NTS 32-E-13



200