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PORT CREDIT
ONTARIO, CANADA
276-1545

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> PROJECTS SECTION

REPORT OF GEOPHYSICAL SURVEYS

SIROLA OPTION (18 CLAIM GROUP), SOTHMAN TWP., ONTARIO

FOR

CANEX AERIAL EXPLORATION LIMITED

BY

J. B. Boniwell
EXPLORATION GEOPHYSICAL CONSULTANT

#### INTRODUCTION

Recent exploration of the ultramafic setting in Sothman Twp. At Reading Lake logically led to coverage of the manifest extensions of the intrusive occurring in the southwest direction. A combination of geophysical methods were applied in this extended section to cater to a fairly wide range of possibilities in mineral incidence, including the possible occurrence of asbestos fibre. The intrusive itself, at least in part, appears to be controlled by a fault linear bearing NE-SW; however outcrops are scanty, and most of the projections regarding geologic setting are based on previously conducted magnetic surveys (PCE Explorations Ltd., 1966), and on governmental mapping in the area.

The results of these several additional geophysical surveys are presented and discussed herein.

#### DESCRIPTION OF PROPERTY

The subject property is composed of the 18 contiguous claims :

L - 213552 - 9 incl.

L - 265539 - 48 incl.

all nominally of 40 acres, and located within Sothman Twp., Larder Lake Mining Division, District of Sudbury. However, the present coverages are confined partially or in whole to just 8 of these claims, viz.:

L = 213558.9

L - 265541

L - 265543 - 47 incl.

as investigations concentrated on the ultrabasic zone.

The area embraced by these claims directly adjoins the so-called 23 claim group of the Sirola Option which lies to the east and north. The option itself is held by Canex Aerial Exploration Ltd., 2600 - 401 Bay Street, Toronto 1, Onterio,

Typical forest growth and glacial overburden characterize the terrain; Bardwell Lake occupies a part of the grid area extending across the 8 claims noted above.

#### WORK UNDERTAKEN

Between 3rd March and 3rd April 1971, induced polarization and electromagnetic surveys were conducted over the grid with lines, 400° apart, specifically cut and laid out for this purpose. The controlling BL was oriented N45°E true.

The em. traversing was largely completed with a Ronka horizontal loop system operating at 676 Hz and at a receiver - transmitter separation of 300; this work followed a breakdown in the Scintrex SE 600 (1600 Hz, 300° coil separation) equipment used to initiate the survey. The I.P. coverage for its part was effected with a pole-dipole electrode array with an 'a' spacing of 200° kva transmitter operating on a 2 sec-on, 2 sec-off power cycle coupled to a Newmont-type receiver. In addition two sections at a later date (June 5-6 1971) were detailed in multi-spacing traversings in which the "n" spacing of the basic pole-dipole array was varied from n=1 to n=4. A total of 4.0 line miles of em. and 5.3 line miles of I.P. were involved in this work.

A small amount of magnetic coverage was also undertaken in a selected portion of the grid to provide a requisite correlation and control with the em. and I.P. data on the local scale.

#### DISCUSSION OF RESULTS

#### (i) Electromagnetic

Run virtually concurrently with the I.P. survey the em. traversing sought to detect and define in the ultrabasic setting conducting zones that could be representative of semi-to massive sulphides. The results by and large are disappointing therefore, since nearly all such anomaly that has been obtained in the grid area is either so weak as to be barely discernible above background or is in direct correlation with the intrusive itself. In fact, there is essentially only one anomaly expression of merit, and this peaks at 4 +50N on line 12E. Unlike any other response in the grid area, it contains a substantial in-phase conponent, both in strength and relative to the out-of-phase component. Moreover on the magnetic evidence it flanks the ultrabasic; however, it suffers somewhat by occurring in Bardwell Lake wherein the response of any weak through-going axis could readily be locally enhanced by lake bottom effects. The latter possibility is a fairly real one insofar as there is an axial trend recognizable to the em., a trend that is actually divergent to the ultrabasic and is probably structural in character therefore. Indeed such an axis could help explain the existence of that second limb of the ultrabasic as defined by the magnetics here, a limb that incidentally is roughly parallel to the implied fault.

#### (ii) Induced Polarization

Somewhat expectedly, the polarization effects of the ultramafic intrusion in this sector provided not only persistent, but quite often pronounced anomaly in association with correlating resistivity lows. The amount of relief inherent is at times quite dramatic, ranging from 2 to 70 msecs in chargeability and from 15 to over 6000 ohm-metres in resistivity. While background in chargeabilities is typically around 2 msecs, there is a prevalence of negative values, albeit small, recorded on the (grid) south or down-dip side of the intrusive. This effect is concluded due, not to inductive components appearing in the measured signal, but to geologic dip distorting current flow. Moreover, it is probable that it is the dip of the

environmental volcanics and not the intrusive which is to blame, for the intrusive body on the magnetic evidence is steep-sided.

Overall, the recorded chargeability anomaly quite faithfully traces the ultrabasic through its strike extent and through the two limbs noted. Only on the most easterly line (40E) does the identifying chargeability expression disappear into background, and this may be more due to an increasing burial than to any inherent immediate change in the underlying intrusion. Thus it may be inferred that the ultrabasic body involved is heavily serpentinized over most of its length; nevertheless the attendant resistivities clearly suggest that there are degrees of serpentinization even at this level. Nowhere is this more apparent than towards the west, and particularly where the two limbs of the ultrabasic coalesce. Here resistivities drop to their lowest values while chargeabilities, far from being subdued, tend if anything to become stronger. In these highly anomalous circumstance, a number of chances exist for mineralization.

#### (iii) Detailed Surveying

In this west sector, a greater detail of the setting was obtained by taking magnetic readings on the present grid stations, and traversing two sections in multi-spacing I.P. The first of these two pieces of work gave emphasis to the northern magnetic limb as the continuous entity going west, that is, the southern ridge which is the far more extensive to the east is the limb most likely terminated (at about line 00) going west. This outcome is consistent with, and hence increases the chances of, a fault axis as prescribed and projected by the em.

The detailed I.P. sections (lines 00 and 4E) reveals the rather interesting circumstance that it is not simply the ultrabasic that is the source of the anomalous chargeabilities but also the wall rocks on the hanging wall side. By contrast, the footwall rocks are devoid of response; they also are obviously different by reason of their high resitivities. Nevertheless the consistency of the ultrabasic in terms

of in-depth chargeabilities is well demonstrated on both sections, as well as incidentally, the essential steep-sided nature of the intrusive body (or bodies).

The result of this detailing is to indicate that the chances for mineralization lie either with the intrusive proper or with one or two individual bands in the volcanics that flank its southern side. This finding tends to discount the chance of contact-controlled sulphides. Normalization of the I.P. data for the varying resistivity. setting only serves to exaggerate these conclusions.

#### CONCLUSIONS AND RECOMMENDATIONS.

Although there has been recorded a varying geophysical response in this ultramafic setting as encompassed by the present grid, there has failed to emerge the clear-cut target anomaly with high mineral potential. The em. indications, such as they are, imply a fault axis which outside one section is very weakly conducting. The I.P. results for their part provide evidence of strong serpentinization within the ultrabasic intrusion, and of certain horizons in the adjacent volcanic sequence being either graphitic or containing sulphides apparently more or less as an inherent formational characteristic. While this is overtly not too incouraging, anomalies do exist and considerable metallics could indeed be present.

In consequence of the latent possibilities brought together under the influences of structure, intrusion and enhanced geophysical response, at least in I.P. and resistivity, a DDH test was undertaken on the line 4E section. The result of this hole (DDH 119-8, collared at 0+50S/4+00E drilled to grid N at -45° for 501') showed that the chief cause of the observed effects was sulphide mineralization occurring in both the intrusive and the volcanic wall rocks, but largely centred about the contact. Two near-massive bands of sulphides dipping south were encountered in this section in the volcanics. Unfortunately the sulphide that dominated was pyrite to the

virtual exclusion of grade minerals. In the intrusive, nickel values appeared and actually improved in depth as did the ratio of sulphide nickel to silicate nickel. Again unfortunately this otherwise promising trend fell short of ore-grades; and since this mineralization neatly explained the heart of the chargeability anomaly, in the ultrabasic proper indicated potential appeared limited. On this basis, further work was curtailed, and no immediate recommendations are made.

,

JBB: sm

August 17, 1971

J. B. Boniwell

Exploration Geophysical Consultant

#### APPENDIX

#### PERSONNEL & DATES WORKED

F.H. Faulkner: Linecutting - February 20-23 incl., 1971

I.P. Survey - March 3,5, 10-14 incl., 19 & 20, June 5,6, 1971.

I.P. Survey - March 10-14 incl., 1971. J. Burns:

P. Makinen: Linecutting - February 11-15 incl., 1971

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Linecutting - February 11-15 incl., 1971 W.R. Taylor:

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B. Van Zoost: I.P. Survey - March 3,5, 10-14 incl., 19,20, 1971.

Magnetometer Survey - April 3, 1971.

0. Simard: I.P. Survey - March 19,20, June 5,6, 1971.

#### Assessment Credits:

Linecutting - 14 man days Geophysics - 48 man days = 48 x 7 = 14 days =336 days

> Total 350 days

1.D = 13 - areas not covered: 1/2 dames -apten area covered a 1 dams = 40 days per claim MAG: 1 - lower only 1 265547, 1/3 1265546, 1/4 1213559, 1/3 effect = 7 days for 1265547 EM = 4 . loves 11/2 claims = 6 day per claim - 1 265543.44-46-47, 213559

Wind the Cornel



1822 CLEARWATER DRIVE PORT CREDIT ONTARIO, CANADA 278-1848

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## LIST OF CONTENTS

	PAGE
INTRODUCTION	1
DESCRIPTION OF PROPERTY	2
WORK UNDERTAKEN	3
DISCUSSION OF RESULTS	4
(i) Electromagnetic	4
(ii) Induced Polarization	4
(iii) Detailed Surveying	5
CONCLUSIONS AND RECOMMENDATIONS	6

## LIST OF DRAWINGS

DWG. NO.	TITLE	SCALE
V - 119 - 1	Ground Electromagnetic Survey	1"=2001
V - 119 - 2	Induced Polarization Survey	1"=2001
V - 119 - 3	Ground Magnetic Survey	1"=200'
V - 119 - 4	Detail I.P. Sections - Line 0+4E	1"=2001

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Geophysics - 48 man days = 48 x 7 = 336 days

Total 350 days

THE TOWNSHIP

DISTRICT OF SUDBURY

4400 Surface Rights Reservation occurre all Lokes and Rivers.

Flooding Rights - L.O. No. 7191, File No. 1162, volume No. A.,

LEASES

IMPROVED ROADS KING HIGHWAYS

MARSH OR MUSKEG

RAILWAYS POWER LINES

CANCELLED

DATE OF ISSUE SEP -7 1971

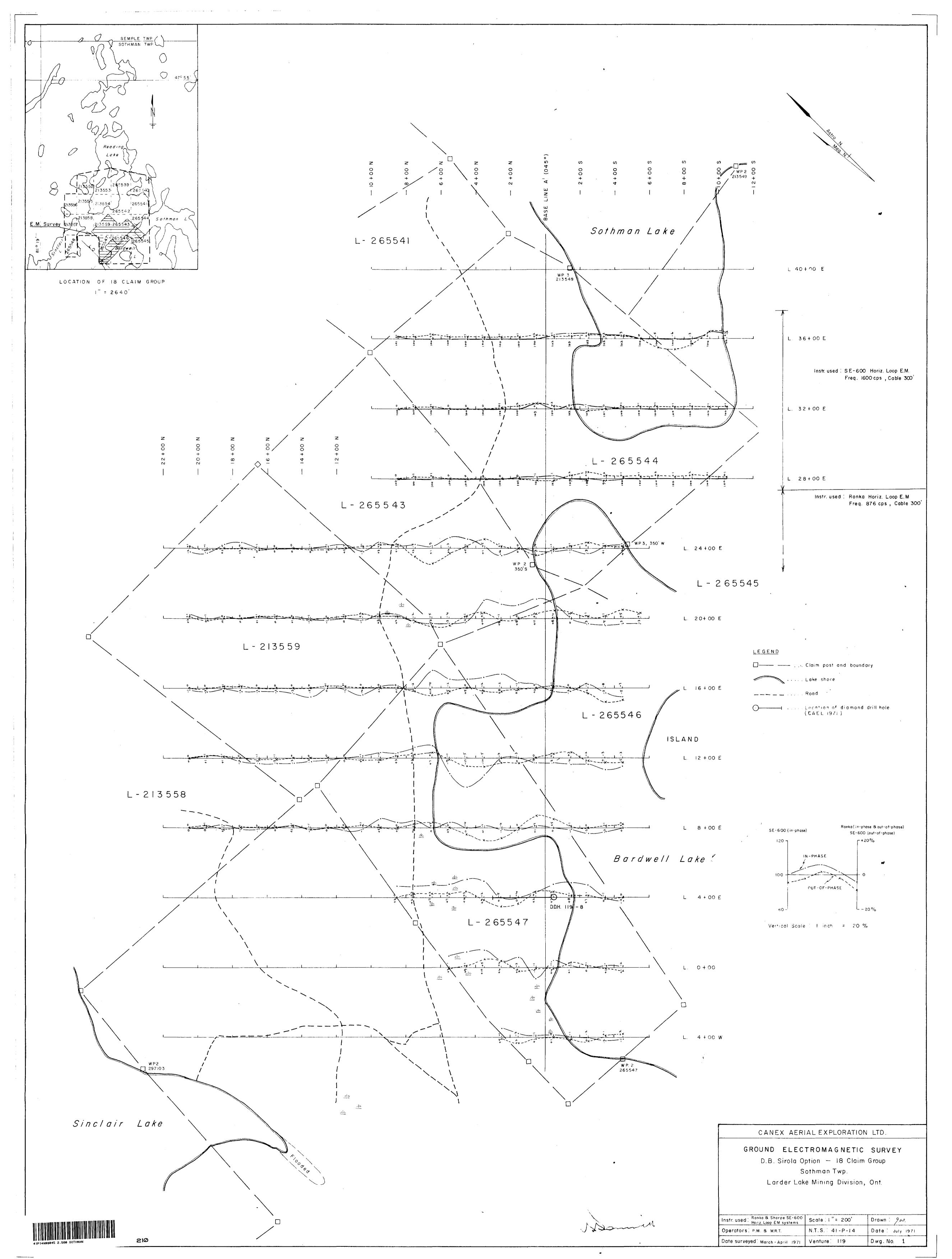
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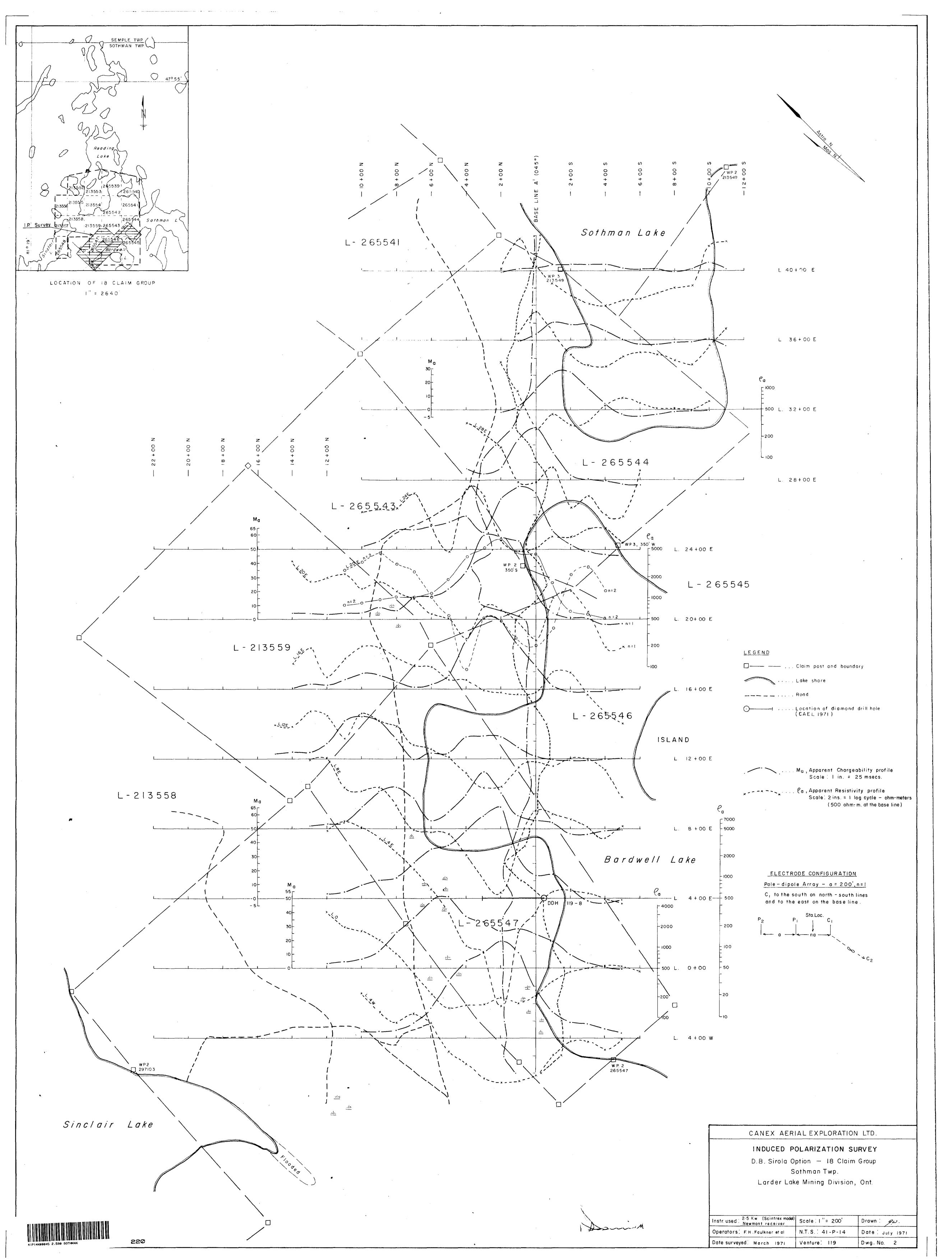
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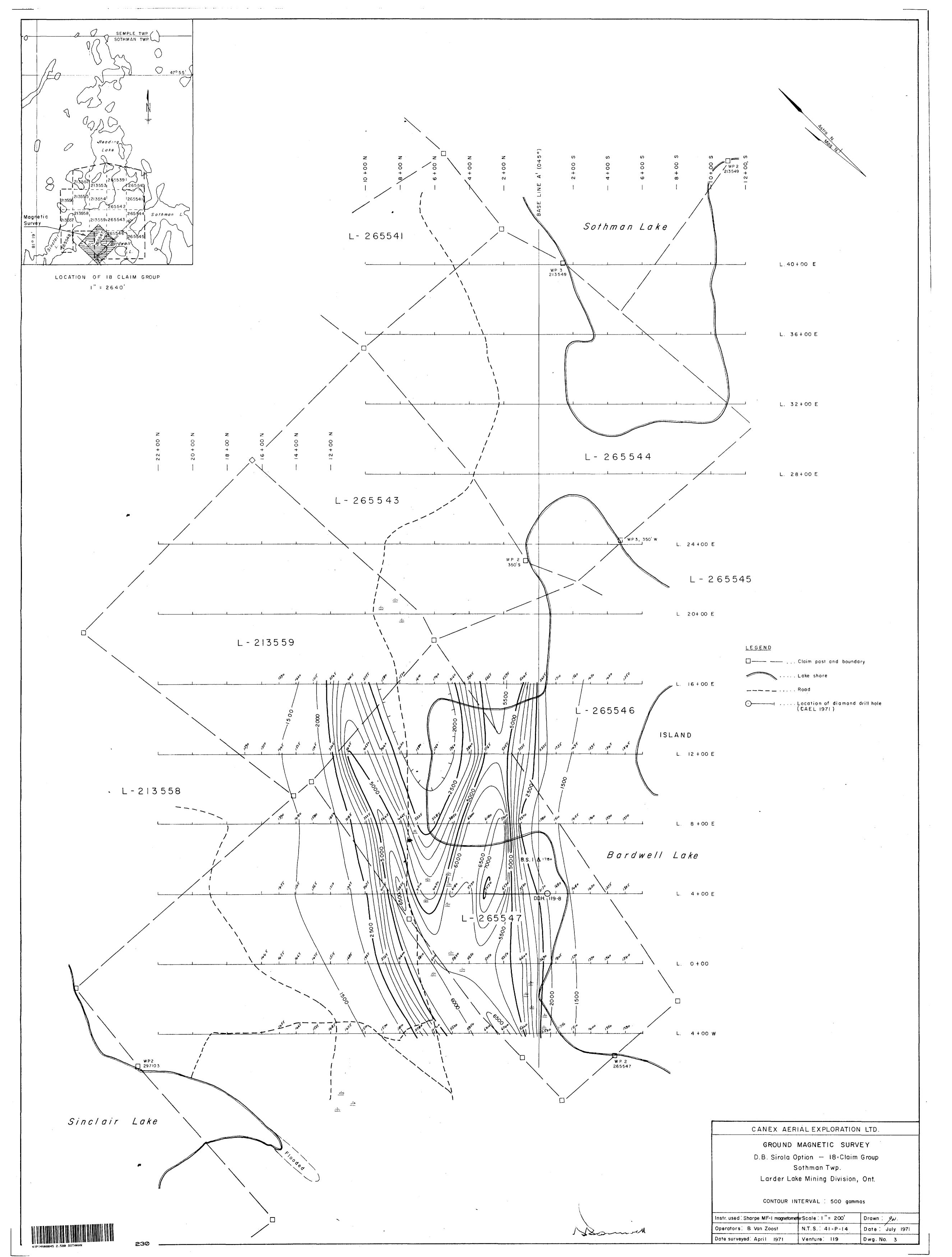
**ONTARIO** DEPARTMENT OF MINES AND NORTHERN AFFAIRS

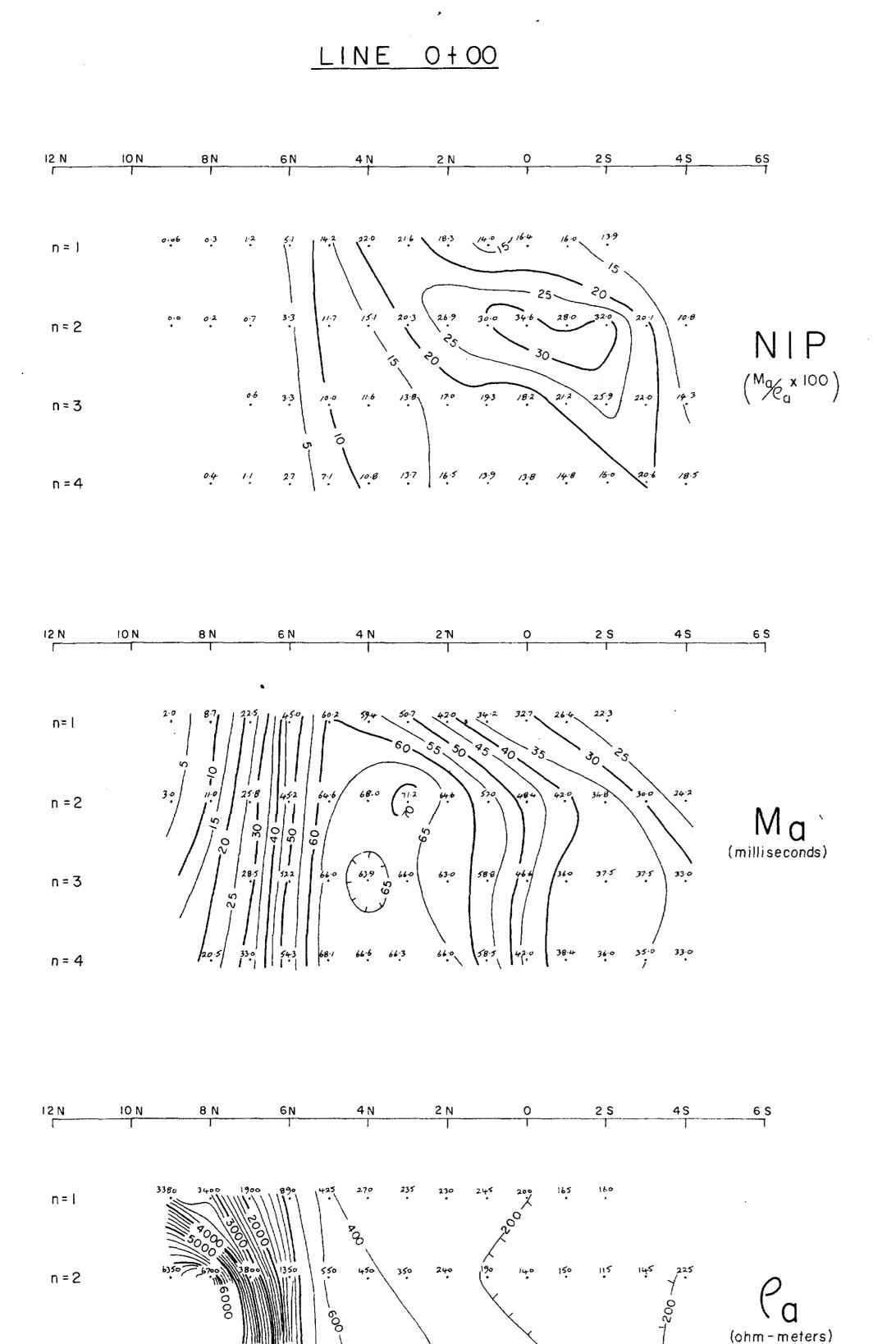
Semple Twp.-M.110.0 L5 L /S 242423 242484 266282 266283- 266284 286285 313480 313475 403 | 24242 | 24242 | 242420 40404 L. 293661 293665 allid( 55820 55826 (L) 55824 **∂**; **€** (L) Kemp Twp.-M. 966

200



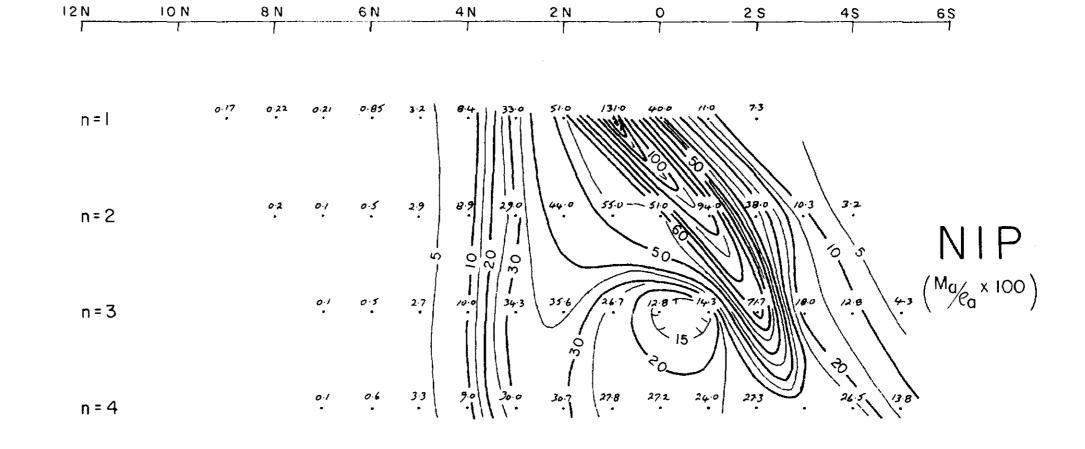


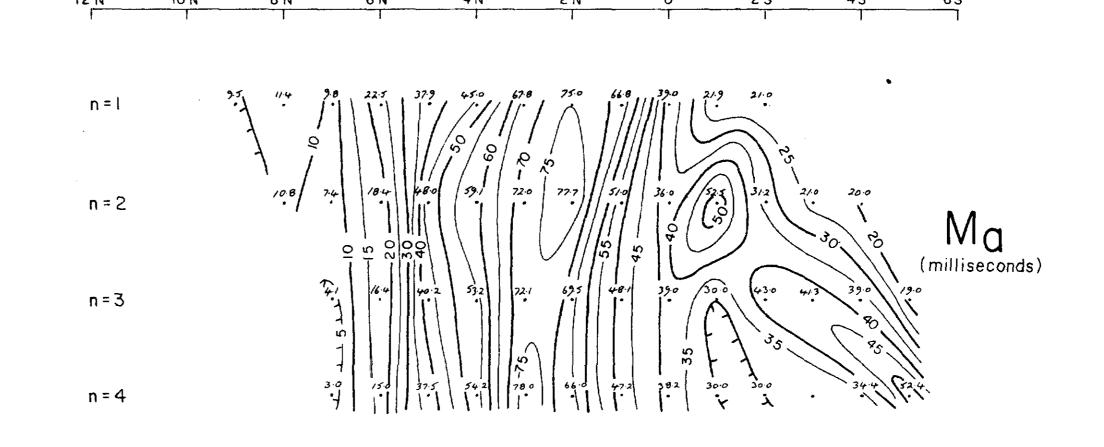


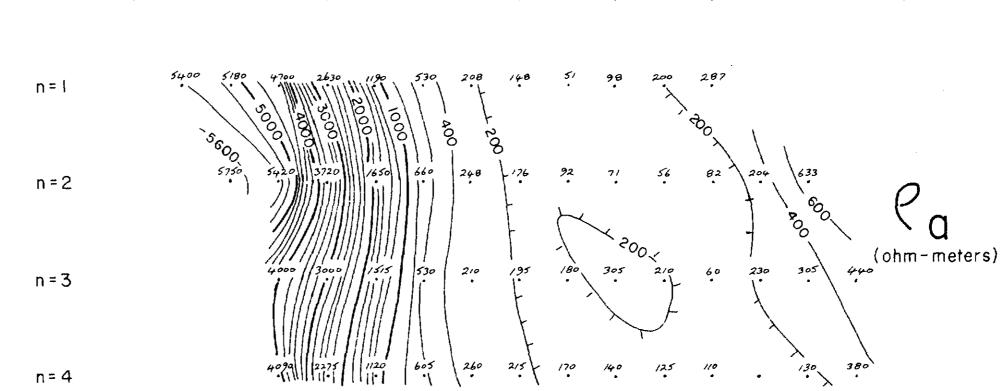


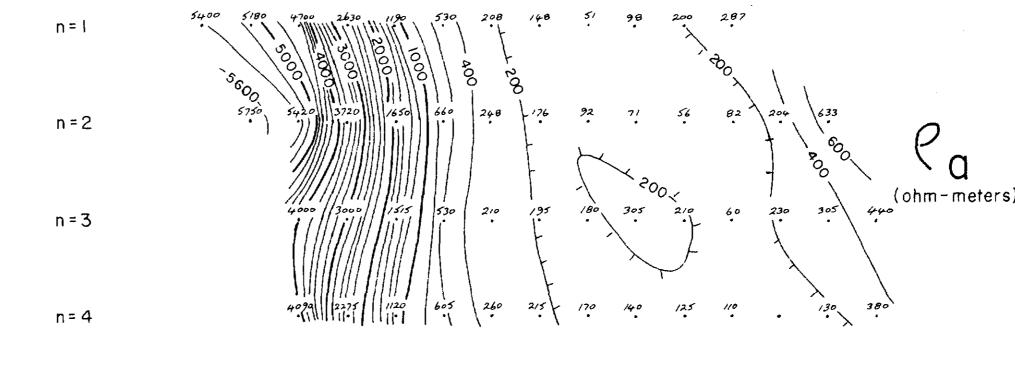
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### LINE 4+00 E





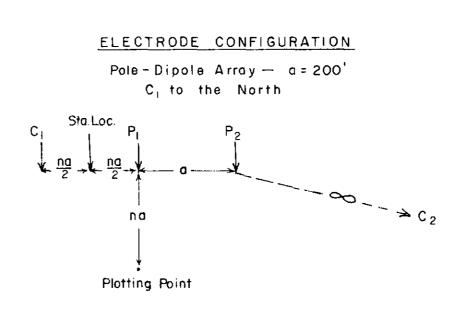




NIP - Normalized I.P (  $M_a/\rho_a \times 100$ ) Contour Interval: 5

Ma - Apparent Chargeability Contour Interval : 5 milliseconds

<sup>e</sup> ← Apparent Resistivity Contour Interval: 200 ohm-meters



12 N

# CANEX AERIAL EXPLORATION LTD.

INDUCED POLARIZATION SURVEY D.B. Sirola Option - 18 Claim Group Sothman Twp. Larder Lake Mining Division, Ont.

DETAIL SECTIONS - Lines 0 8 4 E

Instr. used: 2.5 Kw (Scintrex model) Scale: | " = 200" Drawn: 9w. Operators: F.H. Faulkner et al N.T.S. 1 41-P-14 Date: June 1971 Dwg. No.: 4 Date surveyed: June 1971 Venture: 119



n = 3

n = 4