



41010NE0063 63A.412 CUNNINGHAM

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63A.412

Geological Report
SHUNSBY MINES LIMITED
Cunningham Township, Ontario

Summary and Conclusions

A geological plan was completed over 53 claims using lines at 400 foot centres with stations at every 100 feet on these lines.

Sulphide deposits have been found and drilled with some success on the north claims east of Hiram Lake.

The entire area covered by the geological survey is favourable to the deposition of sulphides.

A great deal of the claims were covered by swamp and overburden but this overburden is shallow and should be prospected carefully by sounding bar and grub hoe. Close prospecting by this method should be done along line 28 just east of the base line.

Property

The property consists of 76 contiguous claims in Cunningham Township. See appended map and inset.

Method

The geological survey was made using lines cut east-west at 400 foot intervals. Stations were every

100 feet along these lines. Some auxiliary lines were run at 200 foot intervals. The base line, shown as number 2 base line on the attached map, was a surveyed line running north-south through the center of the claims. Three men were used for the survey with one on the base line and the other two picking up outcrops to the side.

Access

By winter, road from the town of Sulten on the C.P.R., a distance of about 14 miles. Or, a small plane can be landed in Peter Lake which is about 3 miles by winter road to the main cabin on the east shore of Hiram Lake.

Natural Resources

Some good stands of jackpine are to be found on the claims and some cedar up to 18" diameter are to be found in the numerous swamps.

General Geology

The claims are underlain by rocks of pre-Cambrian age. They are mainly volcanics with andesite flows predominating. Thin flows of Rhyolite, tuff, agglomerate and iron formation are also present.

Lying above the volcanics are a band of sediments composed of conglomerate, quartzite, greywacke and chert.

The above rocks have been intruded by peridotite, diabase and diorite.

The above have all been intruded by granite, porphyry and lamprophyre.

The basic lava; andesite amygdaloidal lava and pillow lava, were grouped together in this survey. Texture varied considerably and in places a dioritic texture was seen which makes it difficult to distinguish between the flows and intrusives. It is possible that some of the rock in the north 1/3 of the property which is called diorite is actually a basic flow with a dioritic texture.

Several basic intrusives (peridotite) were noted on the property, the largest being near the east boundary in the centre of the claims.

Many acid dikes were noted, mainly feldspar or quartz feldspar porphyry. Basic dikes (mostly diorite) were observed and the one extending from the south boundary, almost parallel to, but west of base line number 2 is probably a fracture filling in the fault along this line.

Structural Geology

In the south portion of the claims, the strike of the rocks is more or less east-west with a steep dip to the south. North of this; or roughly 1/2 a mile north of the south boundary, the strike of the rock is nearly at right angles to this or nearly north-south.

Much folding is evident, particularly in the northern claims.

At least 3 major faults cross the property in the area geologized, with many minor faults probably present as shown by the local topography. One major fault running approximately N **75** degrees E from Isaiah Lake across the property shows strong schistosity parallel the fault and dipping south 60 to 65 degrees. Scattered pyrite was seen along this fault.

In the west central portion of the property and starting north of the above-mentioned fault is another roughly north-south fault following the creek line north through a series of beaver ponds. This fault probably carries on to the north and through Hiram Lake.

Another major fault crossing the property is a steeply south dipping fault which runs roughly N 30 degrees W from near the north side of claim 115353 and crosses the property to the west.

From the geology; it would appear likely that a fault crosses the property in a direction approximately N **75** degrees E and more or less along the south boundary of claims 57540, 57537 and 57538. No evidence of this fault was found although just north of the claim line low ground predominates in the direction noted.

An east-west shear was noted 300 feet east of base line number 2 and north of line 28. Some pyrite was noted at this point and disseminated chalcophrite noted on this line as far east as a north trending quartz diorite.

On the west side of the map area is a large continuous swamp extending from Isaiah Lake to near the north side of Forlorn Lake and almost 2 claims wide. The odd outcrop was encountered in this area but they were too few to form any opinion of the structure underlying this area.

Near the south boundary, east west trending bands of tuff, andesite and diorite were encountered and a plug of granodiorite in claim 115348.

Just east of Isaiah Lake an outcrop of diabase was noted but direction of the dike is unknown.

In claim 115362 there is a small plug of peridotite and in the same claim is a quartz diorite with a trend west of north. Another small outcrop of quartz diorite was noted in claim 115368 to the north and west which could be the continuation of this dike.

On the east boundary near the center of the map is a large mass of peridotite which is bounded on the west by a quartz diorite. Several smaller peridotite plugs were noted as was another peridotite mass in the west central claims numbers 115350, 114398 and 90413.

North of number 2 base line and as far south as line 4, large masses of feldspar porphyry, quartz feldspar porphyry and porphyritic rhyolite are evident across the property.

An old trench or shallow shaft was found about 40 feet south of line 88 east at 3050 feet east of the base line. The only rock seen was a carbonated andesite with a little fine disseminated pyrite.

Economic Geology

Widespread and heavy copper-zinc mineralization has been found on the north claims closely associated with the chert bands. Much of the mineralization is in the form of fine veinlets filling fractures in the chert but in one diamond drill hole (#77), chalcopryrite and sphalerite have replaced the chert completely.

Heavy pyrite was observed in an old trench 2700 feet west on line 20 west and 100 feet north of the line. This mineralization was in a brecciated andesite centred between quartz decrite to the north east, a peridotite plug to the north west and quartz porphyry to the south.

Some 500 feet west and 150 feet south of line 44 west there is much pyrite, some pyrrhotite and scattered gossan zones which could stand further prospecting.

As noted above, disseminated chalcopryrite was noted close to line 28 east from 300 to 800 feet east of number 2 base line.

Overburden is comparatively light and in a great many cases only a few inches of sand and moss covers the rock. Even the swamp areas have outcrops only lightly covered by overburden. Although this area has been prospected off and

on since the early 1900's, much virgin rock could be uncovered by grub hoe.

Prior Work

On the section of the claims on which the geological survey was run, several old trenches were observed but no sign of diamond drilling was noted.

Conclusions

The entire area covered by the geological survey is favourable to the deposition of sulphides.

Several large shear zones were noted with scattered sulphides and these should be prospected more thoroughly.

Around line 28 to the east of the base line, disseminated chalcopryite was noted. This area should be examined.

Overburden is generally shallow and grub-hoe prospecting would be advisable. Any new outcrops or contacts found by this method should be added to the present map which would help in locating favourable geology and possibly have metal occurrences.

Recommendations

1. A geophysical survey of the claims using the present base line number 2 and the present lines.
2. Prospecting by sounding rod and grub hoe.

C.W. Archibald
October 1962





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SHUNSBY MINES LIMITED
MAGNETIC AND ELECTROMAGNETIC SURVEY
IN
CUNNINGHAM TOWNSHIP, ONTARIO

FEBRUARY 1964

S U M M A R Y

The present magnetic and electromagnetic survey has indicated several conductors which combine good conductivity with magnetic correlation. The most important of these coincides with a surface showing of sulphide mineralisation. Investigation of this conductor by means of two diamond drill holes is recommended.

HAROLD O. SEIGEL & ASSOCIATES, LIMITED

CONSULTING GEOPHYSICISTS

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TORONTO 1, ONTARIO

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"SEIGEO", TORONTO

TELEPHONE
364-2650

REPORT ON A MAGNETIC AND ELECTROMAGNETIC SURVEY IN
CUNNINGHAM TOWNSHIP, ONTARIO
ON BEHALF OF
SHUNSBY MINES LIMITED
FEBRUARY 1964

INTRODUCTION

During February 1964 a combined magnetometer and electromagnetic survey was carried out on behalf of Shunshby Mines Limited on a property in Cunningham Township, approximately 12 miles east of Sultan, Ontario.

Magnetometer and horizontal loop electromagnetic surveys were conducted on two grids ("A" and "B"), covering selected portions of the property.

Both grids comprised east-west and north-south traverses. In addition a test profile was measured over the Shunshby Mines sulphide body.

A Sharpe M.F.1 fluxgate magnetometer was used for the magnetic survey. Measurements of the relative vertical intensity of the earth magnetic field were made at 100 ft. intervals and appropriate corrections for diurnal variations

were made by checking back periodically to bases previously established. The magnetometer survey covered 14.5 line miles of profile.

The electromagnetic survey was carried out with a Ronka Mk. IV horizontal loop unit, with a basic operating frequency of about 860 c.p.s. Readings were taken at 100 ft. intervals, with intermediate 50 ft. stations in disturbed areas. Intercoil separation was 200 ft. The electromagnetic survey comprised 15.8 line miles of profile.

GEOLOGY AND TOPOGRAPHY

The investigated areas are for the greater part underlain by basic volcanics, mainly andesite. Diorite intrusions are frequent. Sulphide mineralisation appears to be widespread. The location of the most important showings is shown on the grid maps.

Strong topographic relief in some parts of the area has caused spurious anomalies in the in-phase component of the horizontal loop measurements. Such readings have been marked s.c.

DISCUSSION OF RESULTS

A. Magnetometer Survey

Plates 1 and 3 present the reduced magnetic data obtained in grids "A" and "B" respectively, on a scale of 1" = 200'. Because of the different character of the magnetic relief

the observations in area "A" have been contoured on a logarithmic basis, whereas those in area "B" have been contoured at a constant interval of 1000 gammas.

In area "A" (Plate 1) the major magnetic disturbance occurs in a zone crossing the grid in a northwest-southeast direction, between lines 12 S and 28 S. Rather than a continuous feature, the irregular pattern of alternating highs and lows suggests a zone of structural dislocation, involving fragments of a formation of high magnetite content.

Two zones of less pronounced relief occur in the northern and in the southeastern part. Otherwise the area is relatively undisturbed.

Grid "B" (Plate 3) shows higher magnetic relief and a very irregular pattern, which is probably caused by the occurrence of iron formation and considerable structural disturbance. The area is, however, too small to observe any definite trends.

In both areas the magnetic results indicate a rather variable, but limited overburden thickness.

B. Electromagnetic Survey

Plates 2 and 4 present the results of the electromagnetic survey on a scale of 1" = 200'. In-phase readings have been marked on the left, out-of-phase readings on the right side of the traverse lines. Profile curves have not been plotted because of the confusion that would result with the closely spaced perpendicular sections. Conductor location and widths have been marked and the probable outline of the conductive

zones has been indicated with dashed lines. Conductors are characterized by anomalous in-phase and out-of-phase readings. For an accurate gradation of the conductors the resistivity/width ratio (ρ/d value; ρ = resistivity in ohmcm, d = thickness in m.) can be derived from the amplitudes of the two components. The width of the conductors may be determined approximately from the curve forms.

Several zones of geo-electrical disturbance occur in grid "A" (Plate 2). The most important (zone A1) crosses the grid in a northwest-southeast direction. Some of the anomalies show strong positive as well as negative deflections, a type of response that may be obtained when the system moves across a flatly dipping conductor, or parallel to a conductive zone. The general pattern is rather irregular. The ρ/d values of most anomalies indicate very good conductivity.

The total electromagnetic picture of zone A1 suggests the presence of a strongly warped and dislocated body of highly conducting material.

Zone A2 comprises in its open eastern part several strong and highly conducting bands, which appear to merge toward the southwest into a weaker and flatter dipping conductor of lower conductivity.

Zone A3 is weaker and the connection between individual anomalies conjectural. The best conductivity is found on line 0.

All three zones display magnetic correlation, although in varying degrees. Most striking is correspondence between the geo-electrical and the magnetic pattern in zone A1.

In grid "B" (Plate 4) two anomalous zones have been located, one of which coincides with an exploration pit in the central part of the area (B2). The other conductive zone consists of two or more parallel bands, and appears to extend beyond the west boundary (B1). Neither zone has magnetic correlation.

TEST TRAVERSE

For comparison a test traverse was run over the Shunsby Mines sulphide deposit east of Hiram Lake (line 10 N.). The results are shown on Plate 5. The electromagnetic profiles at 200' and 300' coil separation indicate the presence of a strong near surface conductor of high conductivity ($\rho/d = 1.7$) at 2 + 00 W. The magnetic profile shows some distortion, but no evident correlation.

CONCLUSIONS

Of great interest is the relation between magnetic and conductive anomalies in grid "A". Although it does not appear to be direct in the sense that both are caused by the same bodies (the magnetic highs are undoubtedly due to magnetite and the electromagnetic anomalies show no permeability influence), there seems to be a structural relation, which greatly enhances the significance of zone A1, as well as of zones A2 and A3.

Generally high conductivity, combined with the occurrence of an important showing within its western part, leave little doubt that zone A1 is due to sulphide mineralisation.

For a further examination of zone A1 the following diamond drill holes are recommended:

	Collar	Orientation	Length	Dip
D.D.H. #1	Line 24 S 3 + 00 E	Due East	350 ft.	45°
D.D.H. #2	Line 8 W 21 + 00 S	Due North	350 ft.	45°

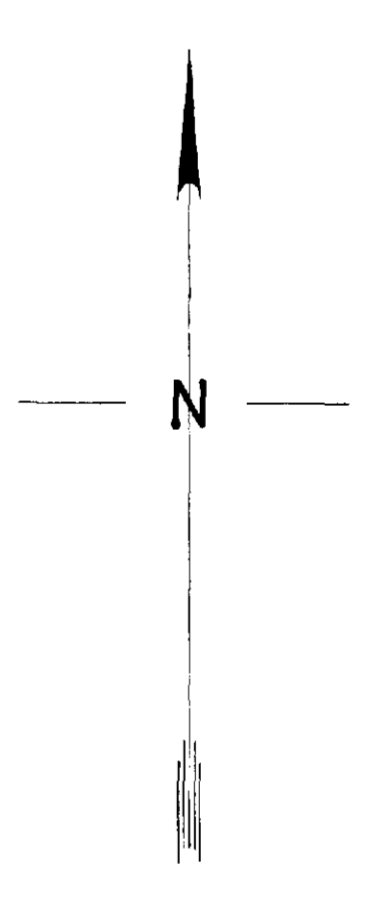
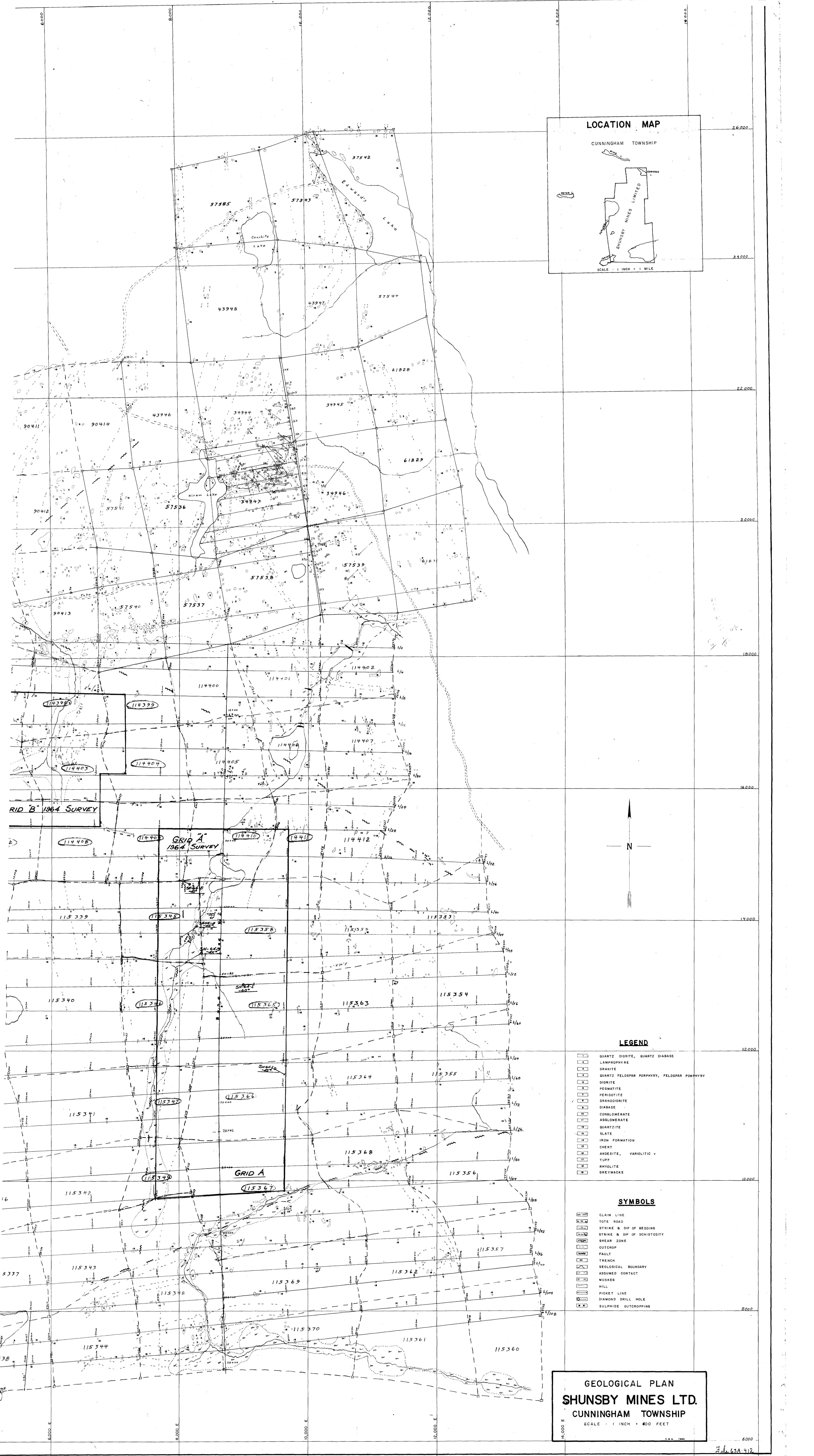
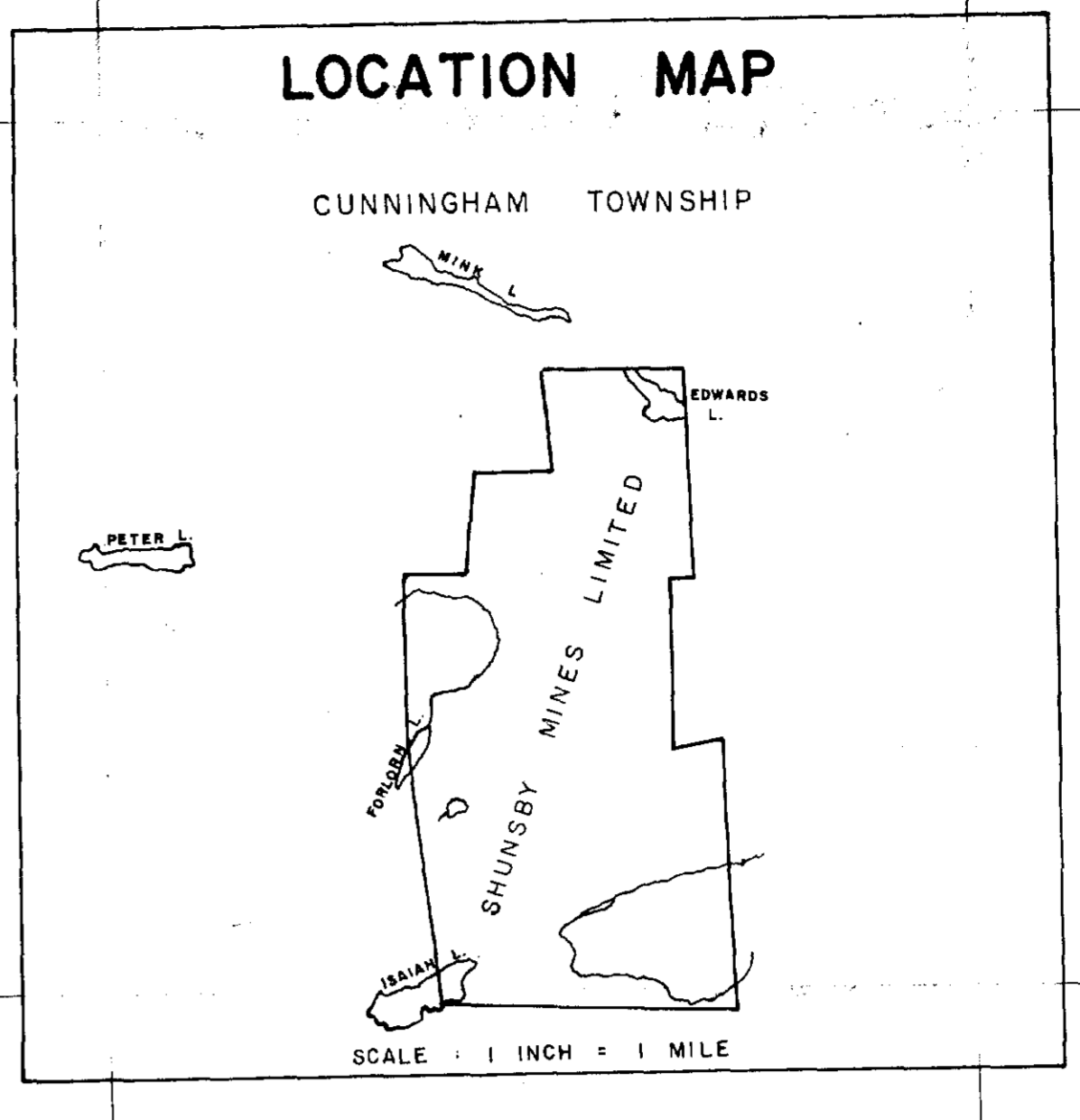
In view of the apparently complicated structure it is recommended to carry out additional electromagnetic measurements on intermediate lines, in order to properly define the remaining conductors, and to extend the survey beyond the existing grids to delimit conductors A₂ and B₁.

Respectfully submitted,



Robert A. Bosschart M.Sc.

Toronto, Ontario
March 3, 1964.



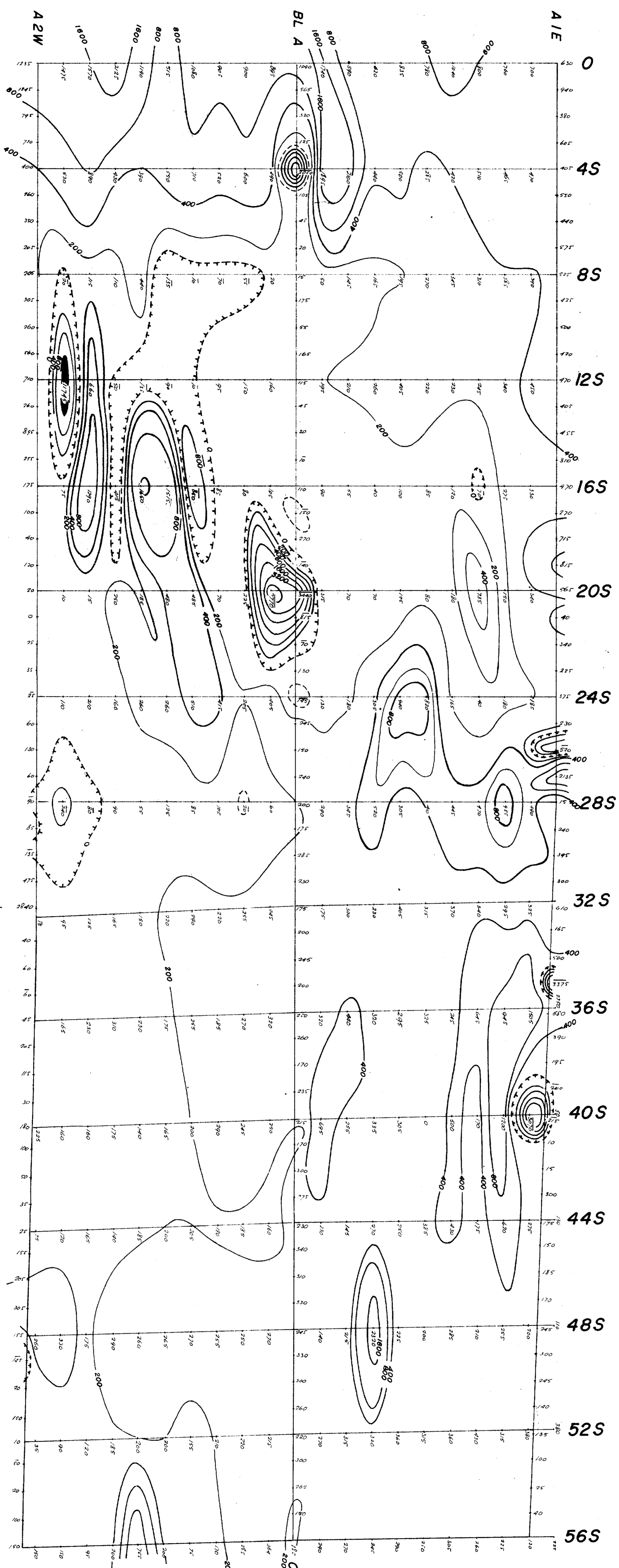
LEGEND

- QUARTZ DIORITE, QUARTZ DIABASE
- LAMPROPHYRE
- GRANITE
- QUARTZ FELDSPAR PORPHYRY, FELDSPAR PORPHYRY
- DIORITE
- PEGMATITE
- PERIDOTITE
- GRANDIORITE
- DIABASE
- CONGLOMERATE
- ARGILLACEOUS CONGLOMERATE
- QUARTZITE
- SLATE
- IRON FORMATION
- CHERT
- ANDESITE, VARIOLITIC
- TUFF
- RHYOLITE
- GREYWACKE

SYMBOLS

- CLAIM LINE
- TOTE ROAD
- STRIKE & DIP OF BEDDING
- STRIKE & DIP OF SCHISTOSITY
- SHEAR ZONE
- OUTCROP
- FAULT
- TRENCH
- GEOLOGICAL BOUNDARY
- ASSUMED CONTACT
- MUSKEG
- HILL
- PICKET LINE
- DIAMOND DRILL HOLE
- SULPHIDE OUTCROPPING

GEOLOGICAL PLAN
SHUNSKY MINES LTD.
 CUNNINGHAM TOWNSHIP
 SCALE : 1 INCH = 400 FEET



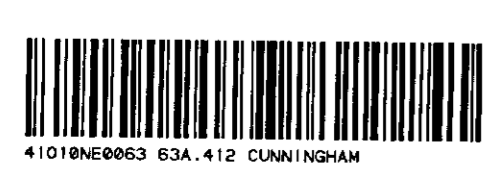
LEGEND :
 LOGARITHMIC MAGNETIC CONTOURS (IN GAMMAS)

—————	800
—————	400
—————	200
—————	0
—————	200
—————	400
—————	800

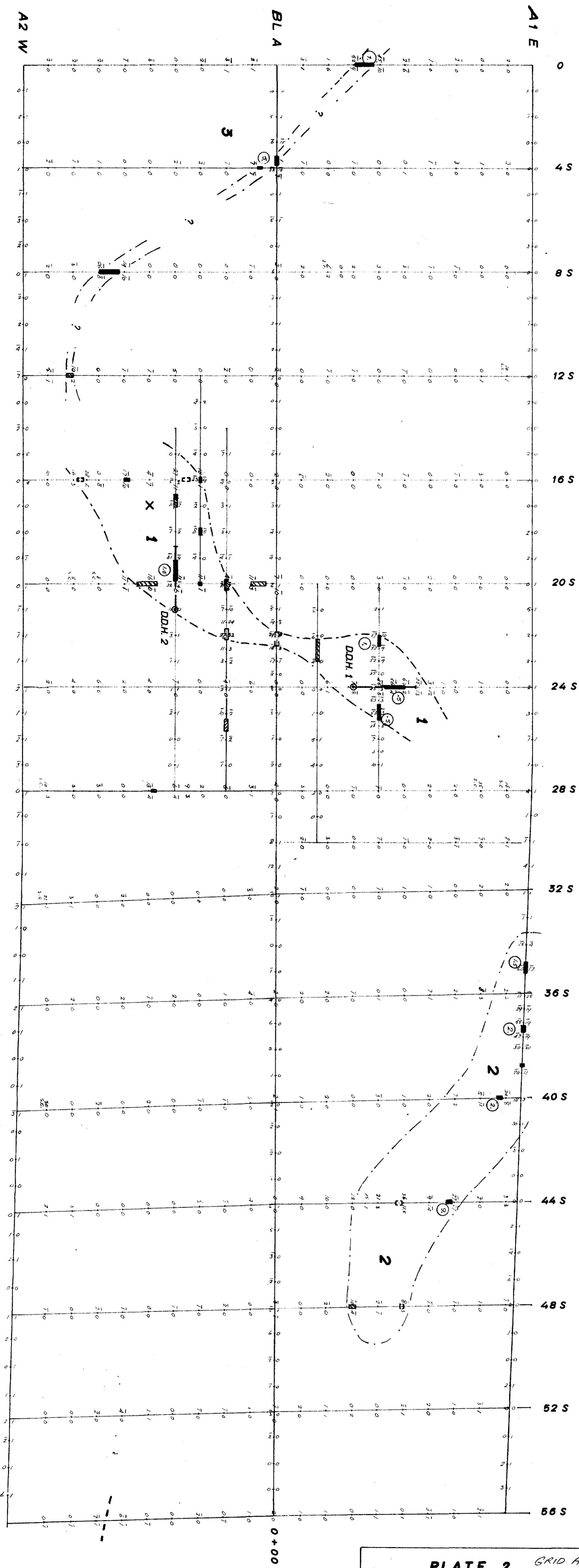
PLATE 1 GRID A

SHUNSBY MINES LTD.
 CUNNINGHAM TWP. ONTARIO
MAGNETOMETER SURVEY

BY
H.O. SEIGEL & ASSOCIATES
 SCALE: 1" = 200' DATE: FEBR. 1964



H. O. Seigel



LEGEND:

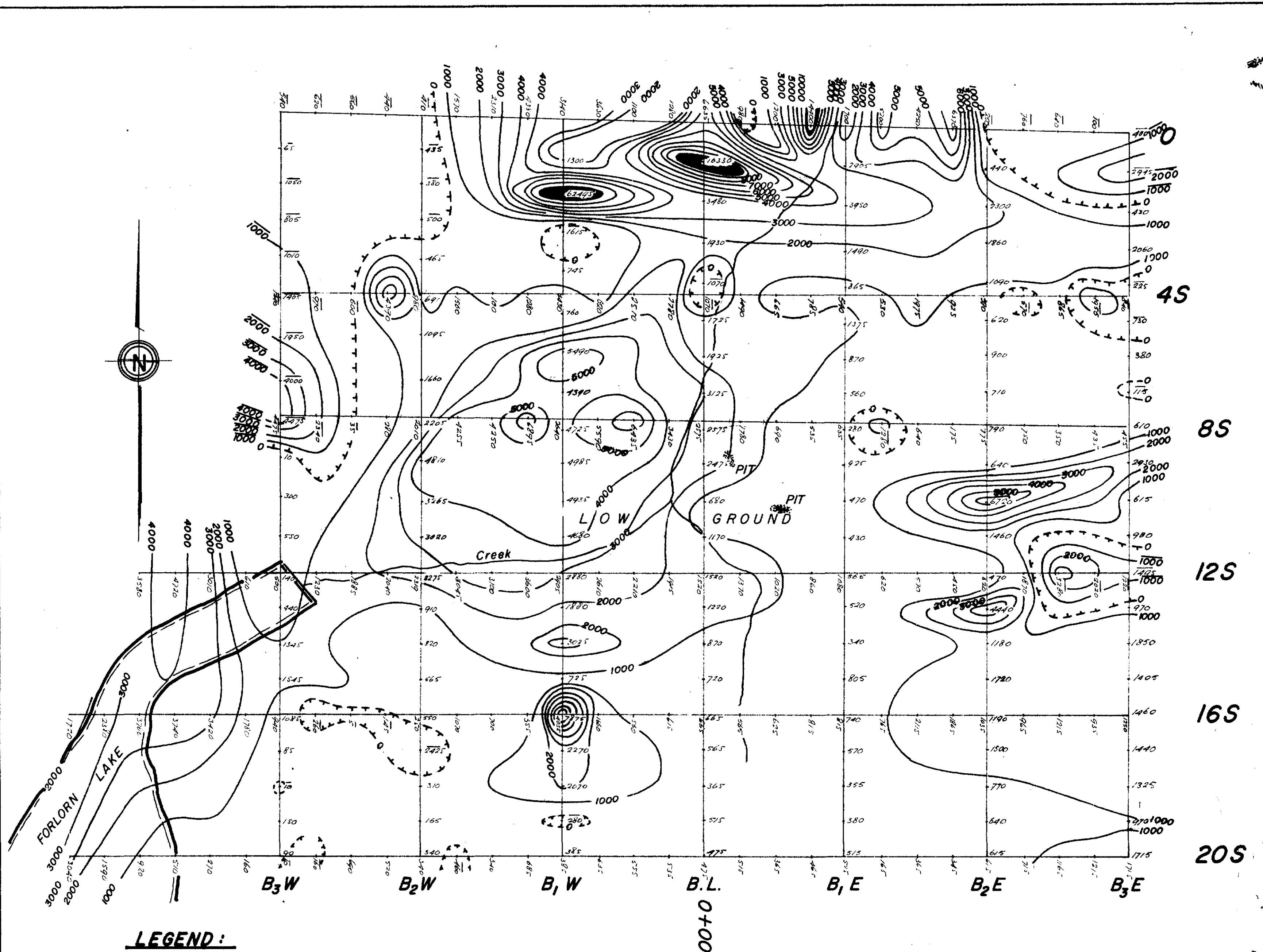
E.M. ANOMALY P/d VALUE
 " " WEAK
 " " INVERTED
 SHOWING
 IN PHASE OUT OF PHASE
 RECOMMENDED DIAMOND DRILL HOLE
 DDH

PLATE 2 GRID A

SHUNSBY MINES LTD.
 CUNNINGHAM TWP. ONTARIO
 HORIZONTAL LOOP E.M. SURVEY
 BY
H.O. SEIGEL & ASSOCIATES
 SCALE: 1" = 200' DATE: FEBR. 1964
 R.B.

David O. Seigel





LEGEND:

1000 ——— MAGNETIC CONTOURS
(INTERVAL 1000 GAMMAS)

GRID B

PLATE 3

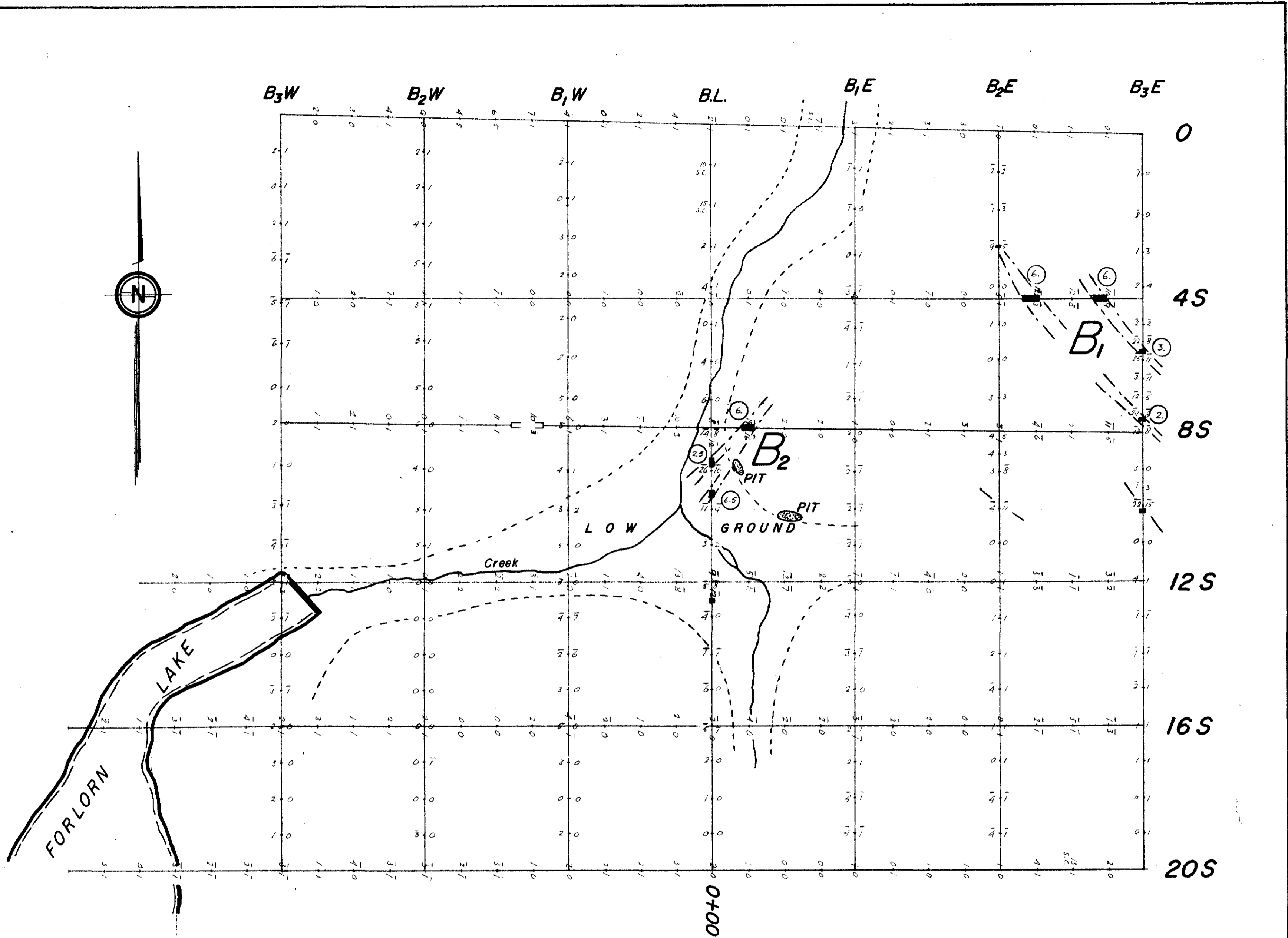
SHUNSBY MINES LTD.
CUNNINGHAM TWP., ONTARIO
MAGNETOMETER SURVEY

BY
H. O. SEIGEL & ASSOCIATES LTD.

SCALE: 1" = 200' DATE: FEBR. 1964.

Harold O. Seigel





LEGEND :

SEE PLATE 2

B₂ E. M. ANOMALY.



41010NE0063 63A.412 CUNNINGHAM

240

PLATE 4 GRID B

SHUNSBY MINES LTD.
CUNNINGHAM TWP., ONTARIO
HORIZONTAL LOOP E. M. SURVEY
 BY

H. O. SEIGEL & ASSOCIATES LTD.

SCALE: 1" = 200' DATE: FEBR. 1964.

Harold O. Seigel

10W 8W 6W 4W 2W 0+00 2E

R % I

-40 -

HOR. LOOP E.M.

860 c.p.s.

COIL SEPARATION 200 ft

-20+-

0

$\rho/d = 1.7$

+20--

--- R % I ---

--60

HOR. LOOP E.M.

860 c.p.s.

COIL SEPARATION 300 ft

--40

--20+

0

+20-

MAGNETOMETER

δ

500

0

500

1000

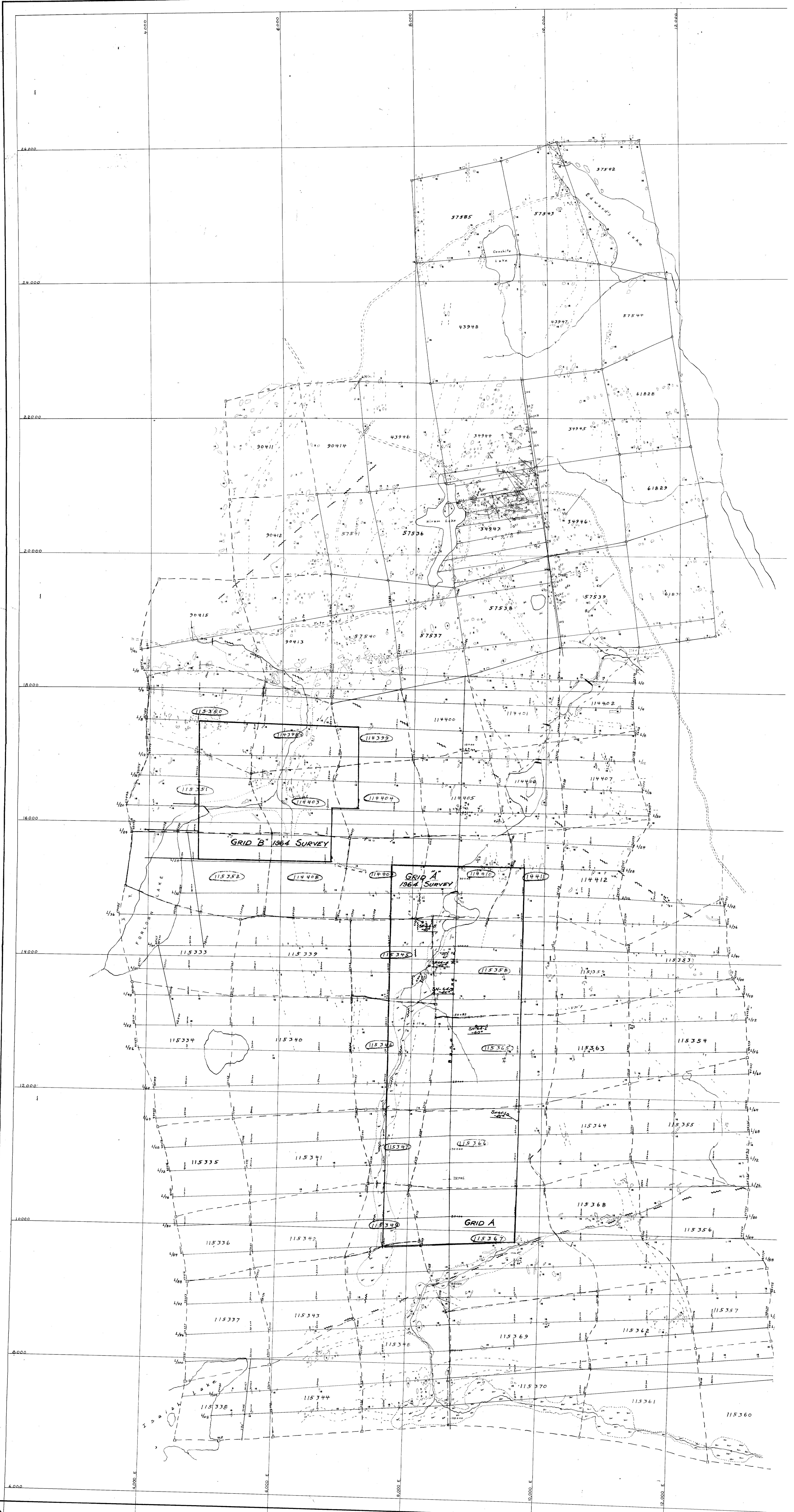


41010NE0063 63A.412 CUNNINGHAM

250

HAROLD O. SEIGEL & ASSOCIATES, LIMITED		
PROJECT SHUNSBY MINES LTD.		
SUBJECT TEST TRAVERSE		
SURVEY . MAGNETOMETER & H.E.M.		
Scales:		Legend:
1" = 200'		
WORK BY: R.B.	PLOT BY:	DATE MARCH 1964

Harold O. Seigel



GRID B 1964 SURVEY

GRID A 1964 SURVEY

GRID A

FORLORN LAKE

E. J. WARD'S LAKE

SUNNY LAKE

26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000

5,000 E
6,000 E
8,000 E
10,000 E
12,000 E

90411 90414 90412 90413 90415
57585 57543 57544 57536 57533 57538 57540 57537
43948 43947 43946 34944 34945 34946 34947
61828 61829 6183
114400 114401 114402 114403 114404 114405 114406 114407
115330 115331 115332 115333 115334 115335 115336 115337 115338
114408 114409 114410 114411 114412
115340 115341 115342 115343 115344 115345 115346 115347 115348
115350 115351 115352 115353 115354 115355 115356 115357 115358
115360 115361 115362 115363 115364 115365 115366 115367 115368 115369 115370 115371