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A-617

REPORT ON AN
AIRBORNE MAGNETIC AND VLF-EM SURVEY
RANEY AND ROLLO TOWNSHIPS
PORCUPINE MINING DIVISION, ONTARIO

for
CARLSON MINES LTD.

RECEIVED

SEP 22 1986

MINING LANDS SECTION

by

TERRAQUEST LTD.
Toronto, Canada

August 30, 1986

TERRAQUEST LTD.



Suite 905, 121 Richmond Street West, Toronto, Canada, M5H 2K1, Telephone (416) 869-0010



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- No. A-617-3, VLF-EM Survey
- No. A-617-4, Interpretation



1. INTRODUCTION

This report describes the specifications and results of a geophysical survey carried out for Carlson Mines of 407-2 Civic Centre, Etobicoke, Ontario M9C 5A3 by Terraquest Ltd., 905 - 121 Richmond St. W., Toronto, Canada. The field work was performed on November 22, 1985 and the data processing, interpretation and reporting from November 25, 1985 to August 30, 1986.

The purpose of a survey of this type is two-fold. One is to prospect directly for anomalously conductive and magnetic areas in the earth's crust which may be caused by, or at least related to, mineral deposits. A second is to use the magnetic and conductivity patterns derived from the survey results to assist in mapping geology, and to indicate the presence of faults, shear zones, folding, alteration zones and other structures potentially favourable to the presence of gold and base-metal concentration. To achieve this purpose the survey area was systematically traversed by an aircraft carrying geophysical instruments along parallel flight lines spaced at even intervals, 100 meters above the terrain surface, and aligned so as to intersect the regional geology in a way to provide the optimum contour patterns of geophysical data.

2. THE PROPERTY

The property is located in Raney and Rollo townships, in the Porcupine Mining Division of Ontario about 48 kilometres south southwest of Foleyet and 50 kilometres east of Chapleau. The property lies south of Ridley Lake and can be reached by floatplane from Chapleau.

The latitude and longitude are 47 degrees 53 minutes, and 82 degrees 44 minutes respectively, and the N.T.S. reference is 410/15.

The claim numbers are shown in figure 2.

3. GEOLOGY

Map References

1. Map 43b: Swayze Gold Area. scale 1:63,360. O.D.M.1934
2. Map P.673: Horwood Lake Sheet. scale 1:126,720. O.D.M. 1971
3. Map P.675: Opeepeesway - Rocky Island Lakes. scale 1:126,720. O.D.M. 1971
4. Map 2352: Chapleau. scale 1:250,000. O.D.M. 1976



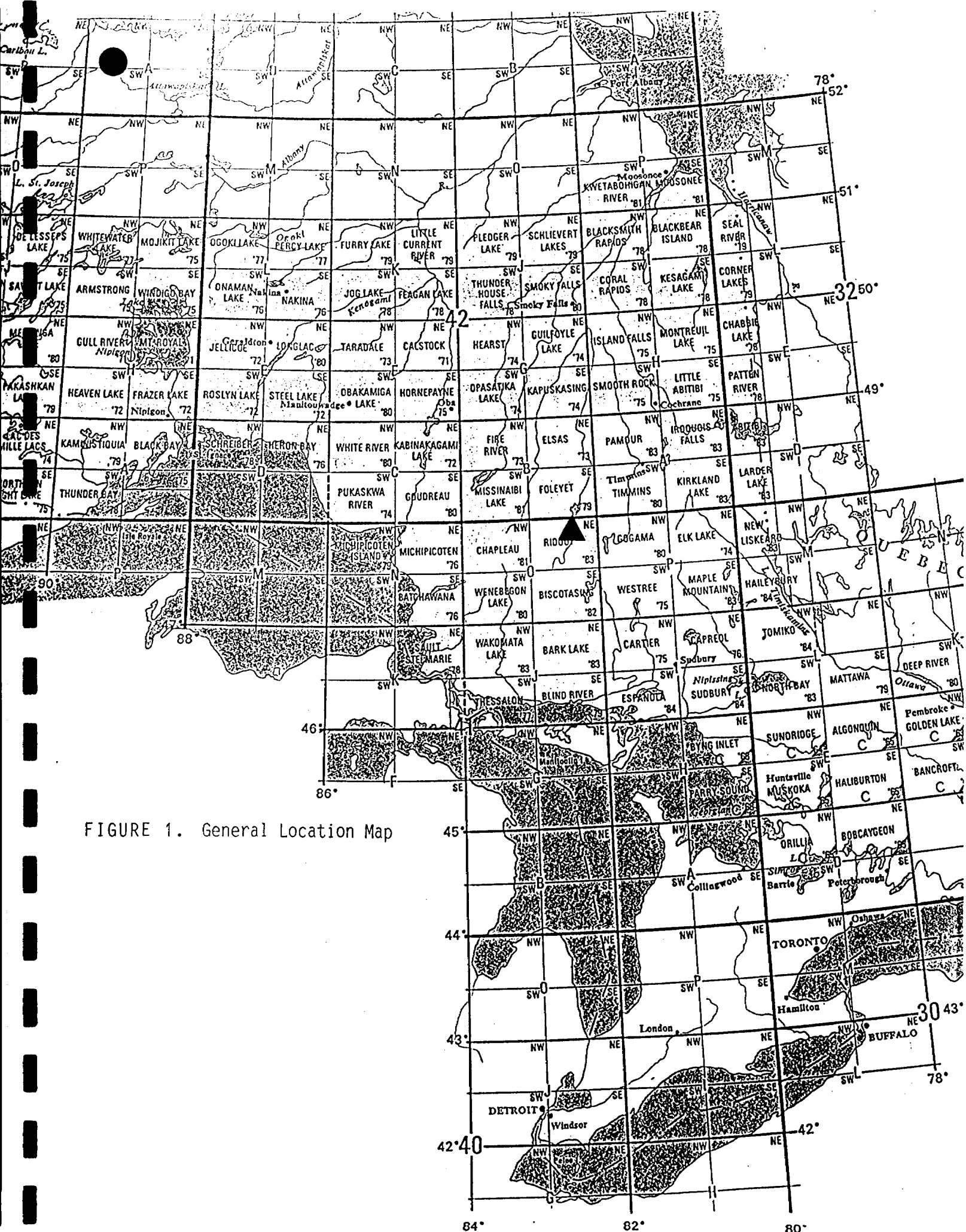


FIGURE 1. General Location Map

The property is underlain primarily by mafic to intermediate volcanics trending to the northeast. Minor felsics and sediments occur as a narrow belt across the southern edge of the property and as a narrow wedge projecting in from the eastern boundary. A stock of biotite - hornblende granite occurs along the northern boundary and as a small plug in the centre of the property.

The Destor - Porcupine Break occurs to the east of the property and projects to the south east corner of the survey area.

4. SURVEY SPECIFICATIONS

4.1 Instruments

The survey was carried out using a Cessna 182 aircraft, registration C-FAKK, which carries a magnetometer and a VLF electromagnetic detector.

The magnetometer is a proton precession type with the sensor element mounted in an extension of the right wing tip. It's specifications are as follows:

- Resolution: 0.5 gamma
- Accuracy: One gamma
- Cycle time: One second
- Range: 20000 - 100000 gammas in 23 overlapping steps
- Gradient tolerance: Up to 5000 gammas per meter
- Model: GSM-8BA
- Manufacturer: GEM Systems Inc., 105 Scarsdale Rd., Don Mills, Ontario, M3B 2R5

The VLF-EM unit uses three orthoganol detector coils to measure (a) the total field strength of the time-varying EM field and (b) the phase relationship between the vertical coil and both the "along line" coil (LINE) and the "cross-line" coil (ORTHO). The LINE coil is tuned to a transmitter station that is ideally positioned at right angles to the flight lines, while the ORTHO coil transmitter should be in line with the flight lines. It's specifications are:

- Accuracy: 1%
- Reading interval: 1/2 second
- Model: TOTEM 2A
- Manufacturer: Herz Industries, Toronto

The VLF sensor is mounted in the left wing tip extension.

Other instruments are:

- . King KRA-10A Radar altimeter



- . UDAS-100 data processor with Digidata nine track tape recorder, manufactured by Urtec Ltd., Markham, Ontario.
- . Geocam video camera and recorder for flight path recovery, manufactured by Geotech Ltd., Markham, Ontario.

4.2 Lines and Data

- a) Line spacing: 100 meters
- b) Line direction: 360 degrees
- c) Terrain clearance: 100 meters
- d) Average ground speed: 156 km/hr.
- e) Data point interval:
 - Magnetic: 42 meters
 - VLF-EM: 21 meters
- f) Tie Line interval: 2 kilometers
- g) Channel 1 (LINE): NAA Cutler, Me., 24.0 kHz
- h) Channel 2 (ORTHO): NSS Annapolis. 21.4 kHz
- i) Line km over total survey area: 340
- j) Line km over claim groups: 313

4.3 Tolerances

- a) Line spacing: Any gaps wider than twice the line spacing and longer than 10 times the line spacing were filled in by a new line.
- b) Terrain clearance: Portions of line which were flown above 125 meters for more than one km were reflown if safety considerations were acceptable.
- c) Diurnal magnetic variation: Less than twenty gammas deviation from a smooth background over a period of two minutes or less as seen on the base station analogue record.
- d) Manoeuvre noise: Approximately +/-5 gammas.

4.4 Photomosaics

For navigating the aircraft and recovering the flight path, mosaics of aerial photographs were made from existing air photos.

5. DATA PROCESSING

Flight path recovery was carried out in the field using a video tape viewer to observe the flight path as recorded by the Geocam video camera system. The flight path recovery was completed daily to enable reflights to be selected where needed for the following day

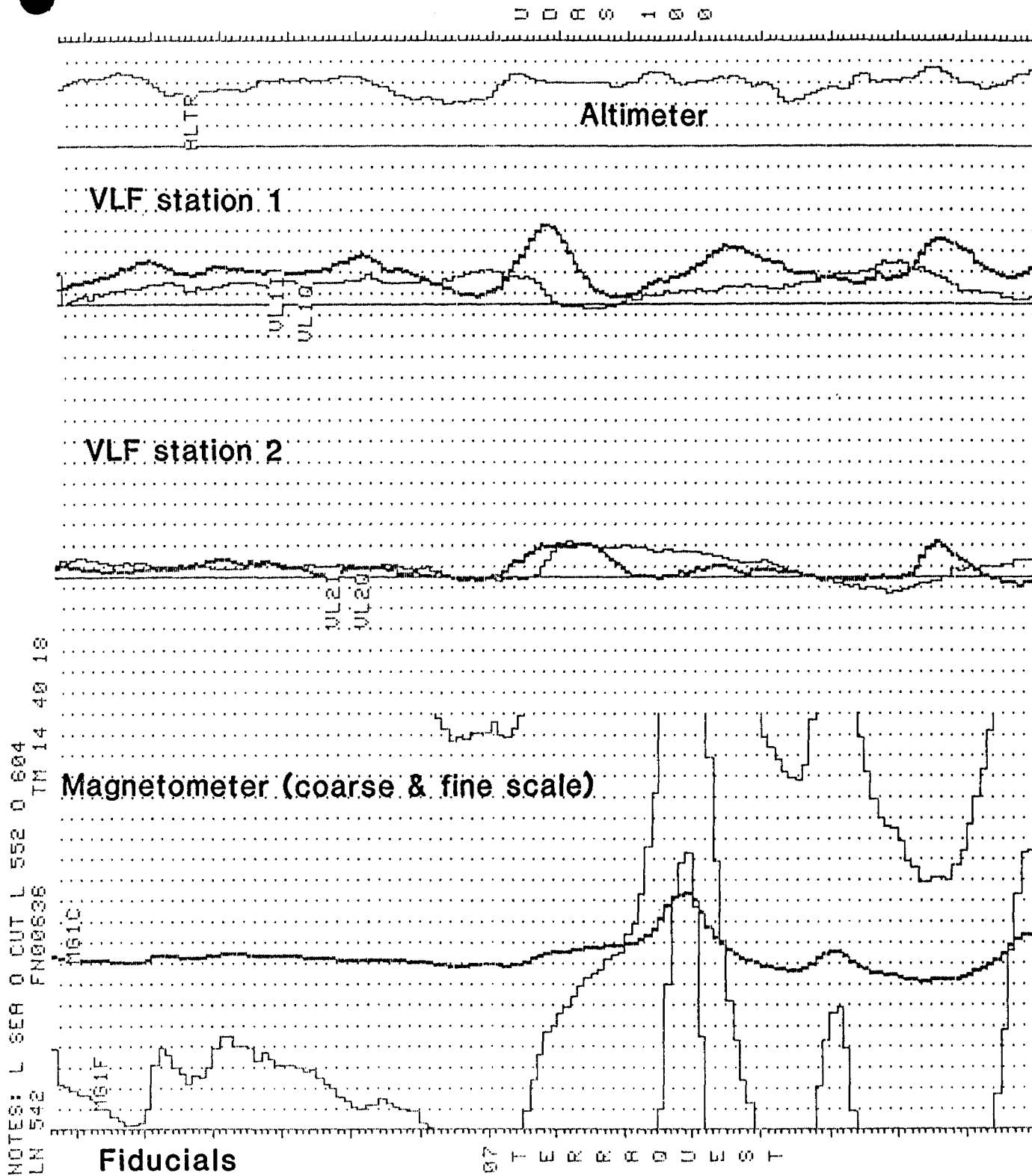


FIGURE 3. Sample of analogue data



The magnetic data was levelled in the standard manner by tying survey lines to the tie lines. The IGRF has not been removed. The total field was contoured by computer using a program provided by Dataplotting Services Inc. To do this the final levelled data set is gridded at a grid cell spacing of 1/10 of an inch at map scale.

The vertical magnetic gradient is computed from the total field data using a method of transforming the data set into the frequency domain, applying a transfer function to calculate the gradient, and then transforming back into the spatial domain. The method is described by a number of authors including Grant, 1972 and Spector, 1968. The computer program for this purpose is provided by Paterson, Grant and Watson Ltd. of Toronto.

The VLF data was treated automatically so as to normalize the non conductive background areas to 100 (total field strength) and zero (quadrature). The algorithms to do this were developed by Terraquest and will be provided to anyone interested by application to the company.

All of these dataprocessing calculations and map contouring were carried out by Dataplotting Services Inc. of Toronto.

INTERPRETATION

6.1 General Approach

To satisfy the purpose of the survey as stated in the introduction, the interpretation procedure was carried out on both the magnetic and VLF data. On a local scale the magnetic gradient contour patterns were used to outline geological units which have different magnetic intensity and patterns or "signatures". Where possible these are related to existing geology to provide a geological identity to the units. On a regional scale the total field contour patterns were used in the same way.

- Grant, F.S. and Spector A. 1970: Statistical Models for Interpreting Aeromagnetic Data; Geophysics, Vol 35
Grant, F.S., 1972: Review of Data Processing and Interpretation Methods in Gravity and Magnetism; Geophysics, August 1972.
Spector, A., 1968: Spectral Analysis of Aeromagnetic maps; unpublished thesis; University of Toronto, 1968.

Faults and shear zones are interpreted mainly from lateral displacements of otherwise linear magnetic anomalies but also from long narrow "lows". The direction of regional faulting in the general area is taken into account when selecting faults. Folding is usually seen as curved regional patterns. Alteration zones can show up as anomalously quiet areas, often adjacent to strong, circular anomalies that represent intrusives. Magnetic anomalies that are caused by iron deposits of ore quality are usually obvious owing to their high amplitude, often in tens of thousands of gammas.

VLF anomalies are categorized according to whether the phase response is normal, reverse, or no phase at all. The significance of the differing phase responses is not completely understood although in general reverse phase indicates either overburden as the source or a conductor with considerable depth extent, or both. Normal phase response is theoretically caused by surface conductors with limited depth extent.

Areas showing a smooth response somewhat above background (ie. 110 or so) are likely caused by overburden which is thick enough and conductive enough to saturate at these frequencies. In this case no response from bedrock is seen.

6.2 Interpretation

The total magnetic field has a relief of approximately 875 gammas and shows exceptionally clear magnetic patterns, unusually detailed for total magnetic field data. The vertical magnetic gradient data improves the resolution of the very high and the very low magnetic stratigraphy. The vertical magnetic gradient data was used to delineate the stratigraphy and structure and the total magnetic field was used to obtain the relative intensities of the magnetic units.

The mafic to intermediate volcanics (Unit 1) correlate with moderately strong magnetic responses. Areas mapped as Unit 1 probably contain minor felsic volcanics. Strongly magnetic strata (Unit 1m) occur within the mafic volcanics and are probably related to increased concentrations of mafic constituents, magnetite or sulphides, particularly pyrrhotite. Boundaries of the very strongly magnetic units are generally exaggerated beyond their true ground widths.

Diabase dykes (Unit 9) also possess a moderately strong magnetic response. They are identified primarily by their cross cutting nature. In general they cannot be resolved from the volcanics where the diabase parallels the mafic strata (Unit 1m).

The felsic to intermediate volcanics (Unit 2) and metasediments (Unit 3) both correlate with moderately low magnetic responses.

The biotite - hornblende granite (Unit 6) generally possesses a weak magnetic response common for most granites. The outline is best identified by the total magnetic field data which suggest that the granite extends southwards beneath the volcanics in the middle of the property. Strata with higher magnetic activity (Unit 6m) may be related to different granitic phases (such as increased concentrations of hornblende) or to remnant volcanic enclaves.

The area is structurally complex. The Destor - Porcupine Break represented by the northeastern trending diabase dyke (Unit 9) occurs in the southeastern corner of the property. A parallel set of faults occur throughout the survey area.

Other fault sets trend to the east, north and northwest. The northwest set is interpreted to be relatively early and may be responsible for the apparent large scale dextral displacement of the major magnetic strata. Some of these faults may have been tensional providing ground preparation for diabasic intrusives. This is suggested by the possible northwest trending dykes in the centre of the property. Alternatively, the termination of the northeast trending magnetic strata may be related to the granitic intrusive.

The east trending fault set is defined primarily by offsets in the north trending dykes,. In places these splay slightly to the north or south. This set is interpreted to be relatively young.

The interpretation of faults from magnetic data is quite subjective, many variations are possible. Reinterpretation by a different individual preferably with ground data is often informative.

Numerous moderate to strong VLF-EM conductor axes have been identified and evaluated according to the Terraquest classification system (Figure 4). This system correlates the nature and orientation of the conductor axes with stratigraphic, structural and topographic features to obtain an association from which one or more origins may be selected. Alternate associations are indicated in parentheses.

Those conductor axes that coincide with or parallel magnetic stratigraphy possess the greatest potential for bedrock origins either as graphite or sulphides. These should be followed up on the ground by EM or IP techniques. Faults identified by VLF-EM or magnetic methods may provide primary structural control for epithermal mineralization.

FIGURE 4

TERRAQUEST CLASSIFICATION OF VLF-EM CONDUCTOR AXES

<u>Symbol</u>	<u>Correlation</u>	<u>Association: Possible Origins</u>
a	Coincident with magnetic stratigraphy	Magnetic horizons: stratabound mineralogic origin or shear zone
b	Parallel to magnetic stratigraphy	Non-magnetic horizons: stratabound mineralogic origin or shear zone
c	No correlation with magnetic stratigraphy	Association not known: stratabound mineralogic origin, fault or shear zone, overburden
d	Coincident with magnetic dyke	Dyke or possible fault: mineralogic or electrolytic
f	Coincident with topographic lineament or parallel to fault system	Fault zone: mineralogic or electrolytic
ob	Total field contours conform to topographic depression	Most likely overburden: Clayey sediments, swampy mud
cul	Coincident with cultural sources	Electrical, pipe or railway lines

Index to Relative Amplitudes of Conductor Axes

- a** - Total field conductor axis
- A** - Strong total field conductor axis
- a** - Total field conductor axis with strong quadrature response

Notes

- 1 - Mineralogic origins include sulphides, graphite, and in fault or shear zones gouge
- 2 - Electrolytic origins imply conductivity related to porosity or high moisture content

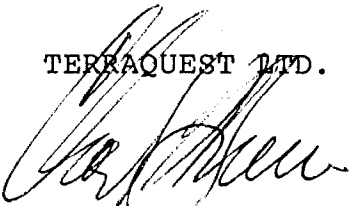


7. SUMMARY

An airborne combined magnetic and VLF-EM survey has been done on the property at line intervals of 100 metres. The total field and vertical gradient magnetic data, VLF-EM data and interpretation maps are produced at a scale of 1:10,000.

The magnetic data has been used to modify and update the existing geology and has shown a number of new contacts and faults in considerable detail. Numerous VLF-EM conductor axes were found of which some are believed to have potential sulphide origins and have been recommended for additional investigation.

TERRAQUEST LTD.



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Charles Q. Barrie, M.Sc.
Geologist





Ministry of
Northern Affairs
and Mines

Report of Work

(Geophysical, Geological,
Geochemical and Expenditures)

182/86
29419

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

Mining Act

Type of Survey(s) AIRBORNE VLF-EM, MAGNETICS		Township or Area ROLLO
Claim Holder(s) CARLSON MINES LTD.		Prospector's Licence No. T 1226
Address Ste 407 - 2 CIVIC CENTRE COURT ETOBICOKE M9C 5A3		
Survey Company TERRAQUEST	Date of Survey (from & to) 20 Day 11 Mo. 85 Yr. 22 Day 11 Mo. 85 Yr.	Total Miles of line Cut
Name and Address of Author (of Geo-Technical report) CHARLES Q. BARRIE 121 RICHMOND ST. W. Ste 905 TORONTO ONT.		

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	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
For each additional survey: using the same grid: Enter 20 days (for each)	Geochemical	
	Geophysical	
	Days per Claim	
Man Days Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
Airborne Credits	Electromagnetic	40
	Magnetometer	40
	Radiometric	

Mining Claims Traversed (List in numerical sequence)			Mining Claims Traversed (List in numerical sequence)		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P	636156				
	636157				
	636158				
	636159				
	636160				
	636161				
	636162				
	636163				
	636164				
	636165				
	619086				
	619087				
	619088				
	619089				
	619090				
	619091				
	619092	Cancelled Claim			
	619093	Cancelled Claim			

RECEIVED
JUN 13 1986

Expenditures (excludes power stripping)	
Type of Work Performed	FORCUPINE MINING DIVISION
Performed on Claim(s)	RECEIVED
	JUN 13 1986
Calculation of Expenditure	Days Credits
Total Expenditures	Days Credits
\$	÷ 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.

Date	Recorded Holder or Agent (Signature)
	<i>[Signature]</i>

For Office Use Only		Mining Recorder <i>[Signature]</i> Branch Director
Total Days Cr. Recorded	Date Recorded	
1440	June 13/86	
	Date Approved as Recorded	
	10.9.86	

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		
ROBERT PLATT Ste 407 - 2 CIVIC CENTRE COURT		
ETOBICOKE M9C 5A3		
Date Certified	Certified by (Signature)	
June 10/86	<i>[Signature]</i>	

Total number of mining claims covered by this report of work. **18**

Mining Act

Type of Survey: **AIRBORNE ULF-EM, MAGNETICS** Township or Area: **RANBY**

Claim Holder(s): **DAVE JONES** Prospector's Licence No.: **M 21190**

Address: **% INGAMAR EXPLORATIONS CEDAR HILL CONNAUGHT PONIAO**

Survey Company: **TERRAQUEST** Date of Survey (from & to): **20 11 85 22 11 85** Total Miles of line Cut: _____

Name and Address of Author (of Geo-Technical report): **CHARLES Q BARRIE 121 RICHMOND ST W. Ste 905 TORONTO ONTARIO**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- 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	Electromagnetic	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.		40
	Magnetometer	40
	Radiometric	

Prefix	Mining Claim Number	Expend. Days Cr.
P	851945	
	851946	
	851947	
	851948	
	851949	
	851950	
	851951	
	851952	
	851953	
	851954	
	851955	
	851956	
	851957	
	851958	
	851959	
	851960	
	851961	
	851962	
	851963	
	851964	
	851965	
	851966	
	851967	

Prefix	Mining Claim Number	Expend. Days Cr.
	851968	
	851969	
	851970	
	851971	
	851972	
	851973	
	851974	
	851975	
	851976	
	851977	
	851978	
	851979	

RECORDED

JUN 13 1986

[Signature]

RECEIVED

JUN 13 1986

FORCUPINE MINING DIVISION

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. **35**

For Office Use Only

Total Days Cr. Recorded: **2,800** Date Recorded: **June 13/86** Mining Recorder: *[Signature]*

Date Approved as Recorded: **10-7-86** Branch Director: *[Signature]*

Date: **JUNE 11/86** 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: **ROBERT PLATT Ste 407 - 2 CIVIC CENTRE COURT**

ETOBICOKE M9C 5A3 Date Certified: **JUNE 10/86** Certified by (Signature): *[Signature]*



Note: - If number of mining claims traversed exceeds space on this form, attach a separate sheet. Only days credits calculated in "Expenditures" section may be entered in the "Expend. Days Cr." column. Do not use shaded areas below.

Type: **AIRBORNE VLF-EM, MAGNETICS** Township or Area: **ROLLO**

Claim Holder(s): **MIKE PEPLINSKI (M2121) GEORGE FOURNIER (M26705) VITAL LARCHE (M20967)** Prospector's Licence No.

Address: **40 ANDY BOUDREAU R21 AIRPORT ROAD TIMMINS, ONTARIO**

Survey Company: **TERRAQUEST** Date of Survey (from & to): **20 Day 16 Mo. 85** Total Miles of line Cut: **22 Day 16 Mo. 85**

Name and Address of Author (of Geo-Technical report): **CHARLES Q. BARRIE 121 RICHMOND ST. W. Ste 905 TORONTO ONT.**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- 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	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic: 40
	Magnetometer: 40
	Radiometric: 40

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
P	866876		P	866899	
	866877			866900	
	866878			866901	
	866879			866902	
	866880			866903	
	866881			866904	
	866882			866905	
	866883			866906	
	866884			866907	
	866885			866908	
	866886			866909	
	866887			866910	
	866888			866911	
	866889			866912	
	866890			866913	
	866891			866914	
	866892			866916	
	866893			866917	
	866894			866918	
	866895			866919	
	866896			866920	
	866897			866921	
	866898			866922	

RECORDED JUN 13 1988

RECEIVED JUN 13 1986

Expenditures (excludes power) **MINING DIVISION**

Type of Work Performed: **RECEIVED**

Performed on Claim(s): **JUN 13 1986**

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.

Date: Recorder/Holder or Agent (Signature): *[Signature]*

For Office Use Only

Total Days Cr. Recorded: **3,680** Date Recorded: **June 13/86** Mining Recorder: *[Signature]*

Date Approved as Recorded: **6.9.86** Branch Director: *[Signature]*

Total number of mining claims covered by this report of work: **46**

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: **ROBERT PLATT Ste 407-2 CIVIC CENTRE COURT ETOBICOKE M9C 5A3**

Date Certified: **June 10/86** Certified by (Signature): *[Signature]*

186/86 29419

Instructions: - Please type or print. - If number of mining claims traversed exceeds space on this form, attach a list. Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns. - Do not use shaded areas below.

Aug

Type of Survey(s) **AIRBORNE VLF-EM, MAGNETICS** Township or Area **ROLLO**

Claim Holder(s) **DAVE JONES** Prospector's Licence No. **M21190**

Address **40 INGAMAR EXPLORATIONS - CEDAR HILL CONNAUGHT PON 1A0**

Survey Company **TERRAQUEST** Date of Survey (from & to) **20 11 85 22 11 85** Total Miles of line Cut

Name and Address of Author (of Geo-Technical report) **CHARLES Q. BARRIE 121 RICHMOND ST. W. Ste 905 TORONTO ONT.**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

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

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
RECORDED	- Magnetometer	
JUN 13 1986	- Radiometric	
<i>ef.</i>	- Other	
	Geological	
	Geochemical	

Airborne Credits	Electromagnetic	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.		40
	Magnetometer	40
	Radiometric	

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
P	836710		P	836733	
	836711			836734	
	836712			836735	
	836713			836736	
	836714			836737	
	836715			851807	
	836716			851808	
	836717			851809	
	836718			851810	
	836719			853163	
	836720			853164	
	836721			853165	
	836722			853166	
	836723			853167	
	836724				
	836725				
	836726				
	836727				
	836728				
	836729				
	836730				
	836731				
	836732				

Expenditures (excludes power and consumables)

Type of Work Performed **RECEIVED**

Performed on Claim(s) **JUN 13 1986**

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Total number of mining claims covered by this report of work. **37**

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 **2960** Date Recorded **June 13/86** Mining Recorder *[Signature]*

Date Approved as Recorded **June 13/86** Branch Director *[Signature]*

Date **June 13 1986** Recorder/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 **ROBERT PLATT 2 CIVIC CENTRE COURT Ste 407 ETOBICOKE M9C 5A3**

Date Certified **June 10/86** Certified by (Signature) *[Signature]*



Ministry of
Northern Affairs
and Mines

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

187/86
29419

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

Auger

Mining Act

Type of Survey(s) AIRBORNE VLF-EM, MAGNETICS		Township or Area ROLLO
Claim Holder(s) CARLSON MINES LTD		Prospector's Licence No. T 1226
Address Ste 407 - 2 CIVIC CENTRE COURT, ETOBICOKE M9C 5A3		
Survey Company TERRAQUEST	Date of Survey (from & to) 20 11 85 22 11 85	Total Miles of line Cut
Name and Address of Author (of Geo-Technical report) CHARLES Q BARRIE 121 RICHMOND ST. W. Ste 905 TORONTO ONT.		

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
Man Days	Geological	
	Geochemical	
	Geophysical	
	Days per Claim	
Complete reverse side and enter total(s) here PROCESSED JUN 13 1986 <i>ef</i>	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Days per Claim	
Airborne Credits	Electromagnetic	24
	Magnetometer	24
	Radiometric	

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
P	634397				
	634398				
	634399				
	634400				
	633567				
	633568				
	633569				
	633570				
	633592				
	633593				
	633594				
	633595				
	633596				
	619084				
	619085				
	636282				
	636283				
	636284				
	636285				

RECEIVED
Mining Lands Section

Expenditures (excludes power stripping)

FOR OFFICE USE ONLY

RECEIVED
JUN 13 1986

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.

Date Recorded Holder or Agent (Signature) *[Signature]*

For Office Use Only

Total Days Cr. Recorded Date Recorded **June 13/86**

Date Approved as Recorded **6-16-86** Mining Recorder *[Signature]*

Branch Director *[Signature]*

Total number of mining claims covered by this report of work. **19**

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
ROBERT PLATT Ste 407 - 2 CIVIC CENTRE COURT ETOBICOKE M9C 5A3

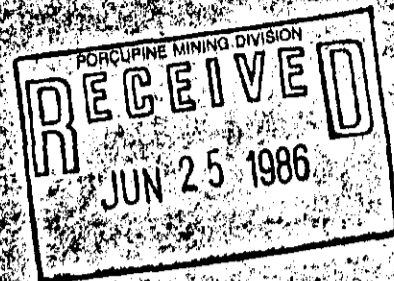
Date Certified **June 10/86** Certified by (Signature) *[Signature]*

REFERENCES

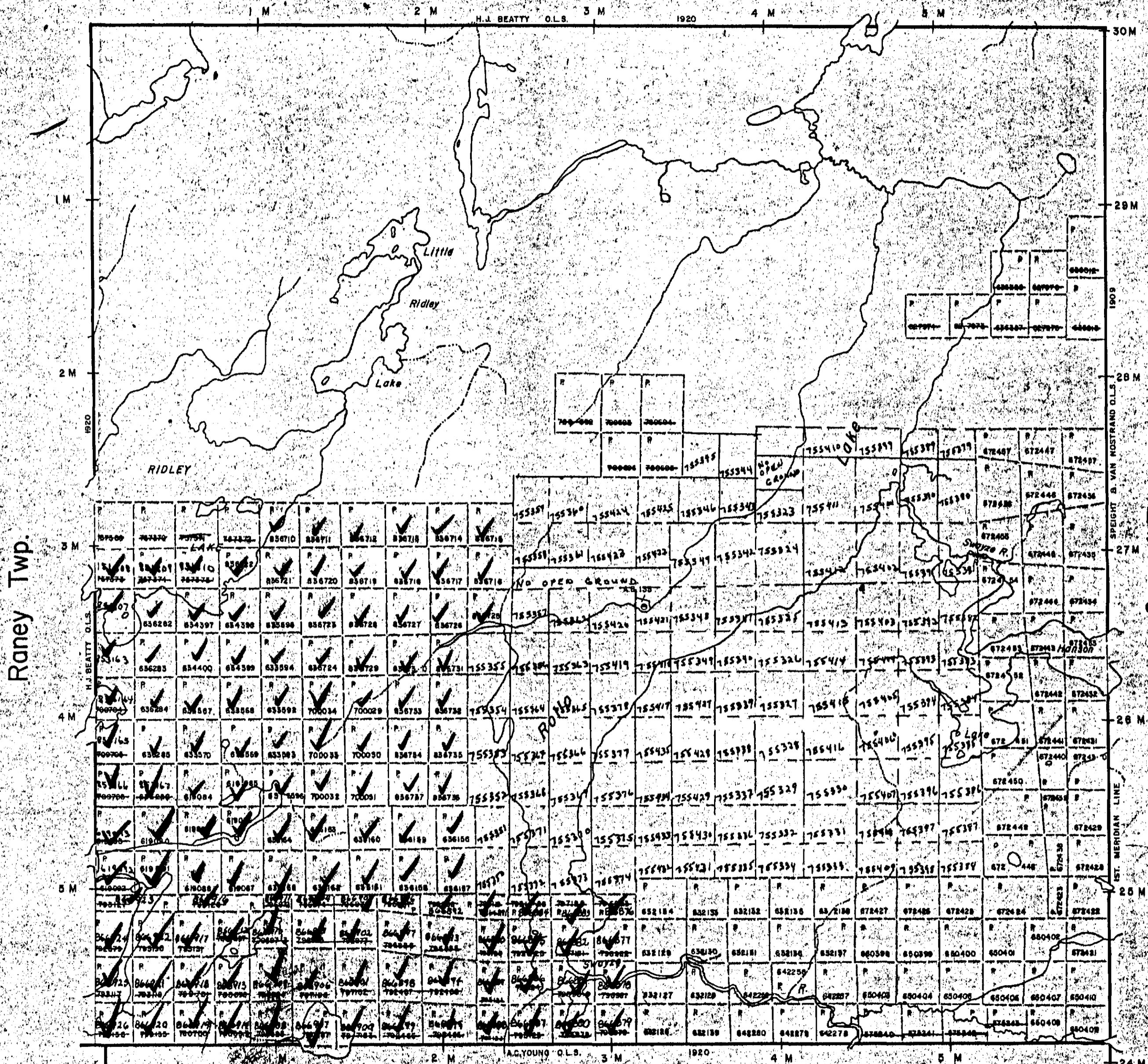
AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M. & S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File



Biggs Twp.



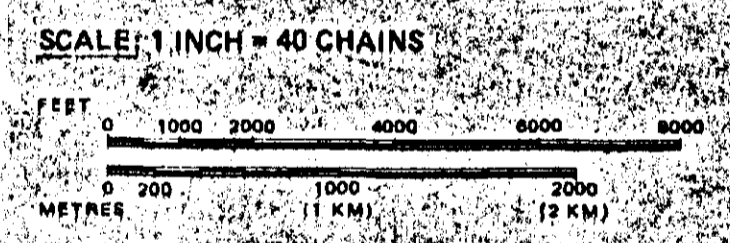
LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
 - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

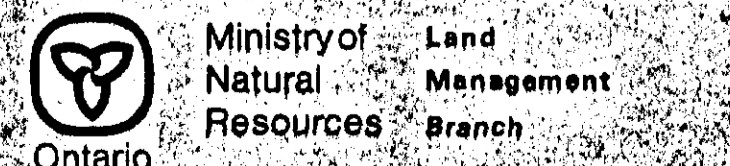
DISPOSITION OF CROWN LANDS

- | TYPE OF DOCUMENT | SYMBOL |
|---------------------------------|--------|
| PATENT, SURFACE & MINING RIGHTS | |
| SURFACE RIGHTS ONLY | |
| MINING RIGHTS ONLY | |
| LEASE, SURFACE & MINING RIGHTS | |
| SURFACE RIGHTS ONLY | |
| MINING RIGHTS ONLY | |
| LICENCE OF OCCUPATION | |
| ORDER-IN-COUNCIL | |
| RESERVATION | |
| CANCELLED | |
| SAND & GRAVEL | |

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1912, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.



TOWNSHIP
ROLLO
 M.N.R. ADMINISTRATIVE DISTRICT
CHAPLEAU
 MINING DIVISION
PORCUPINE
 LAND TITLES / REGISTRY DIVISION
SUDBURY



Date: MARCH, 1985
 Number: **G-3246**



410155E0015 2.9419 ROLLO 200

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. - MINING RIGHTS ONLY

S.R.O. - SURFACE RIGHTS ONLY

M.L.S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
SMR				
MSR+MR - withdrawn from staking		NAK	18/86	

SMR
MSR+MR - withdrawn from staking
NAK 18/86

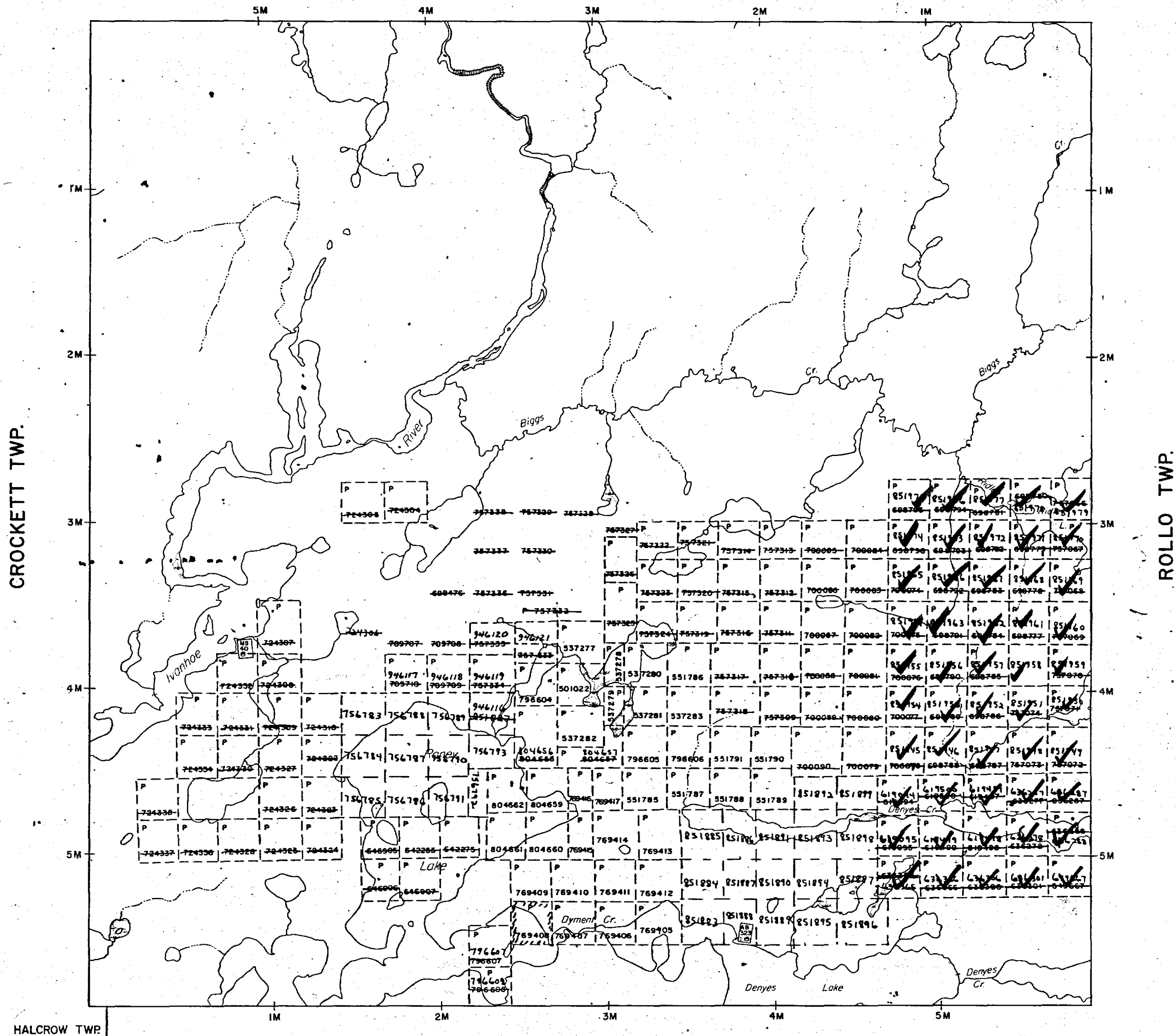
RECEIVED
JUL 22 1986



410155E015 2.9419 ROLLO

210

HELLYER TWP.



LEGEND

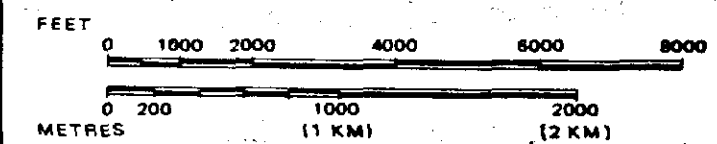
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
 - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	◼
" MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	①
CANCELLED	⊖
SAND & GRAVEL	⊙

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 83, SUBSEC 1.

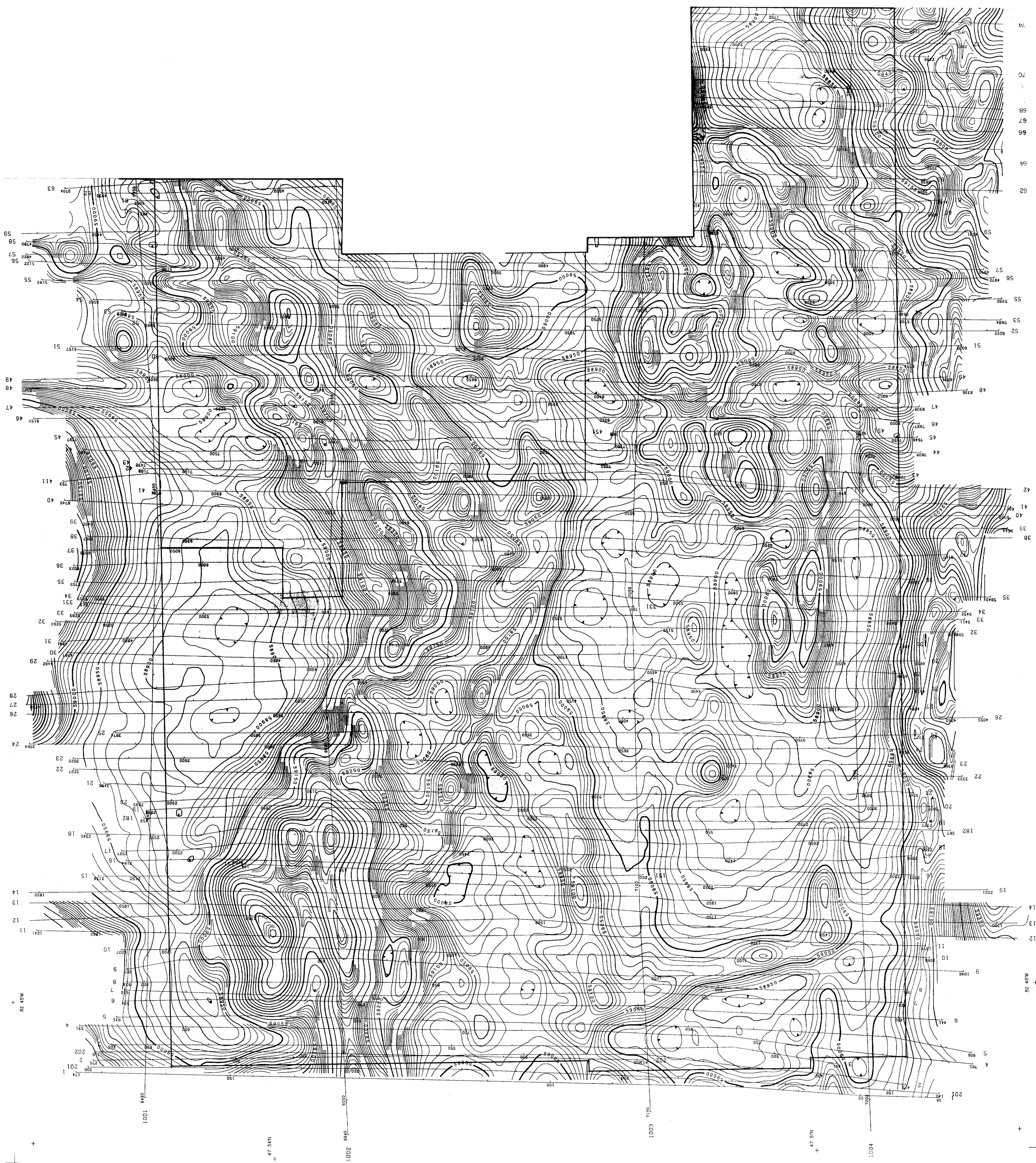
SCALE: 1 INCH = 40 CHAINS



TOWNSHIP
RANEY
M.N.R. ADMINISTRATIVE DISTRICT
CHAPLEAU
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
SUDBURY

Ministry of Land Management
Natural Resources Branch
Ontario

Date MARCH, 1985
Number G-3245



CARLSON MINES LTD.

AIRBORNE MAGNETIC SURVEY
TOTAL MAGNETIC FIELD

RANEY & ROLLO TWPS.
ONTARIO

N.T.S. NO. 410/15 DRAWING NO. A-617-1
SCALE 1:10,000 DATE AUGUST 1986

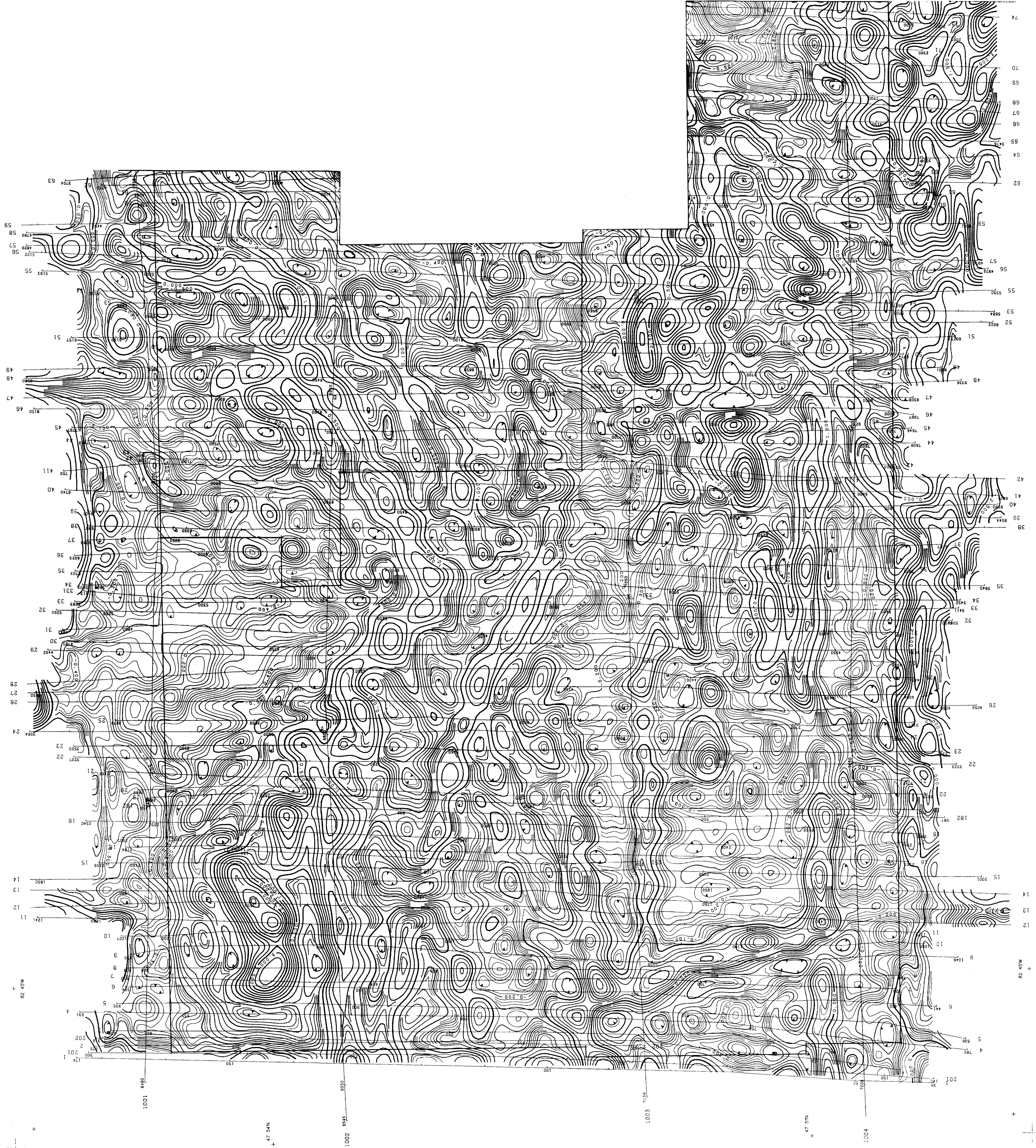
TERRAQUEST LTD.
TORONTO, CANADA

LEGEND

Terrain Clearance 100 meters
Line Spacing 100 meters

1000 gammas
250 gammas
10 gammas





LEGEND

Terrain Clearance 100 meters
 Line Spacing 100 meters
 2.500 gammas / meter
 500 gammas / meter
 .025 gammas / meter

CARLSON MINES LTD.

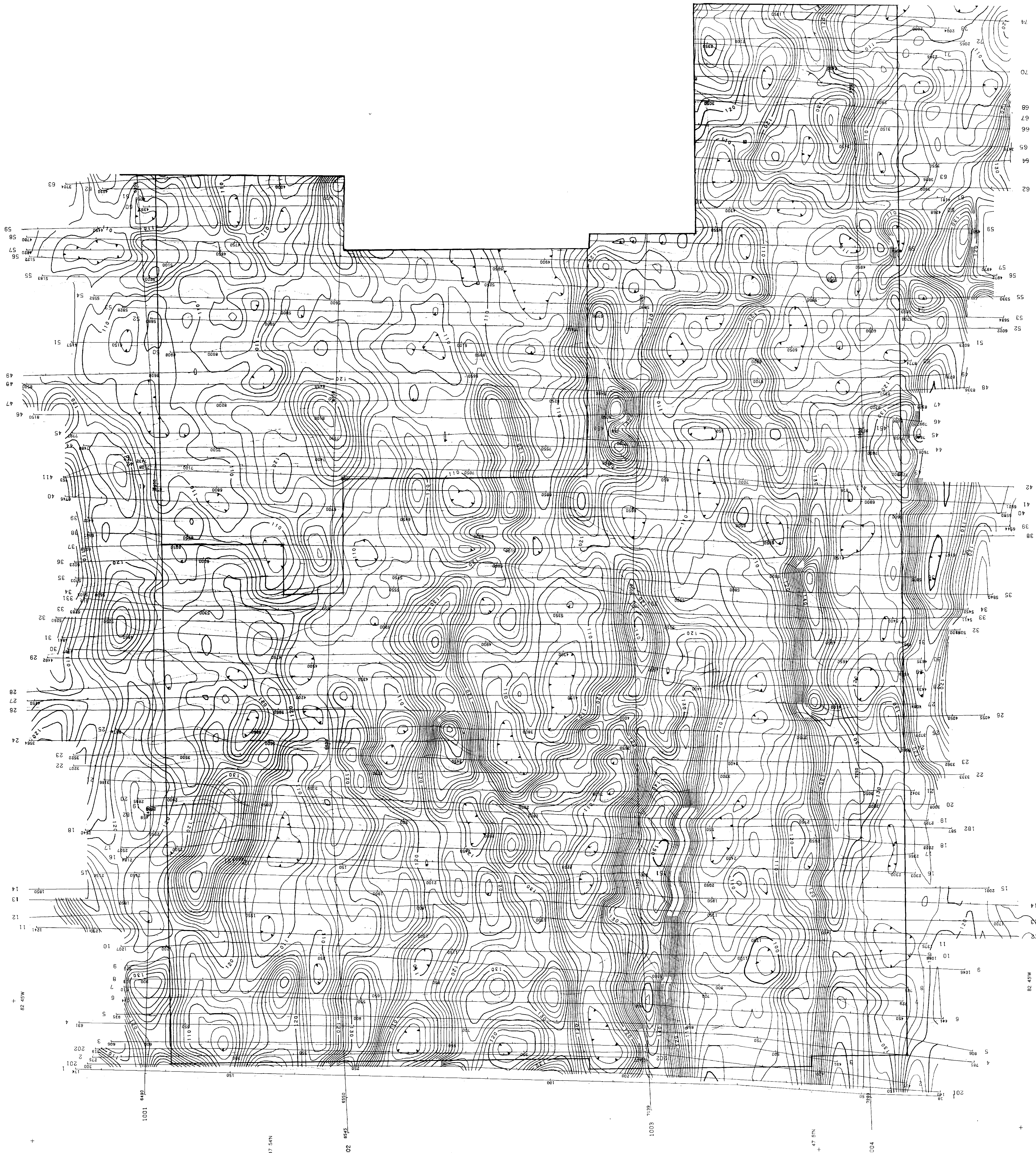
AIRBORNE MAGNETIC SURVEY
 VERTICAL MAGNETIC GRADIENT
 Calculated From Total Field

RANEY & ROLLO T.W.P.S.
 ONTARIO

N.T.S. NO. 410/15 DRAWING NO. A-617-2
 SCALE 1:10,000 DATE August, 1986

TERRAQUEST LTD.
 TORONTO, CANADA





CARLSON MINES LTD.

AIRBORNE VLF-EM SURVEY
 CONTOURS OF TOTAL FIELD STRENGTH
 PROFILES OF QUADRATURE

RANEY & ROLLO TWPS.
 ONTARIO

DRIVING NO. A-617-3
 DATE August 1986
 SCALE 1:10,000

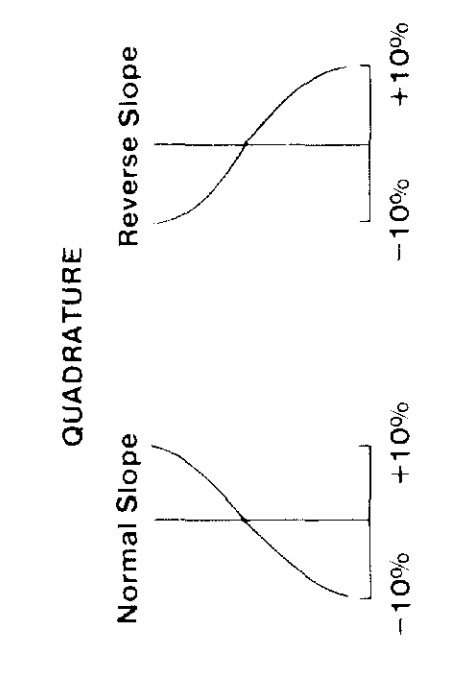
TERRAQUEST LTD.

TORONTO, CANADA

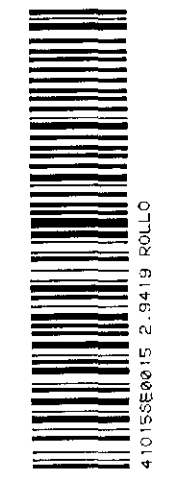
LEGEND

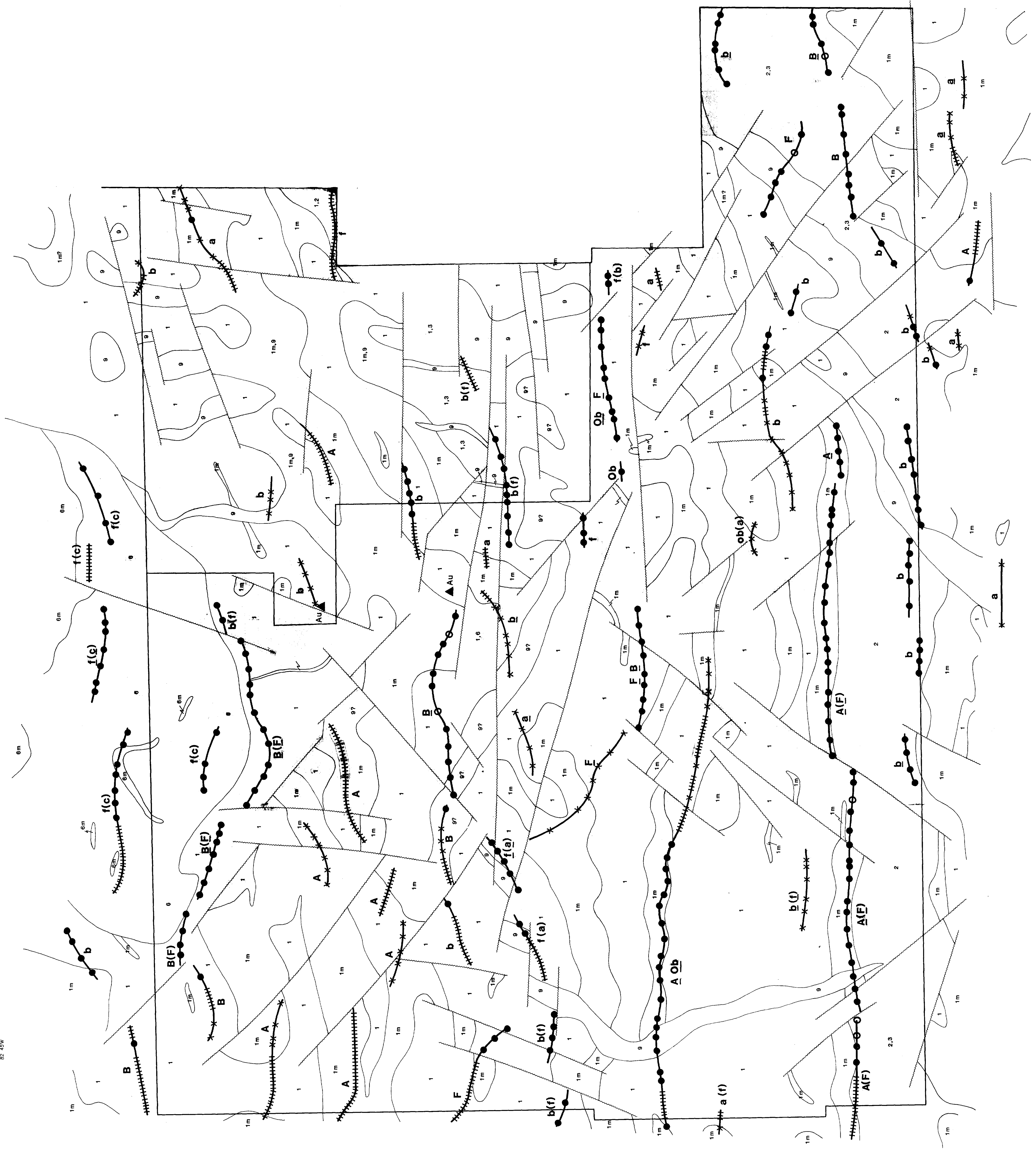
Terrain Clearance 100 meters
 Line Spacing 100 meters

Field Strength
 10%
 2%



NAA C-110r
 24.0 Mhz
 Azimuth 101





LITHOLOGY

9	Diabase Dyke
6m	Magnetic unit within 6.
6	Biotta-Hornblende Granite
3	Metasediments
2	Felsic to intermediate Volcanics
1m	Magnetic unit within 1.
1	Mafic to intermediate Volcanics

LEGEND

INTERPRETATION

- Contact
- Fault
- Property Boundary
- VLF-EM Conductor
- Oblique quadrature
- reverse quadrature
- total field only

See text for classification of conductors.
 Line Spacing: 100 meters
 100 meters
 Property boundary:

2

NAA Center
 24.0 kHz
 Azimuth 101

82 45W

47 54N

47 51N

CARLSON MINES LTD.

INTERPRETATION

RANEY & ROLLO TWPS.
 ONTARIO

N.T.S. NO. 410/15 DRAWING NO. A-620-4
 SCALE 1:10,000 DATE August 1986

TERRAQUEST LTD.
 TORONTO, CANADA

