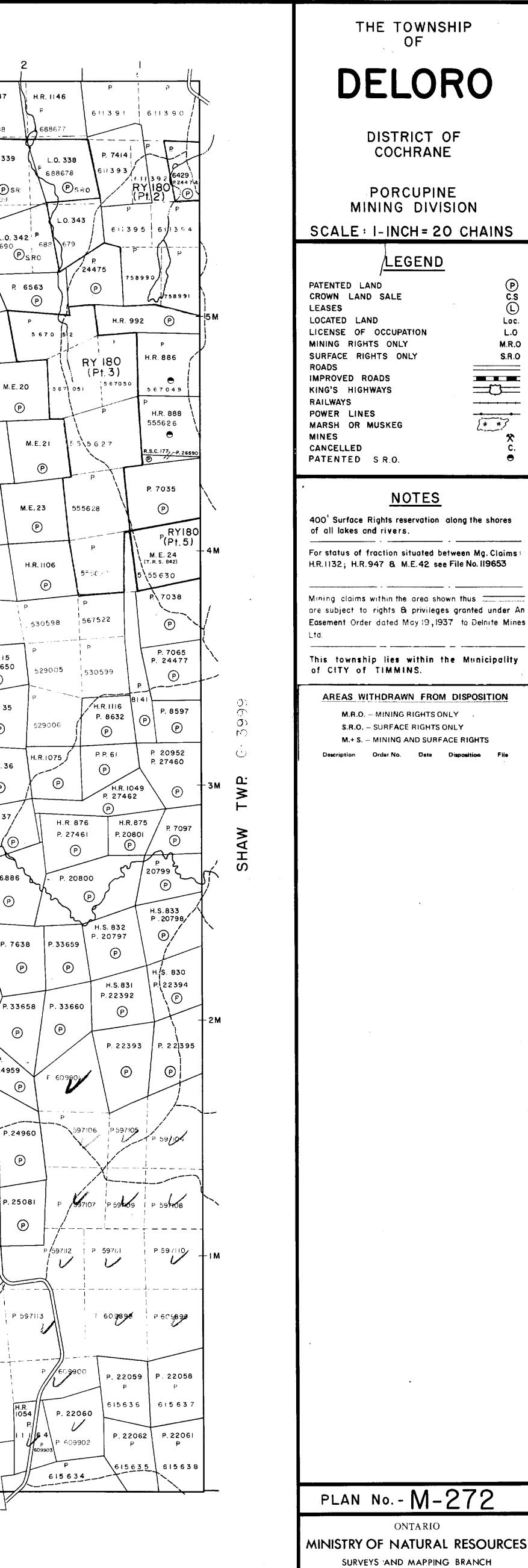
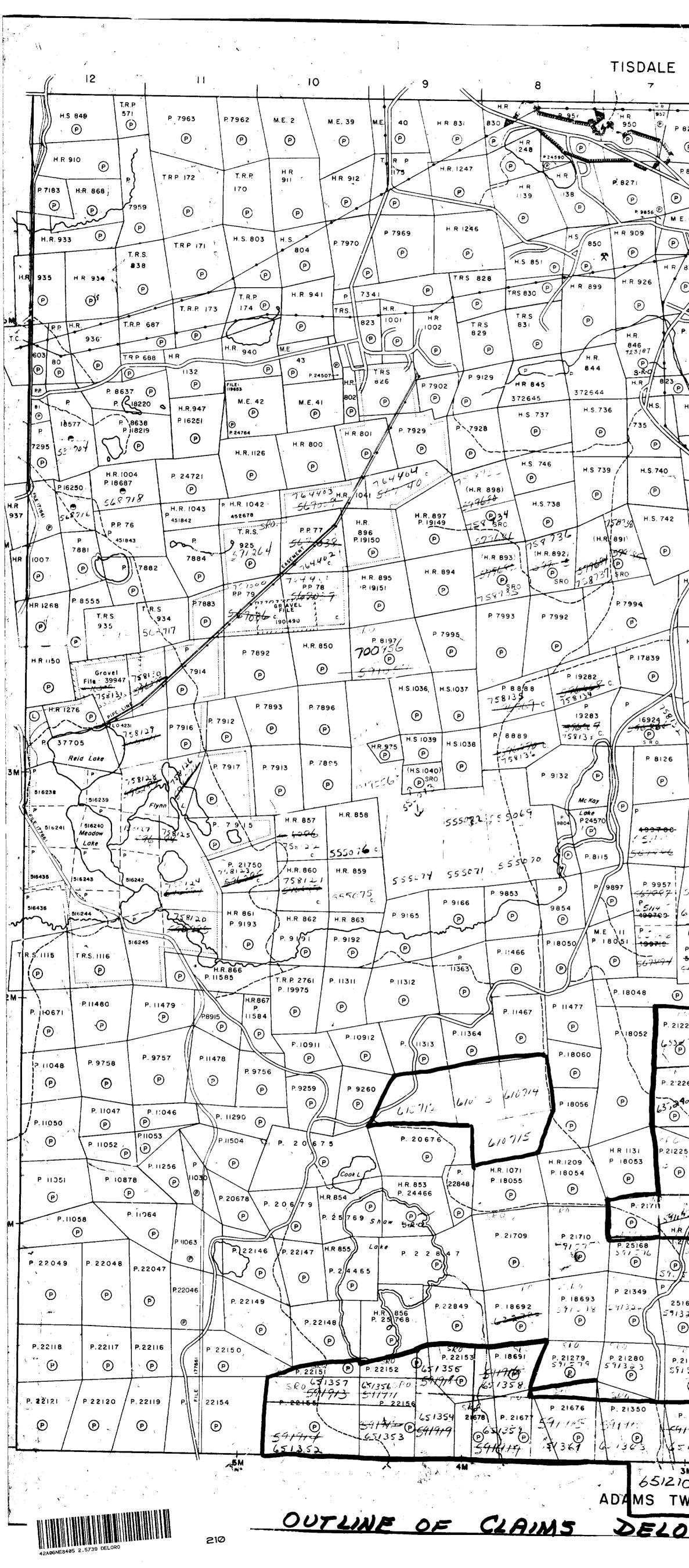


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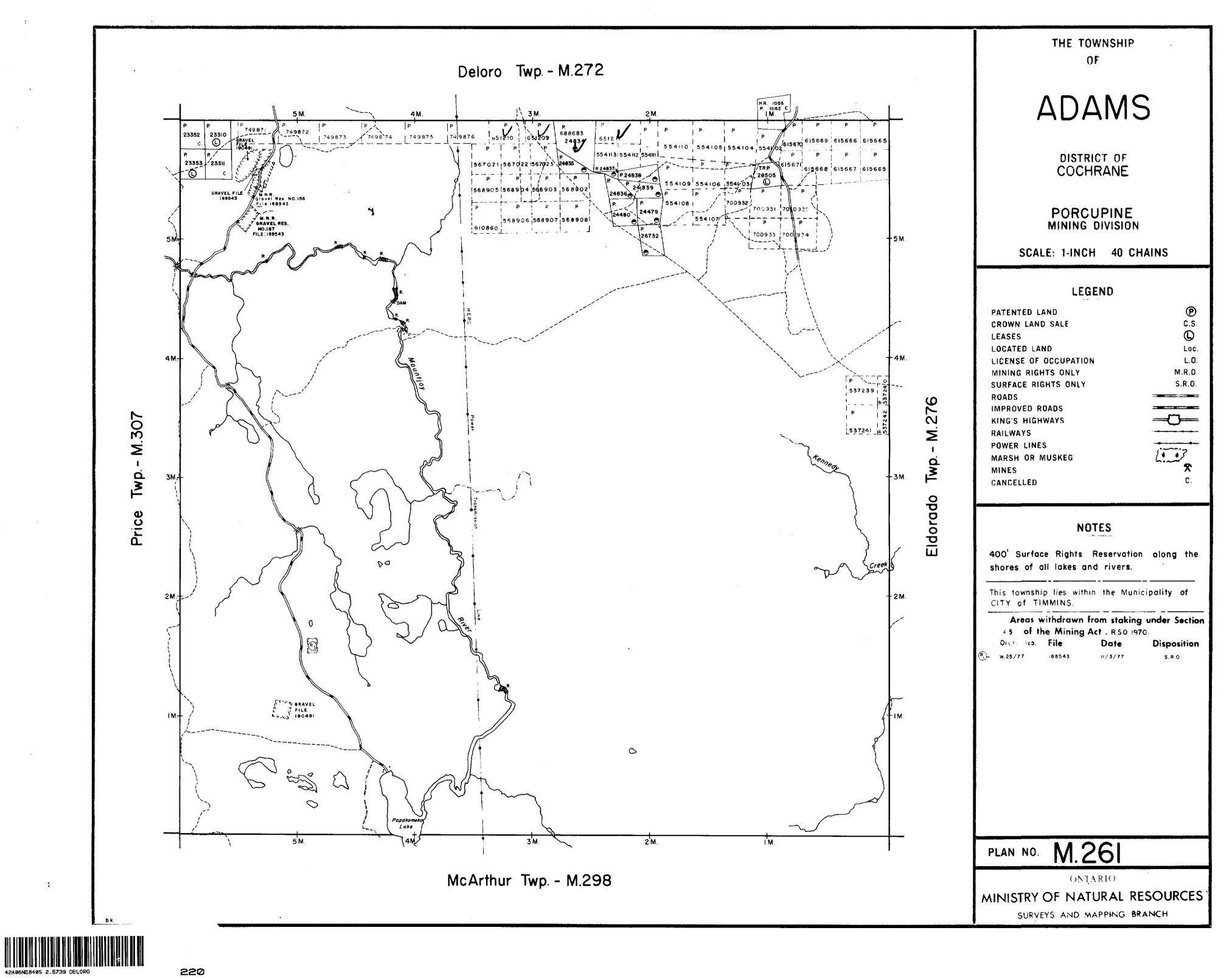


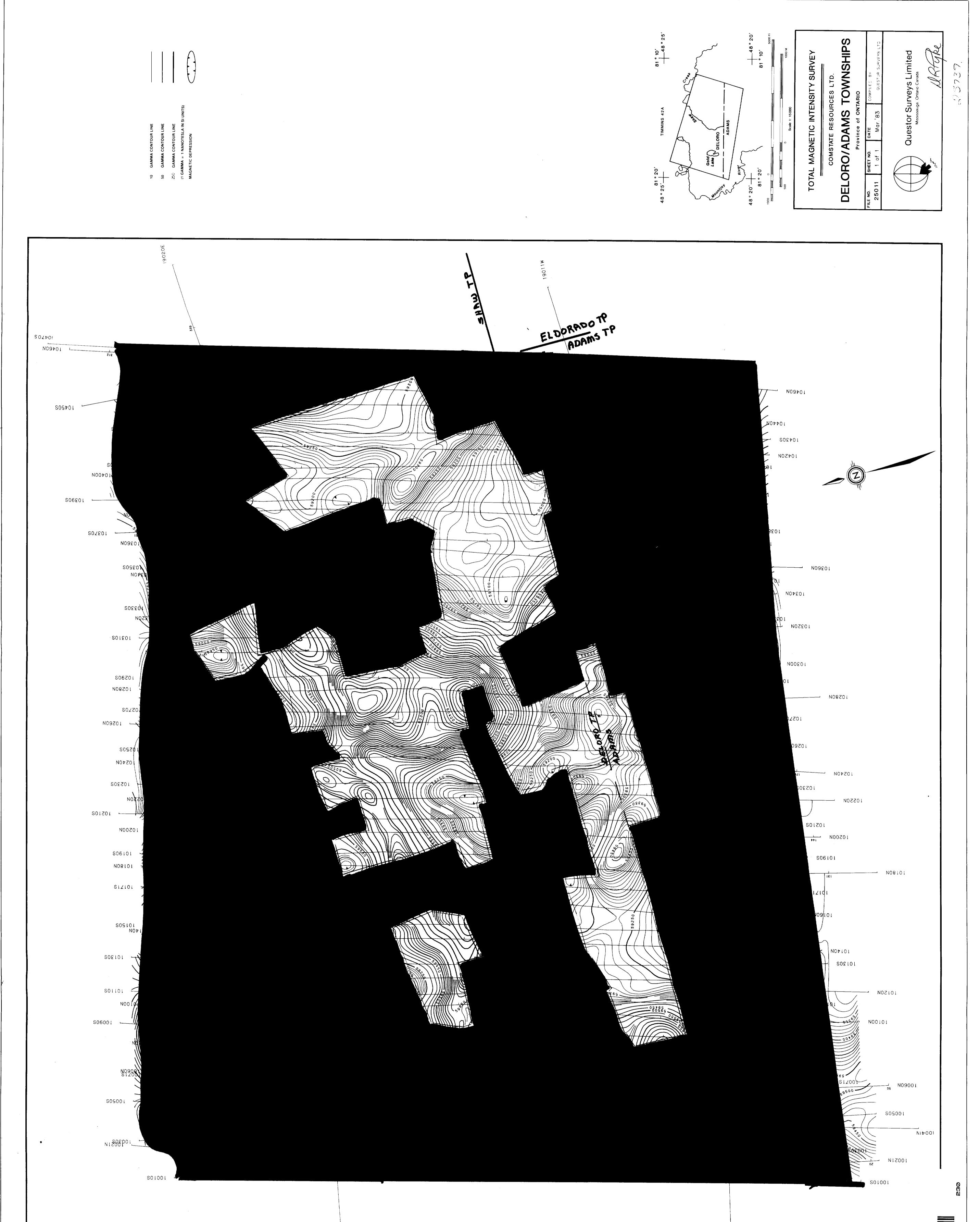
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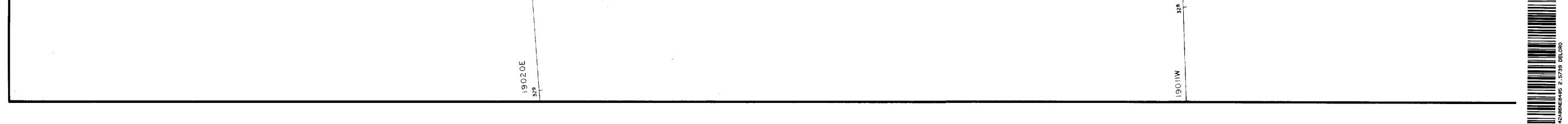


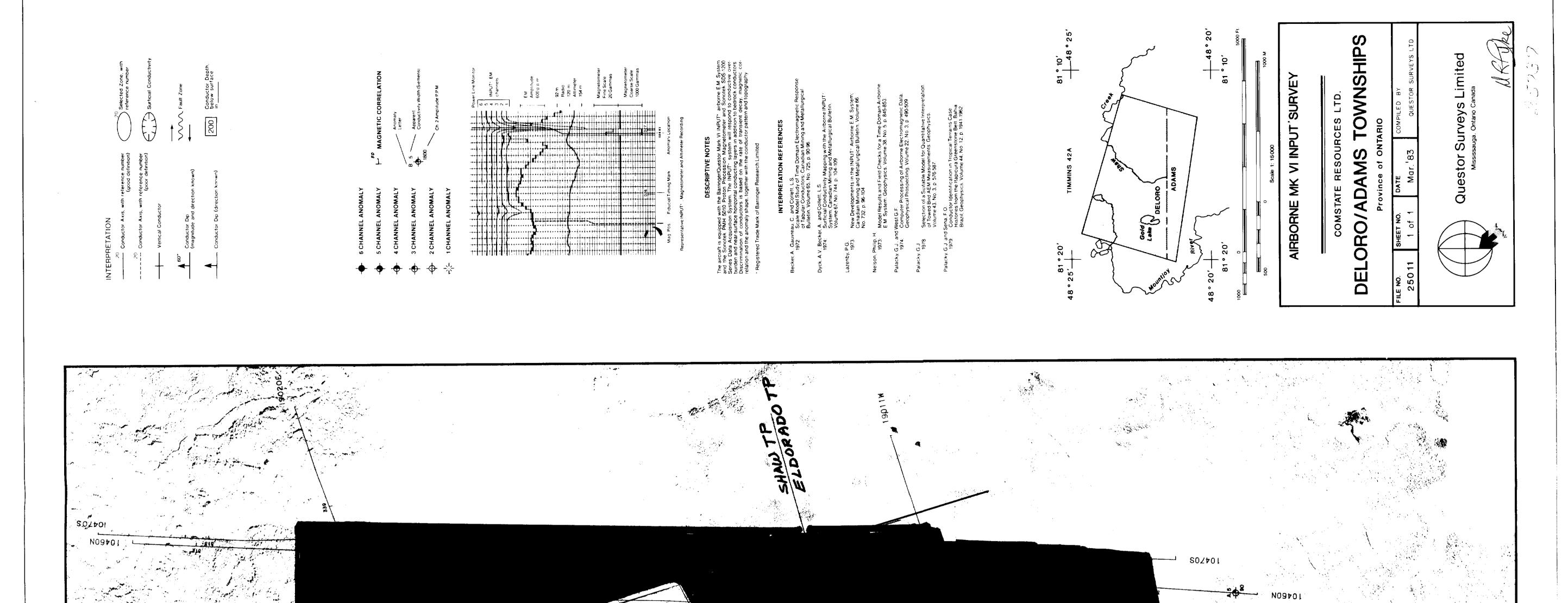
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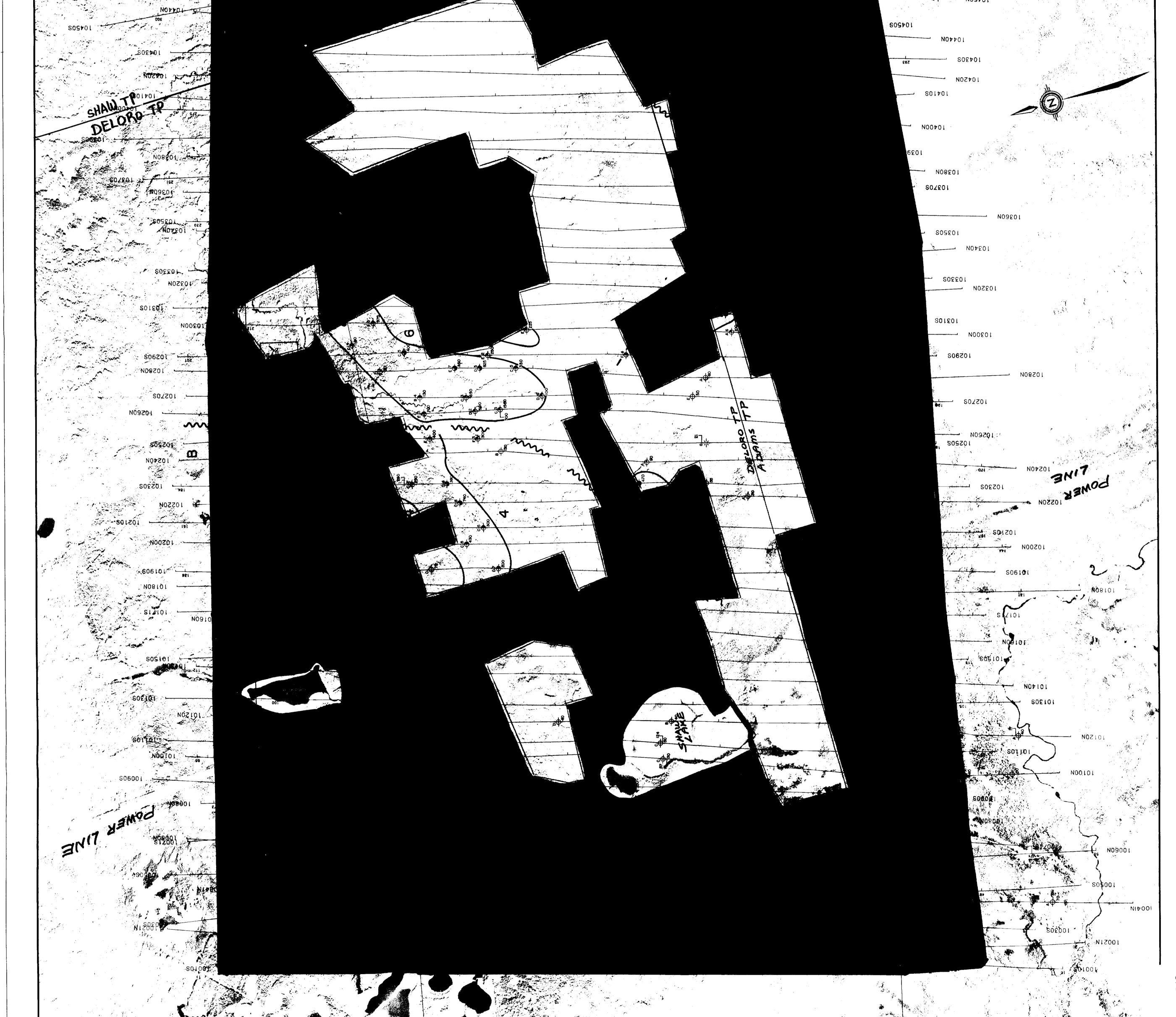
THE TOWNSHIP OF DELORO DISTRICT OF COCHRANE PORCUPINE MINING DIVISION SCALE - I-INCH = 20 CHAINS LEGEND PATENTED LAND CROWN LAND SALE LEASES LODATED LAND LICENSE, OF OCCUPATION MINING RIGHTS ONLY SURFACE RIGHTS DNLY ROADS IMPROVED ROADS KING'S HIGHWAYS RAILWAYS . POWER LINES MARSH OR MUSKEG MINES 1.00 CANCELLED PATENTED S.R.O. REGISTERED FLAN OF SUBDIVISION NOTES 400' Surface Rights reservation stang the shore , of all lakes and rivers. For status of fraction situated between HR. 1132; H.R. 947 & M.E. 42 see File No. 19653 Mining claims within the area shown thus are subject to rights & privileges granted under • Easement Order dated May 19, 1937 to Delnite h Ľtd. This township lies within the Minicipal of CITY of THMMINS. 31 1 Σ Ϋ́Ρ application for lagran and sr not open to sk SHAW . . . L'OROUTINE MINING DIVISION GEIV А.М. 7181911011112/411213141510 . 2 H  $\lambda \neq$ PLAN No - M-272 المراجع المدتي و ONTARIO MINISTRY OF NATURAL RESOURCES SURVEYS AND MAPPING BRANCH











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Comstate Resources Ltd.

Airborne Magnetic and Electromagnetic Survey

Deloro - Adams Township Area

Porcupine Mining Division, Ontario

# RECEIVED

AUG 9 1983

# MINING LANDS SECTION

July 23, 1983 Timmins, Ontario

D.R. Pyke, Ph.D.

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### <u>Contents</u>

Introduction

Map Compilation

Survey Procedure

Data Presentation

Input

Magnetic

Equipment

General Geology

Results

Magnetic

Electromagnetic

Conclusions

References

Appendices (A & B)

Figure I - Location of claims in Deloro - Adams Townships

### Introduction

This report contains part of the results of an airborne magnetic and electromagnetic (INPUT) survey flown by Questor Surveys Limited in the Porcupine Area, about six miles south of Timmins, for Comstate Resources Ltd. The survey was flown on March 27, 1983, and covered most of the south half of Deloro Township and a small portion of north Adams Township (Figure 1). A total of 291.9 line kilometers was flown for the survey. The survey aircraft was a Shorts Skyvan C-GDRG and the operating base was Timmins, Ontario.

The main purpose of the survey was to aid in deciphering the structure and stratigraphy of the area, and to provide a high quality data base for further exploration in the area.

The following were the personnel involved with the airborne survey:

Pilot	B. McKenna
Co-pilot	B. Jurgens
Operator	D. Borsoi
Engineer	S. Mills
Crew Chief	D. Martyn

A geophysical report on the airborne survey was submitted to Comstate Resources Ltd. by Questor Surveys Ltd. The report was authored by David G. Rogers, geophysicist with Questor Surveys. The author of this report, D.R. Pyke, has extracted all relevant information from the report of D.Rogers relating to the claim block currently held by Comstate Resources in the south Deloro - north Adams Township area.

The 84 mining claims comprising the Deloro - Adams property are currently held in the name of D.R. Pyke.

### Map Compilation

The base map for navigation and flight path recovery was constructed from photographs obtained from the National Air Photo Library in Ottawa, Ontario. The final map was reproduced at a scale of 1:15000 on stable transparent film from which white prints can be made.

Fligh path recovery was accomplished by comparison of the 35 mm continuous strip film with the mosaic, in order to locate the fiducial points. Most picked points are within 1200 metres.

### Survey Procedure

Terrain clearance was maintained as close to 122 metres as possible, with the E.M. bird at approximately 45 metres above the ground. A normal S-pattern flight path using approximately one-half kilometre turns was used. The equipment operator logged the flight details and monitered the insturments.

A line spacing of 200 metres was used for the survey, with flight directions at N  $15^{\circ}$  E.

Tie lines were flown in an east-west direction across the survey area to be utilized in the levelling of the magnetic data. In addition, a ground magnetic base station, Geometrics G-806, was used to moniter diurnal variations.

### Data Presentation

The data is presented in the following manner: 1) <u>INPUT</u> - The symbols used to designate the anomalies are shown in the legend on the map sheet, and the anomalies on each line are lettered in an alphabetical order in the direction of flight. Their locations are plotted with reference to the fiducial numbers on the analog record.

A sample record is included to indicate the method used for correcting the position of the E.M. bird and to identify the parameters that are used.

The input map has a photo mosaic base, is at a scale of 1:15,00, and depicts all the flight lines.

2) <u>Magnetic</u> - The aeromagnetic data is presented in computer contoured plan form of the total magnetic field, at a scale of 1:15,000. The data, dependent on magnetic gradient, has been contoured at 10, 50 and 250 gamma intervals.

### Equipment

The aircraft is equipped with a Mark VI INPUT (R) airborne E.M. system and a Sonotek P.M.H. 5010 Proton Magnetometer. Radar altimeters are used for vertical control. The outputs of these instruments together with fiducial timing marks are recorded by means of galvanometer type recorders using light sensitive paper. Thirty-five millimeter continuous strip cameras are used to record the actual flight path.

General theory and specifications of the instruments and aircraft are given in the included appendix.

### General Geology

Deloro Township was first mapped by Burrows (1912,1924) and later by Hurst (1939) and Carlson (1967). Adams Township was mapped by Harding and Berry (1938) and Pyke (1975).

The property is near the southwest margin of the Shaw Dome, and straddles the contact zone between the Deloroand Tisdale Group volcanic rocks (Pyke, 1982). The contact has not been mapped in detail, but would appear to be transitional in nature, in that it represents an intercalation of calc-alkaline volcanic rocks of the Deloro Group, with overlying komatiitic volcanic rocks at the base of the Tisdale Group. Iron Formation is common near this contact zone. Large sill-like intrusions of dunite-peridotite with minor associated gabbro underlie much of the central portion of the township. Pervasive carbonatization of a portion of these ultramafic sills has produced a large sub-economic magnesite deposit near the south central boundary of Deloro Township. Northeast and northerly trending diabase dikes are common.

Numerous gold occurrences have been reported in the south Deloro Township area. Production, however, has been minor and essentially limited to the former Faymar Mine in the north part of the Township.

### Results

### Magnetic Survey

Magnetic relief on the property is in the order of 2500 gammas.

The northern portion of the property is dominated by a westerly trending magnetic anomaly which largely correlates with a sill-like body of dunite-peridotite as outlined by Carlson (1967). An ENE trending diabase dike, (Carlson, 1967) tends to augment the anomaly; numerous inflections on this anomaly represent NNW trending diabase dikes, as do narrow anomalies elsewhere on the property.

The magnetics are generally low in the east-southeast portion of the property. Limited outcrop suggests this portion of the claim group is largely underlain by andesite - basalt.

## Electromagnetic Survey

Most of the input responses detected on the property are situated in the north central portion, in the general vicinity of Shaw Creek (anomaly areas 4 and 6). Both zones have similar electromagnetic responses and possible geologic associations. They display low to moderate decay rates and are located at the edge or within a magnetic high. The stagger in intercept location and shape suggests flat or shallowly dipping sources. Virtually all these anomalies are either within what are interpreted from the magnetic data as being ultramafic intrusions or at the contact zones of ultramafic intrusions or diabase dikes.

### <u>Conclusions</u>

The airborne survey has provided a good data base for further work in the area. Detailed geological mapping is an essential ingredient of any follow-up exploration, in order to more fully evaluate the electromagnetic and magnetic responses.

Hyte.

### References

Burrows, A. G.

- 1912: The Porcupine Gold Area; Second Report; Ont. Bureau of Mines, Vol. 21, pt. 1, p. 205-249. Accompanied by Map 21a. Scale 1 inch to 1 mile.
- 1924: The Porcupine Gold Area; Fourth Report; Ont. Dept. of Mines, Vol 33, pt. 2, 112 p. Accompanied by Map 33a, Scale 1 inch to 2000 feet.

Carlson, H. D.

1967: Geology of Ogden, Deloro and Shaw Townships; Ont. Dept. of Mines, Open File Report 5012, 117p. Accompanied by Maps P 341, P 342, and P343. Scale 1 inch to  $\frac{1}{4}$  mile.

Hurst, M. E.

1939: Porcupine Area, District of Cochrane; Ont. Dept. of Mines, Map 47a, Scale 1 inch to 2000 feet.

Pyke, D.R.

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1975: Geology of Adams and Eldorado Townships, District of Timiskaming; Ont. Div. of Mines, G.R. 121, 51p. Accompanied by Map 2274. Scale 1 inch to <sup>1</sup>/<sub>2</sub> mile.

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### CERTIFICATE

I, D.B. Pyke, submit this document to certify that the following statements are, to the best of my knowledge, true and correct.

- That I have extracted all the relevant information regarding the airborne geophysics, from a report authored by David G. Rogers (geophysicist, Questor Surveys Limited) for an airborne survey conducted by Questor Surveys Ltd., in Deloro and Adams Townships, for Comstate Resources Ltd. The survey was flown on March 27, 1983.
- 2. That I am the author of the corresponding assessment report entitled "Airborne Magnetic and Electromagnetic Survey, Deloro-Adams Township Area, Forcupine Mining Division, Ontario".
- 3. That I have received the following university degrees in geology:

B.Sc.	University of Saskatchewan	1959
M.Sc.	University of Saskatchewan	1961
Ph.D.	McGill University, Quebec	1967

4. That I have been working as a geologist in the general Timmins area for 16 years, and I am familiar with the geology of the area under consideration.

Respectfully submitted, D. R. Fyke

### APPENDIX A

# BARRINGER/OUESTOR MARK VI INPUT (R) System

The INduced PUlse Transient (INPUT) method is a system whereby measurements are made, in the time domain, of a secondary electromagnetic field while the primary field is between pulses. Currents are induced into the ground by means of a pulsed primary electromagnetic field which is generated from a transmitting loop around the aircraft. By using half-sine wave current pulses (Figure A-1) and a transmitter loop of large turns-area, a high signal-to-noise ratio and the high output power needed for deep penetration, are achieved.

A-1

Induced current in a conductor produces a secondary electromagnetic field which is detected and measured after the termination of each primary pulse. Detection of the secondary field is accomplished by means of a receiving coil, wound on a ferrite rod, mounted in a fibreglass shell called a "bird" and towed behind and below the aircraft on 120 metres (400 feet) of coaxial cable. The received signal is processed and recorded by equipment within the aircraft.

The axis of the receiving coil is horizontal and parallel to the flight direction. This optimizes the discrimination between flat lying surficial conductors and bedrock conductors. The secondary field is in the form of a decaying voltage transient, measured in time, at the termination of the primary transmitted pulse. The amplitude of the transient is proportional to the amount of current induced into the conductor, the conductor dimensions, conductivity and the depth beneath the aircraft.

The rate of decay of the transient is inversely proportional to conductance. By sampling the decay curve at six different time intervals and recording the amplitude of each sample, an estimate of the relative conductance can be obtained. Transients due to strong conductors such as sulphides and graphite, usually exhibit long decay curves and are therefore commonly recorded on all six channels. Sheet-like surface conductive materials, on the other hand, have short decay curves and will normally only show a response in the first two or three channels.

For homogeneous conditions, the transient decay will be exponential and the time constant of decay is equal to the time difference at two successive sampling points divided by the log ratio of the amplitudes at this point.

## TRANSMITTER SPECIFICATIONS

Pulse	Repetition Rate	211	per sec
Pulse	Shape	Half-	sine
Pulse	Width	2.0	) millisec
Off	Time	2.7	millisec
Output	Voltage	50	volts
Output	Current	300	amperes
Output	Current Average	80	amperes
Coil	Area	190 n	. <sup>2</sup> (2,050 ft. <sup>2</sup> )
Coil	Turns	6	
Electromag	netic Field Strength (peak) 34	2,000 a	mp-turn-meter <sup>2</sup>

TRANSMITTED PRIMARY FIELD . • 2.0 millisec. 2.7 millisec

INPUT SIGNAL



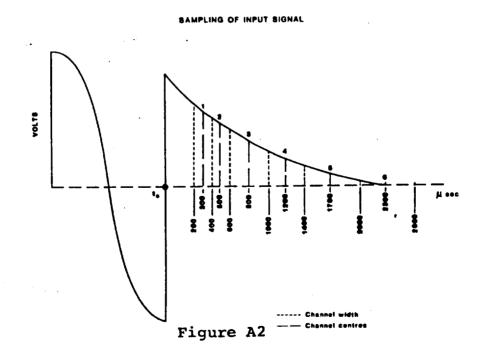
## RECEIVER SPECIFICATIONS

Sample	Gate	Windows (centre positions)	Widths	5
-	CH 1 CH 2 CH 3 CH 4 CH 5	300 µ sec 500 800 1200 1700	200 µ 200 400 600	BeC
	CH 6	2300	600	
Sample	Interv	val	0.5	sec
Integra	ation 7	Time Constant	1.1	sec
Bird Po	osition	n behind Aircraft (110 kt)	93	metres
Bird Po	ositio	n below Aircraft (110 kt)	69	metres

Receiver features:

Power Monitor 50 or 60 Hz

50 or 60 Hz and Harmonic Filter VLF Rejection Spheric Rejection (tweak) Filter



### SONOTEK P.M.H. 5010 PROTON MAGNETOMETER

The airborne magnetometer is a proton free precession sensor, which operates on the principle of nuclear magnetic resonance to produce a measurement of the total magnetic intensitity. It has a sensitivity of 1 gamma and an operating range of 20,000 gammas to 100,000 gammas. The sensor is a solenoid type, oriented to optimize results in a low ambient magnetic field. The sensor housing is mounted on the tip of the nose boom supporting the INPUT transmitter cable loop. A 3-term compensating coil and perma-alloy strips are adjusted to counteract the effects of permanent and induced magnetic fields in the aircraft.

Because of the high intensity electromagnetic field produced by the INPUT transmitter, the magnetometer and INPUT results are sampled on a time-share basis. The magnetometer head is energized while the transmitter is on, but a measurement is only obtained during a short period when the transmitter is off. Using this technique, the sensor head is energized for 0.80 seconds and subsequently the precession frequency is recorded and converted to gammas during the following 0.20 seconds when no current pulses are induced into the transmitter coil.

### DATA ACQUISITION SYSTEM

Sonotek SDS 1200

9 track 800 BPI ASCII

Includes time base Intervalometer, Fiducial System

### **CAMERA**

Geocam 75 SF

35 mm continuous strip or frame

### TAPE DRIVE

Digidata Model 1139

### OSCILLOSCOPE

Tektronix Model 305

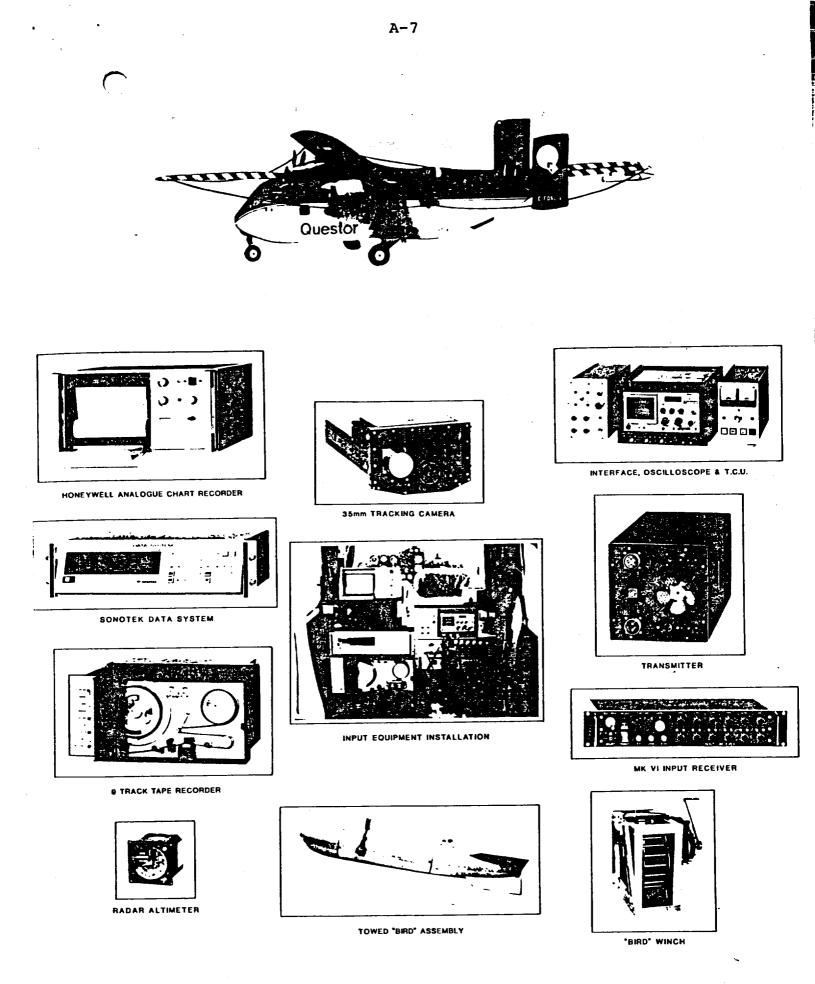
### ANALOG RECORDER

Honeywell Visicorder WS 4010 Kodak Light Sensitive Pape (15cm)

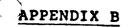
Recording 14 Channels: 50-60 Hz Monitor, 6 INPUT Channels, fine and coarse Magnetics, Altimeter, vertical and horizontal timing lines and fiducial markers.

### ALTIMETER

Sperry Radar Altimeter



QUESTOR/BARRINGER MARK VI "INPUT" SYSTEM EQUIPMENT



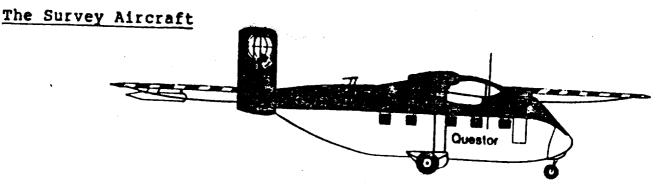


Figure BlManufacturerShort Brothers Ltd.TypeSHORT SKYVANModelSH-7 Series 3Canadian RegistrationC-GDRGDate of INPUT InstallationOctober 1981

Modifications:

- 1) Nose, tail and wing booms for coil mounting
- 2) Long range cabin fuel tank: 8 hours of air time
- 3) Winch, camera and altimeter ports
- 4) Sperry C-12 navigational system
- 5) Doppler navigational system
- 6) Capable of spectrometry
- 7) Modified hydraulic driven generator system

The SKYVAN is a short take-off and landing aircraft. It is powered by two low maintenance turbine engines. The configuration of the aircraft provides for easy installation of equipment and extra fuel capability. These factors have proven the SKYVAN to be a reliable and efficient geophysical survey aircraft.

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	ASSESSMENT WORK BREAKDOWN
	Type of Survey AIRBORNE Geophysical
1.	Type of Survey MIRBORNE (TCOPHUSICA)
2.	Township or Area ADELORO - ADAMS
3.	Numbers of Mining Claims Traversed by Survey 84 (See accompany
	1 -L
	list
•	
4.	Number of Miles of Line Cut Flown 181.4 miles
	Flown flown
*5.	Number of Stations Established
*6.	Make and type of Instrument Used SONOTER PMH 5010 Magnetometer: MARK & INPUT (R) AIRBORNEEM
	MADY VI TUDIE TOMETOMETE
*7.	Scale Constant or Sensitivity
	Scare constant of Sensitivity
*8	Frequency Hand and Deven of
0.	Frequency Used and Power Output
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	Summary of Assessment Credits (details on reverse side)
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·	Total 8 hour Technical Days (Include Consultants, Draughting etc.)
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	Total 8 hour Line-Cutting Days Calculation $\frac{x 7 = }{Technical} + \frac{z = }{Line-cutting} + \frac{z}{Number} = \frac{Assessment credits}{Assessment credits}$ The dates listed on this form represent working time spent entirely within the limits of the above listed claims Check
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	R. PYKE					9/26	
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Survey Company			Date of Survey	(from & to)	/ , _	Total Miles of line	-
Name and Address of Auth	STOR SURVEYS	17.0.	Day   Mo.	Yr. Day	Mo.   Yr.	· · · ·	
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redits Requested per Ea	ich Claim in Columns at right	Mining C	aims Traversed (	List in num	erical seque	ence)	
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Enter 40 days, (This	- Electromagnetic	P	591138		$\mathcal{P}$	609900	
includes line cutting)	- Magnetometer		591139			609901	
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	Geologian N 1 3 1983		591142			609904	
Aan Days	Geochemical	N	591143			609905	
•	Geophysical Claim		591144			609906	
Complete reverse side and enter total(s) here	- Electromagnetic	5 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	591145			609907	1
- 0 D	ED Magnetometer		591146.		Sec. Con	610307	<b>-</b>
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rformed on Clatm(s)			59711			610714	
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			$\frac{9773}{2000}$	<b>.</b>		628511	
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choice. Enter number of c in columns at right.	days credits per claim selected		or Office Use Or Cr. Date Recorded	ıly	Mining Rec	E E	24
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Lune 10/03	Recorded Holder or Agent (Signature)	3360	Date Appressed &	Recorded	Branch	etophining nepores	$\overline{\langle}$
ertification Verifying Re		·····			Ê	<i>p</i> *	
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HODITIONAL CLAIMS FOR AIRBORNE GEOPHYSICA SURVEY

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Ontario	Geotechnical Report Approval
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F. 2.57.39 Aug. 26/83

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1593 (81/10)

August 19, 1983

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Mr. William L. Good Mining Recorder Ministry of Natural Resources 60 Wilson Avenue Timmins, Ontario P4N 2S7

Dear Sir:

We have received reports and maps for an Airborne Geophysical (Electromagnetic and Magnetometer) survey submitted on mining claims P 591138 et al in the Townships of Deloro and Adams.

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

Yours very truly,

E. F. Anderson Director Land Management Branch

Whitney Block, Room 6450 Queen's Park Toronto, Ontario M7A 1W3 Telephone: (416) 965-1380

A. Barr/as

cc Dr. D. R. Pyke Thornhill, Ontario 160 2.5739



### D.R. Pyke and Associates Inc.

1<del>57 Burbank Drive</del> Willowdale, Ontario M2K 1N9 Telephone (416) 221-6210 705-264 - 1037

> P.O. Box 1163 TIMMINS, ONT. PAIN TH9

AUGUST 5, 1983

LAND MANAGEMENT BRANCH MINISTRY NATURAL RESOURCES ROOM 6450 WHITNEY BLOCK QUEENS PARK TORONTO, ONT. MTA, IW3

RE: Assessment Report for 84 mining claims In Deloro-Adams Township

Enclosed are two copies of an airborne geophysical (magnetometer and electro magnetic) survey for 84 claims in Deloro - Adams Townships RECEIVED

> AUG 9 1983 MINING LANDS SECTION

Sincerely DRtyki

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Ontario

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# **Ministry of Natural Resources**

File\_

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 St	urvey(s) 🔜	AIR BOR	NE GEOPHYSICAL	
			0 - ADAMS	
		R. PY		MINING CLAIMS TRAVERSED List numerically
Survey Co	mpany_C	QUESTO	R SURVEYS LIMITED	P 59/138
	-	DRP		(prefix) (number) 
Address of	Author	DELAI	R CRES, THORNHILL ONT.	
Covering D	Dates of Sur	vey_ <i>MARC</i>	(linecutting to office)	591140
	s of Line Cu			- 591141
[				591142
SPECIAL CREDIT	<u>L PROVISI</u> S REQUES	<u>ons</u> Ted	DAYS Per claim	591143
		<del>-</del>	Geophysical per claim Floatnament still	591144
	40 days (inc		-Electromagnetic	591145
survey.	ing) for first	:	Magnetometer Radiometric	
	20 days for	each	-Other	591146
ENTER 20 days for each additional survey using			Geological	591193
same grid	l.		Geochemical	59/194
AIRBORN	E CREDITS	Special provi	sion credits do not apply to airborne surveys)	597/04
Magnetome	eter_20_	Electromag	netic <u>20</u> Radiometric	
/	1	)	lays per claim)	597/05
DATE:	ug 5/	83 SIGNA	ATURE: Author of Report or Agent	597106
				597/07
Res. Geol		Qualif	ications	597108
Previous Su	rveys	-		597/09
File No.	Туре	Date	Claim Holder	597110
•••••		••••••	RECEIVED	59711
•••••••••••••••••••••••••••••••••••••••	••••••		•••••	597/12
•••••	•••••••	•••••••••		
•••••••••••••••••••••••••••••••••••••••			MINING LANDS SECTION	597/13
•••••	••••••	••••••••		SEE APPENDED LIST.
				TOTAL CLAIMS84
		-		

837 (5/79)

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AGNETIC (INPUT)
METER: MARK VI INPUT (R) AIRBORNE
M PHOTO BASE MOSAIC AND FLIGHT
FILM PRODUCED DURING FLIGH.
Line Spacing Zoometers.

Miles flown over total area 181.4 (291.9 line Kilometers) Over claims only 42.6 miles

ADDITIONAL CLAIMS FOR ASSESSMENT CREDITS FOR AIRBORNE GEOPHYSICAL SURVEY IN DELORO - ADAMS TOWNSHIPS

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P609898	P 6 3 9 5 4 3	D(E) = C
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609 900	628545	65/357
609901		651358
	628546	651359
609902	628547	651361
609903	633234	651363
609904	633235	651365
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609906	633237	651367
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