



42A06NE0276 2.14130 CARMAN

010

REPORT ON
GEOPHYSICAL WORK
ON
CARMAN - SHAW PROJECT
CARMAN TOWNSHIP
FOR
FALCONBRIDGE LIMITED

NTS: 42-A/7

PROJ #: 8183

2.14130 -

MAY 1991

D. LONDRY
TIMMINS GEOPHYSICS LTD.

Qua / 2.2289

SUMMARY AND RECOMMENDATIONS

HLFM and magnetic surveys were carried out over 34 claims in Carman Township.

The magnetic survey mapped a broad northeast striking diabase dike in the southwest corner of the property; north-south dikes, although known to occur in the area, are difficult to interpret because of the line direction. Discontinuous, irregular shaped anomalies are located in area underlain by serpentinites.

One definite bedrock conductor was detected in the EM survey. It strikes northwest-southeast along the east side of the property and has a strong coincident magnetic anomaly. It is recommended that this zone is tested by diamond drilling on Line 4500 East where the width and conductivity is greatest.

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INTRODUCTION

During March 1991, magnetic and horizontal loop electromagnetic (HLEM) surveys were carried out for Falconbridge Limited over 34 claims in Carman Township.

The property is located approximately 23 kilometres southeast of the city of Timmins in the Porcupine Mining Division. The claims, located in the southwest portion of Carman Township (Figure 1), are numbered as follows:

P-1114785

P-1117118 P-1117139 inclusive

P-1117141 P-1117147 inclusive

P-1126598

P-1126600 P-1126601 inclusive

P-1126608

P-1127245

The property was accessed by snowmobile from the Car-Shaw Mine Property, which is reached via the Langmuir Road.

The field data was collected by J. DerWeduwen, L. Varin and B. Pigeon.

GENERAL GEOLOGY

The general geology of the area, consisting of Archean volcanic rocks intruded by younger diabase dikes, is described by Pyke (1982).

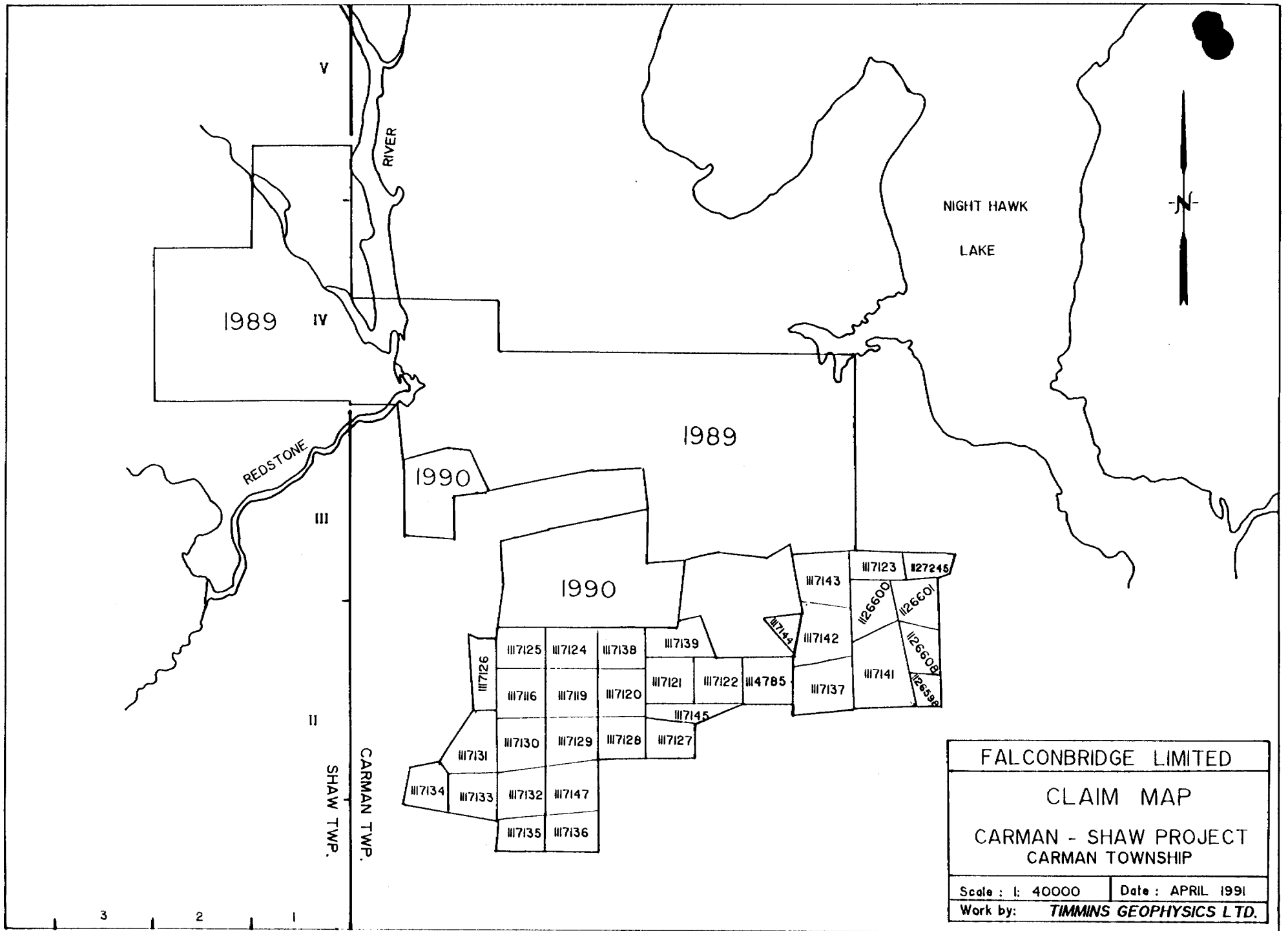


Figure 1 : Location Map

The west side of the property is underlain by calc-alkalic intermediate volcanics within the Shaw Dome. The rest of the property consists of layers of iron formation, and ultramafic flows and intrusives along the edge of the dome.

Nickel mineralization is associated with ultramafics flows such as at the Langmuir deposit, six kilometres to the southeast and the Timmins Nickel deposit, 11 kilometres to the southwest. Gold is associated with iron formation in the Carshaw deposit, 2 kilometres to the west.

PREVIOUS WORK

Table 1 is a summary of the previous work carried out over portions of the 34 claims covered in this report.

YEAR	COMPANY	GEOPHYSICS	DRILL HOLES	ASSESSMENT FILE
1985	GAIL RESOURCES INC.	VLF,MAG		T-2862
1981/82	RIO TINTO CANADIAN EXPLORATION LTD.	VLF,MAG		T-2454
1973	FALCONBRIDGE NICKEL MINES LIMITED	VLEM,MAG		T-1561
1969	INTERNATIONAL NICKEL CO. of CANADA	MAG	32392,32389	T-1009
1966	UNITED MACFIE MINES LTD.	VLF,MAG		T-1299
1965/66	M & M PORCUPINE GOLD MINES LTD.	AEM,VLEM,HLEM	66-1,1a,6,9,8,8a	T-1208
1946	GRANTON SYNDICATE			T-51

Table 1. Summary of Previous Work

In 1946, Granton Syndicate filed geological mapping and property reports over sixteen claims situated in the central portion of the present property.

In 1965, M & M Porcupine Gold Mines Ltd. held 71 claims in Carman and Shaw Townships. The property, under option to McWaters Gold Mines Limited, was covered with an airborne EM survey. This was followed-up with ground vertical loop electromagnetic (VLEM) and magnetic surveys along lines which were oriented North 60 degrees East; VLEM anomalies were detailed with a horizontal loop EM survey. A total of thirteen holes were drilled to test anomalies, six of which are on the present property.

In 1966, United MacFie Mines Ltd. carried out VLF and magnetic surveys over six claims which border the southeast corner of the present property.

In 1969 Inco held a claim block which included the southern row of claims on the eastern half of the present property. They filed assessment work which included a magnetic survey and drilling. Two holes, 32389 and 32392 are located just off the eastern edge of the property.

In 1973, Falconbridge Nickel Mines Limited optioned fourteen claims from D. Meunier and carried out a VLEM survey on lines oriented North 30 degrees West. Follow-up VLEM and magnetic surveys were carried out on lines oriented North 60 degrees East. All of these claims are located in the western portion of the property.

In 1981 and 1982, Rio Tinto Canadian Exploration Ltd. carried out VLF and magnetic surveys on lines oriented 045 degrees. This large claim group included the eastern portion of the present property.

In 1985, Gail Resources Inc. filed geology, VLF and magnetic surveys over seven claims in the western portion of the present property.

SURVEY DESCRIPTIONS

The grid on the property consists of north-south lines spaced every 100 metres and picketed every 20 metres.

The horizontal loop EM survey was carried out with the Apex Parametrics MaxMin I. This instrument measures the in-phase and quadrature components of the secondary field as a percentage of the primary field. Readings were taken every 20 metres using a coil separation of 160 metres and frequencies of 444 and 1777 Hertz.

The magnetic readings were taken with a Scintrex IGS-2/MP-4. This instrument is a proton precession magnetometer which measures the earth's total magnetic field to an accuracy of 0.1 gammas. Diurnal variations were monitored every 20 seconds with a Scintrex MP-3 base station magnetometer.

HLEM RESULTS

The results of the HLEM survey are given in maps 1 and 2 at a scale of 1:5000. The profile scale is 1 cm = 40% for both 444 and 1777 Hz results.

Only one conductor with good conductivity was detected in the survey. Anomaly 'A' strikes northwest from 2040 South on Line 4600 East to 1810 South on Line 4400 East. The width and conductivity thickness is greatest on Line 4500 East (Table 2); the dip is difficult to determine because the positive shoulders are influenced by the angle at which the zone was surveyed. There is a coincident magnetic anomaly which increases in amplitude from southeast to northwest. The strongest magnetic field, on Line 4300 East, does not have an

associated conductivity.

It does not appear as though Anomaly 'A' has been tested by diamond drilling. Hole 32392, drilled by Inco on strike to the southeast, did intersect iron formation.

LINE	ANOMALY CENTRE	ANOMALY WIDTH (M)	IP (%)	Q (%)	DEPTH (M)	CONDUCTIVITY THICKNESS (MHOS)	COMMENTS
4400 E	1810 S	NARROW	6	8	41	7	
4500 E	1950 S	35	41	15	12	75	
4600 E	2040 S	NARROW	7	4	80	30	

Table 2: Anomaly 'A', 444 Hz, 160 metre coil separation.

Anomalies 'B' and 'C' strike east northeast in an area of uniform magnetic field on the west side of the property. The conductivity thickness of 1 mho or less is in the range for a surficial source (Tables 3 & 4).

LINE	ANOMALY CENTRE	ANOMALY WIDTH (M)	IP (%)	Q (%)	DEPTH (M)	CONDUCTIVITY THICKNESS (MHOS)	COMMENTS
1300 E	2860 S	NARROW	5	16	SHALLOW	1	
1400 E	2780 S	NARROW	6	23	SHALLOW	1	
1500 E	2740 S	NARROW	11	33	SHALLOW	1	
1600 E	2700 S	NARROW	4	21	SHALLOW	<1	
1700 W	2660 S	NARROW	1	10	SHALLOW	<1	

Table 3. Anomaly 'B', 1777 Hz, 160 coil separation.

Anomaly 'B' may have been the target of Hole 66-9, drilled by M & M Porcupine Gold Mines Ltd. in 1966. The main rock type in the hole was andesite; no conductor was intersected.

There are other weak quadrature anomalies present in the high frequency results which are undoubtedly due to bedrock topography.

LINE	ANOMALY CENTRE	ANOMALY WIDTH (M)	IP (%)	Q (%)	DEPTH (M)	CONDUCTIVITY THICKNESS (MHOS)	COMMENTS
1000 E	3220 S	NARROW	7	22	SHALLOW	1	
1100 E	3100 S	NARROW	9	30	SHALLOW	1	
1200 E	3040 S	NARROW	8	28	SHALLOW	1	
1300 E	2980 S	NARROW	4	21	SHALLOW	<1	

Table 4: Anomaly 'C', 1777 Hz, 160 metre coil separation.

MAGNETIC RESULTS

The magnetic results are plotted on Map 3 at a scale of 1:5000.

A northeast striking Keweenaw diabase dike in the southwest corner of the property is reflected by a 300 metre wide magnetic high. Older north-south striking Matachewan diabase dikes are also known to be present, however, they are difficult to map because of the line direction. The uniform field along the western side of the property maps an area of intermediate volcanics.

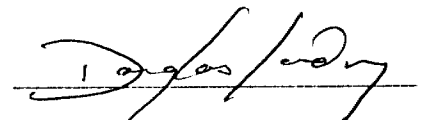
A broad area of discontinuous, irregular shaped anomalies trend northwest in the west central part of the property. Holes 66-1, 1A, 8 and 8A, drilled by M & M Porcupine Gold Mines Ltd. in 1966 intersected serpentinites. Similar

anomalies strike east northeast through the east half of the property.

A northwest striking magnetic anomaly coincides with EM Anomaly 'A'. The increase in field strength from southeast to northwest suggests a transition from a sulphide facies iron formation in the southeast to an oxide facies in the northwest.

MAY 15, 1991

DATE



DOUGLAS LONDRY
TIMMINS GEOPHYSICS LTD.

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REFERENCE

Pyke, D.R.

1982: Geology of the Timmins Area, District of Cochrane; Ontario Geological Survey Report 219, 141p. Accompanied by Map 2455, Scale 1:50,000, 3 Charts, and 1 Sheet Microfiche.

APPENDIX A



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
Township or Area CARMAN
Claim Holder(s) FALCONBRIDGE LIMITED
P.O.Box 1140, Timmins, Ontario P4 7H9
Survey Company TIMMINS GEOPHYSICS LTD.
Author of Report D. LONDREY
Address of Author P.O.Box 1783, South Porcupine, Ont. P0N 1H0
Covering Dates of Survey Mar.20/91 - April 5/91
(linecutting to office)
Total Miles of Line Cut 51.6 km

MINING CLAIMS TRAVERSED List numerically
SEE ATTACHED LIST
(prefix) (number)
TOTAL CLAIMS 34

If space insufficient, attach list

SPECIAL PROVISIONS CREDITS REQUESTED DAYS per claim
Geophysical
--Electromagnetic 20
--Magnetometer 40
--Radiometric
--Other
Geological
Geochemical

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

Magnetometer Electromagnetic Radiometric
(enter days per claim)

DATE: MAY 15/91 SIGNATURE: [Signature]
Author of Report or Agent

Res. Geol. Qualifications Qual 2.2289

Table with columns: File No., Type, Date, Claim Holder

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 2663 Number of Readings HLEM - 2352 MAG - 2662
Station interval 20 metres Line spacing 100 metres
Profile scale 1ccm = 40% (444 & 1777 Hz)
Contour interval 500 gammas

MAGNETIC

Instrument Scintrex IGS- /MP-4
Accuracy - Scale constant +/- .1 gammas
Diurnal correction method Scintrex MP-3 Base Station Magnetometer
Base Station check-in interval (hours) 20 seconds
Base Station location and value Line 900 East - 2400 South
58452

ELECTROMAGNETIC

Instrument Apex Parametrics MaxMin I
Coil configuration Horizontal Loop
Coil separation 160 metres
Accuracy 1%
Method: [] Fixed transmitter [] Shoot back [X] In line [] Parallel line
Frequency 444 Hz - 1777 Hz (specify V.L.F. station)
Parameters measured In-phase and quadrature components of the secondary field measured as percent of the primary field.

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

LIST OF CLAIMS

P - 1114785	P - 1117130	P - 1117144
	P - 1117131	P - 1117145
P - 1117118	P - 1117132	
P - 1117119	P - 1117133	P - 1117147
P - 1117120	P - 1117134	
P - 1117121	P - 1117135	P - 1126600
P - 1117122	P - 1117136	P - 1126601
P - 1117123	P - 1117137	
P - 1117124	P - 1117138	P - 1126608
P - 1117125	P - 1117139	
P - 1117126		P - 1126598
P - 1117127	P - 1117141	
P - 1117128	P - 1117142	P - 1127245
P - 1117129	P - 1117143	

TOTAL CLAIMS = 34

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth -- include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____



Report of Work
(Geophysical, Geological and Geochemical Surveys)

MINING CLAIMS SECTION, MINERAL DEVELOPMENT AND CLAIMS BRANCH

Type of Survey(s) GEOPHYSICS	Mining Division PORCUPINE	Township or Area CARMAN
Recorded Holder(s) FALCONBRIDGE LIMITED	Prospector's Licence No. A-21647	
Address P.O. Box 1140, Timmins, Ontario P4N 7H9		Telephone No. 705-267-1188
Survey Company TIMMINS GEOPHYSICS LTD.		
Name and Address of Author (of Geo-Technical Report) D. Londry, P.O. Box 1783, South Porcupine, Ontario PON 1H0		Date of Survey (from & to) 20, 03, 91. 05, 04, 91.

2.14130

Special Provisions			Mining Claims Traversed (List in numerical sequence)					
For first survey:	Geophysical	Days per Claim	Mining Claim		Mining Claim		Mining Claim	
Enter 40 days. (This includes line cutting)	- Electromagnetic	20	Prefix	Number	Prefix	Number	Prefix	Number
For each additional survey, using the same grid: Enter 20 days (for each)	- Magnetometer	40	P	1114785	P	1117134	P	1126598
	- Other			1117118		1117135		1127245
	- Geophysical			1117119		1117136		
	- Geological			1117120		1117137		
	- Geochemical			1117121		1117138		
				1117122		1117139		
				1117123		1117141		
				1117124		1117142		
				1117125		1117143		
				1117126		1117144		
				1117127		1117145		
				1117128		1117147		
				1117129		1126600		
				1117130		1126601		
				1117131		1126608		
				1117132				
				1117133				
Total miles flown over claim(s)			Total number of mining claims covered by this report of work.					
Date Apr. 26 / 91			Recorded Holder or Agent (Signature) <i>[Signature]</i>					
			Total number of mining claims covered by this report of work. 34					

RECEIVED

JUN 13 1991

MINING LANDS SECTION

RECORDED

MAY 1 1991

Certification Verifying Report of Work

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

Name and Address of Person Certifying
STAN CLEMMER, P.O. BOX 1140, TIMMINS, ONT. P4N 7H9

Telephone No. **267-1188** Date **APRIL 26 '91** Certified By (Signature) *[Signature]*

For Office Use Only

Total Days Cr. Recorded **2040**

Date Recorded **MAY 1 / 91** Mining Recorder **Robert Bunting**

Date Approved as Recorded **June 13, 1991** Provincial Manager, Mining Lands **[Signature]**

RECEIVED
MAY 1 1991
10400

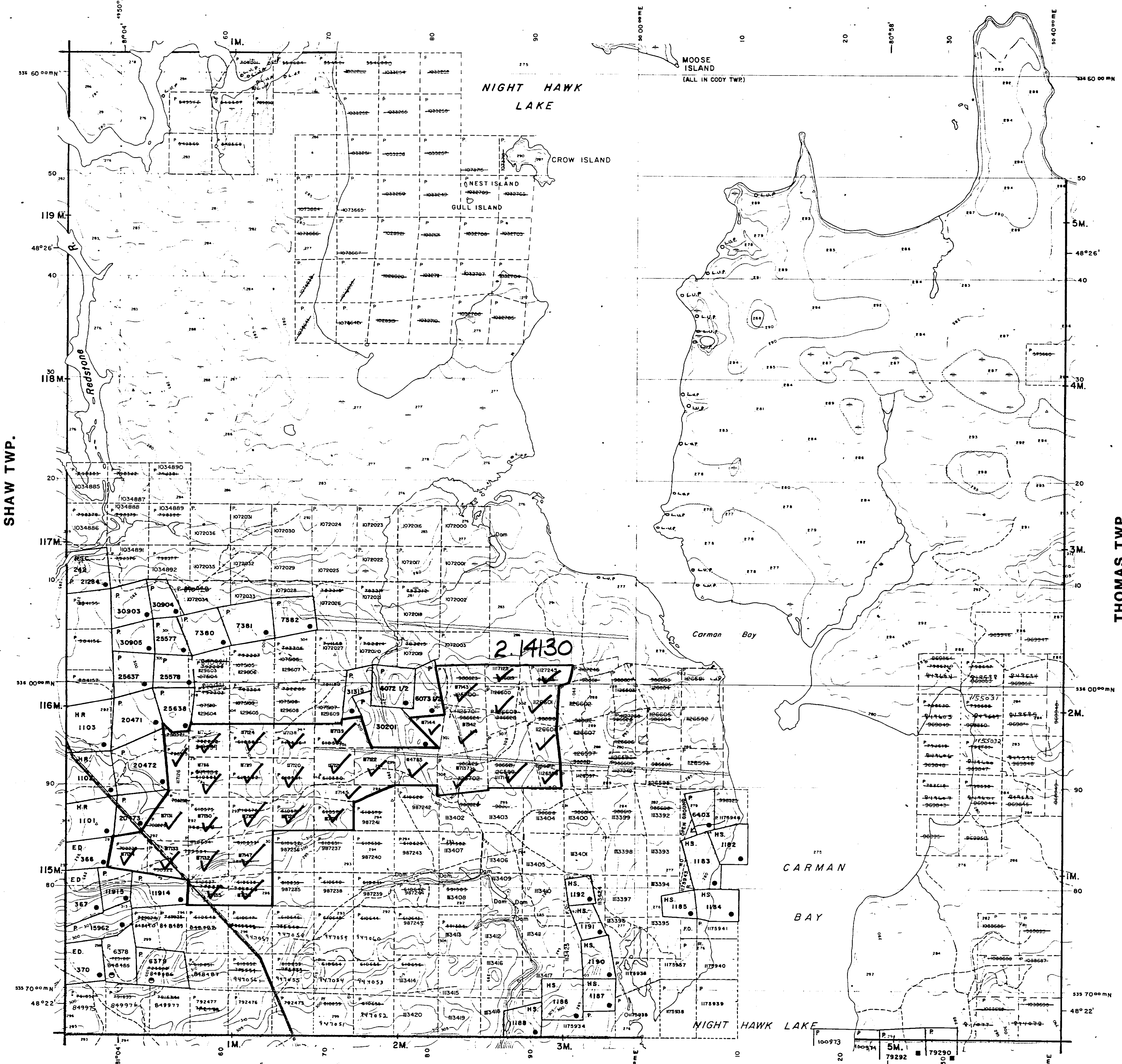
MAP SYMBOLOLOGY

Aerial Cableway	Pipeline (above ground)
Boundary	Railroad
Imaginary	Single Track
Improvement	Double Track
District, Township, Section Reserve	Abandonment
Approximate	Terrace
Lat. Concession	Road
Approximate	Municipal, County, Township
Park Boundary	Access (road of doubtful significance or significant driveway)
Bridge	Trail, Beach Road (separate entry)
Road, Railroad	Double line river with multiple rapids
Building	Double line river with multiple rapids
Chimney	Reservoir
CHFF, Pit, E., etc.	River, Stream, Canal
Contours	Approximate
Interruption	Approximate
Approximate	Spot Elevation (these elevations ≥ 300.0)
Depression	Tower
Control Points	Transmission Line
Horizontal	Power
Vertical	Phone
Vertical	Tunnel
Falls	Utility Poles
Double line river with multiple rapids	Wharf, Dock, Pier
Fence, Hedge, Wall	Wooded Area
Feature Outline (Construction Features, etc.)	
Flooded Land	
Lock	
Marsh or Swamp	
Moat	
Mine Head Frame	
Outcrop	

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

CODY TWP.



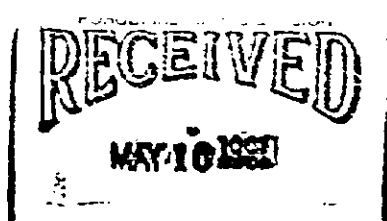
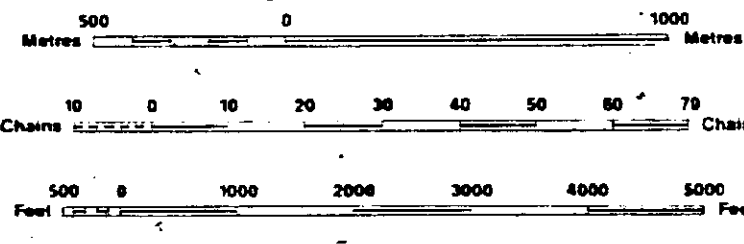
LEGEND

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

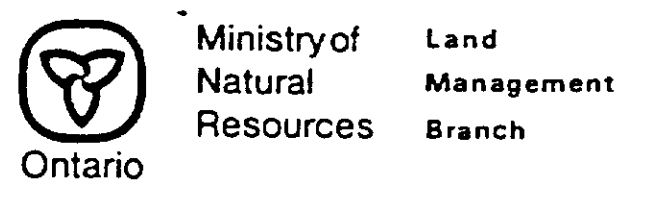
TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.



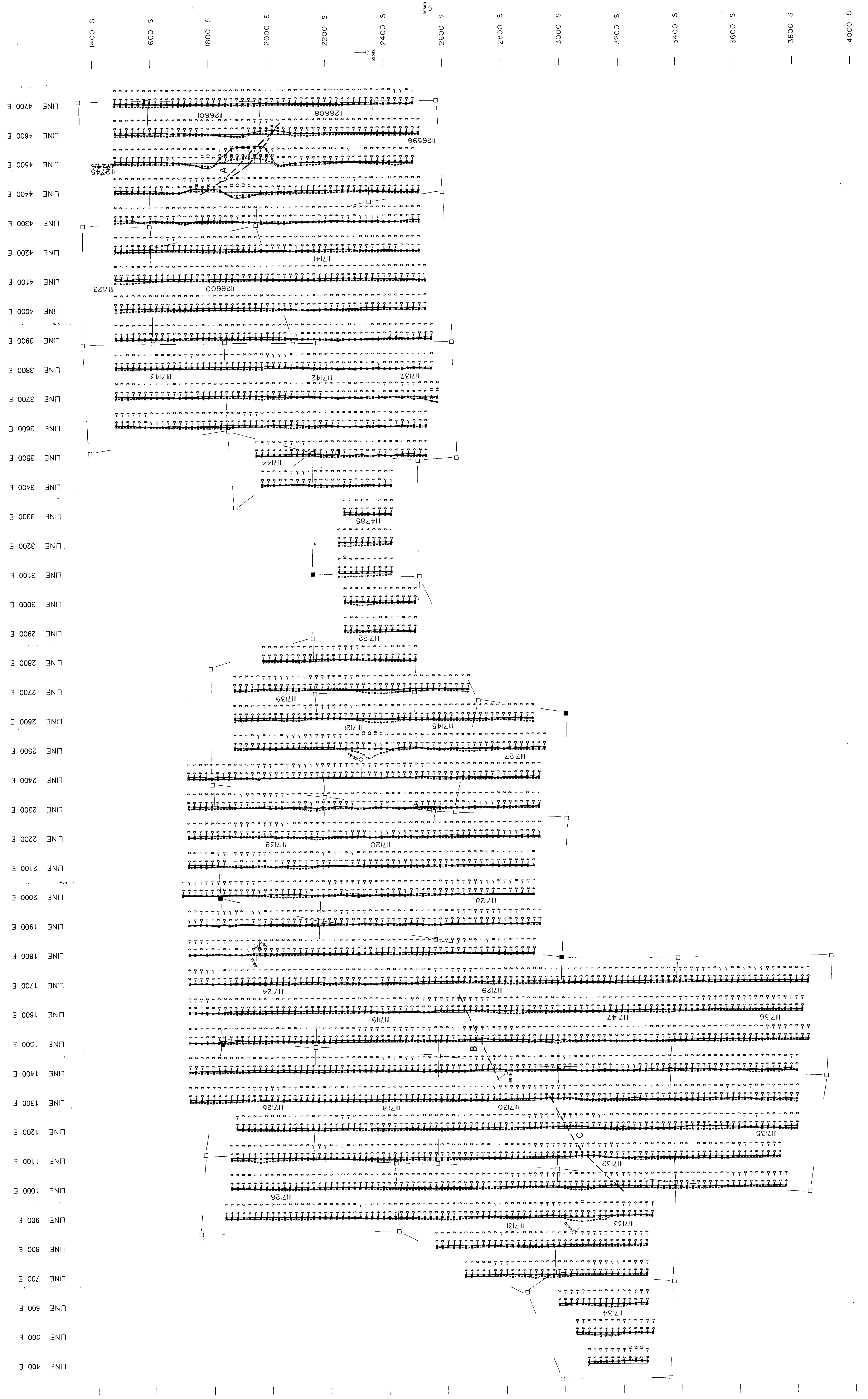
Rec'd Jan 23/85

TOWNSHIP
CARMAN
M.N.R. ADMINISTRATIVE DISTRICT
TIMMINS
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
COCHRANE

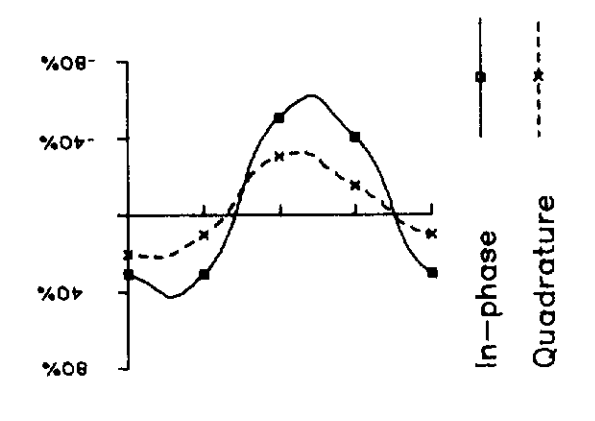


ORIGINAL COMPLETION JULY 1984
REVISED:
Number
G-4000





Instrument : Apex Parametrics MaxMin I
 Frequency : 444 Hz
 Coil Separation : 180 Metres
 Profile Scale : 1 cm = 40%

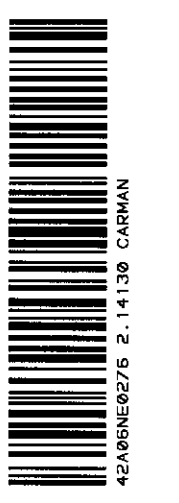


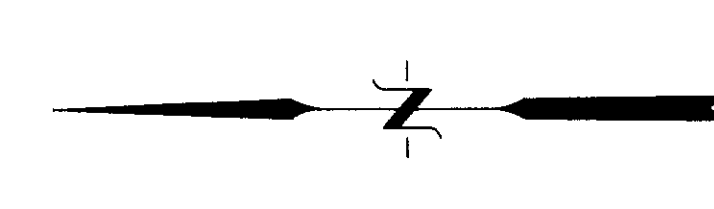
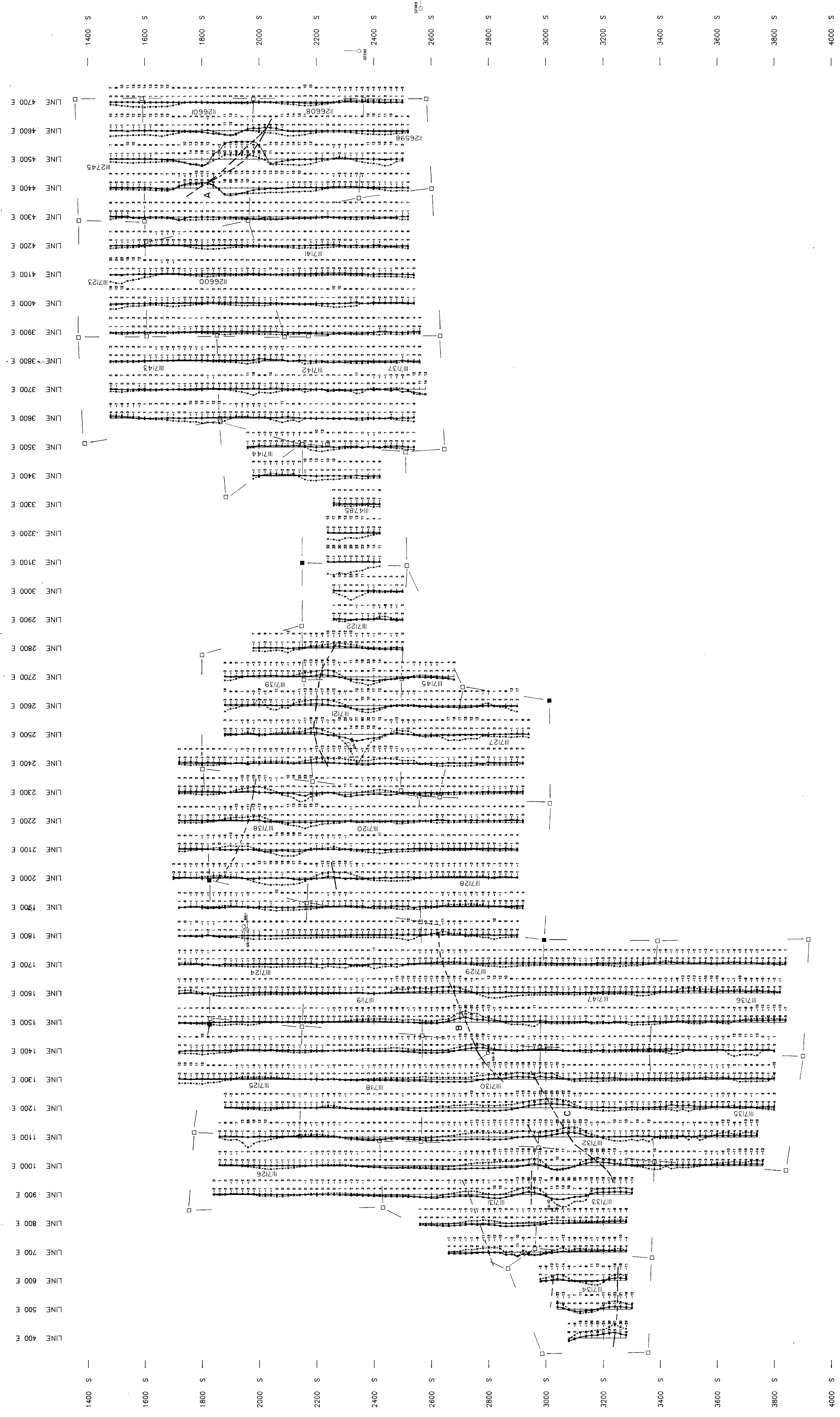
Legend:
 □ Unlocated
 ■ Located
 - - - Anomaly

FALCONBRIDGE LIMITED
HLEM SURVEY
CARMAN - SHAW PROJECT
CARMAN TOWNSHIP

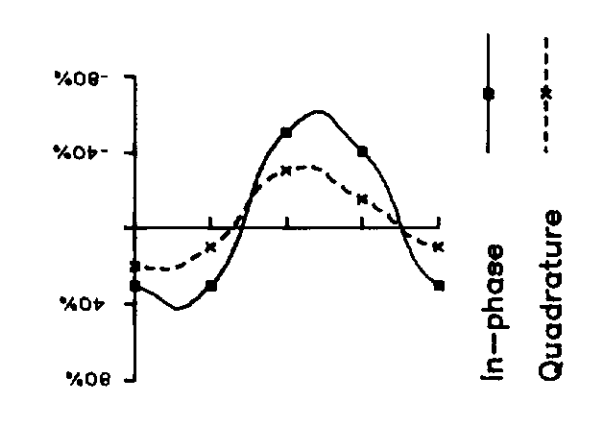
NTS : 42-A/7
 SCALE : 1:500
 FILE : CHM91.HL
 WORK BY : Timmins Geophysics Ltd.

2.14130 -





Instrument : Apex Parametrics MaxMin 1
 Frequency : 1777 Hz
 Coil Separation : 160 Metres
 Profile Scale : 1 cm = 40%

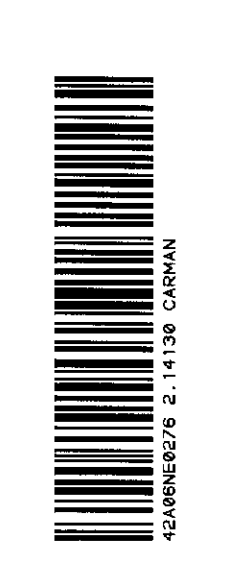


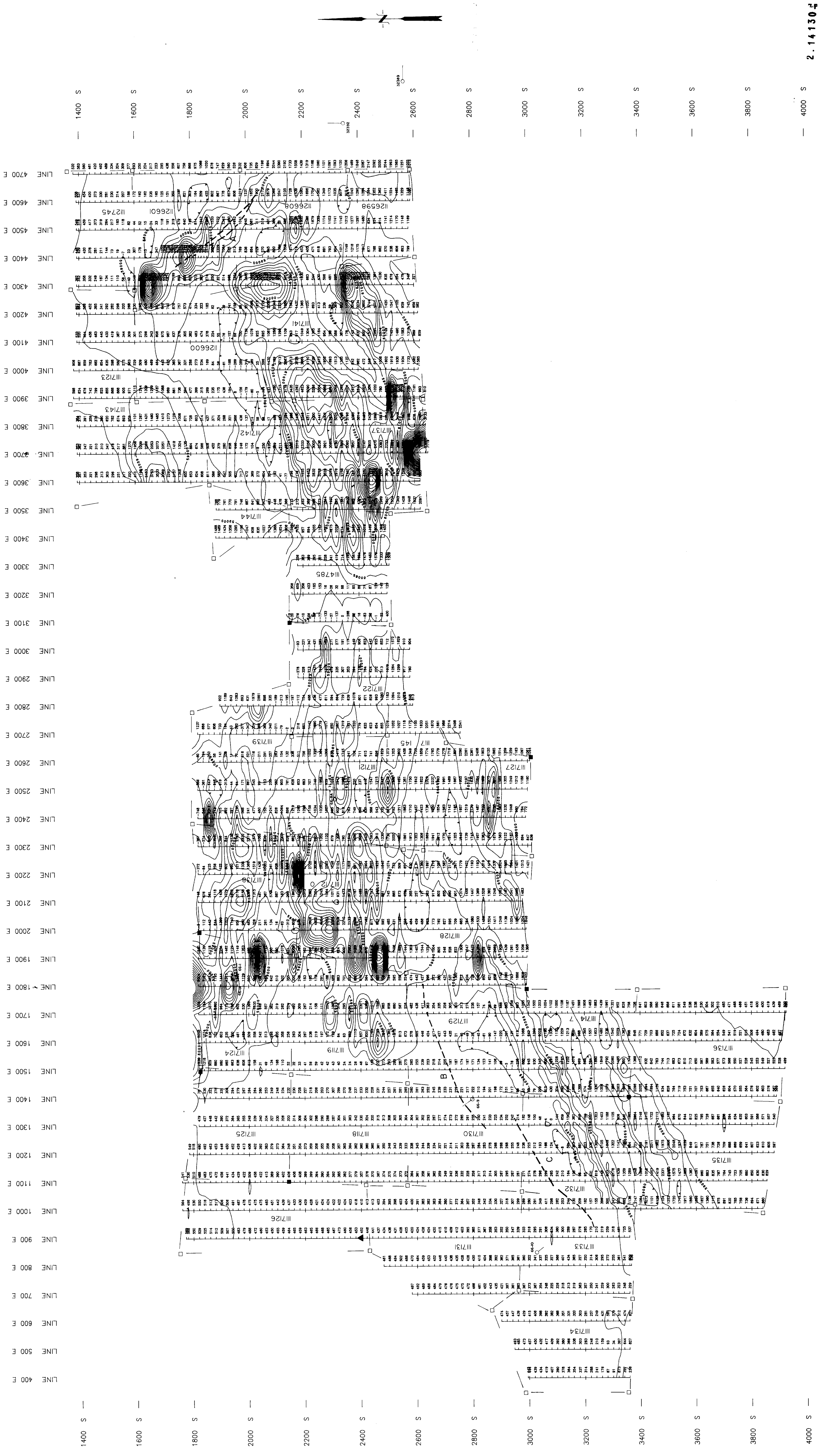
CLAIMPOSTS :
 □ Unlocated
 ■ Located
 - - - Anomaly
 ○ DDH

FALCONBRIDGE LIMITED
HLEM SURVEY
 CARMAN - SHAW PROJECT
 CARMAN TOWNSHIP

NTS : 42-A17
 SCALE : 1 : 5000
 FILE : CARH91-HL

PROJ# : 8183
 DATE : MAY 1991
 WORK BY : Timmins Geophysics Ltd.





FALCONBRIDGE LIMITED
MAGNETIC SURVEY
CARMAN-SHAW PROJECT
CARMAN TOWNSHIP

NTS - 42-A17
 SCALE : 1:5000
 FILE : CAMPT.MAG

PROJ.W : BBS3
 DATE : MAY 1991
 WORK BY : **Trimmins Geophysics Ltd.**

Instrument : Scintrex IQS-2/MP-4
 Type : Total Field Proton Precession
 Contour Interval : 500 gammas
 Datum Level : 58000 gammas

Claimposts :
 □ Unlocated
 ■ Located
 --- Anomaly (777 Hz)
 ▲ Base Station
 ○ DDH

