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REPORT ON THE  
GEOPHYSICAL SURVEY

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JONSMITH GOLD MINES LIMITED  
Parkin Township -- District of Sudbury  
ONTARIO

W.P.CORKING

APRIL 1948

JONSMITH GOLD MINES LIMITED  
GEOPHYSICAL SURVEY

SUMMARY

Various features are herein described of the geophysical survey carried out, during the period January to April, 1948, on the Jonsmith property in Parkin Township.

Performance of the survey, using a vertical magnetometer, involved reading the comparative intensity of the earth's magnetic field at 100 foot intervals along a northeast-southwest system of section lines spaced 200 feet apart.

The physical basis for the network of stations was laid out by transit from base lines passing north-westerly through the property.

The accompanying maps have been prepared to show contour lines of equal comparative magnetic intensity throughout the property.

The highly complex anomalous magnetic pattern so demonstrated, together with the occurrence of copper-

nickel-platinum ore on the claims and the relationship of this to the Sudbury nickel eruptive, lead to the recommendation of 13,750 feet of diamond drilling.

#### INTRODUCTION

At the present time the property consists of a group of 32 mining claims, either owned or held under option by Jonsmith Gold Mines Limited, in the southeastern portion of Parkin Township, District of Sudbury, Ontario. These claims are numerically listed as follows: S 48893, 48892, 48891, 5424, 5422, 39838, 5423, 39839, 43949, 48291, 43950, 5 265, 42676, 42321, 42319, 42677, 42316, 42315, 42320, 5481, 5480, 42318, 7656, 5363, 4800, 5326, 42317, 5740, 5362, 5364, 5325, 5324.

In a report submitted to the Company on June 28th, 1947, the writer outlined the geology of the claims and its relationship to the Sudbury nickel eruptive. The results were detailed also of a short diamond drilling campaign in which copper-nickel-platinum ore was encountered. Further development work was obviously indicated by the results obtained at that time. To design effectively such development work a geophysical survey, using a vertical magnetometer, was recommended. Its function here is partly to trace the strike of the known magnetic ore, partly to detect additional concentrations of magnetic mineral, of which valuable base

and precious metals may constitute a portion, and partly to outline such structural features as basic intrusive bodies and contact areas which might reasonably be favourable for ore deposition.

The magnetometer survey has now been completed.

#### RESULTS OF THE GEOPHYSICAL SURVEY

Details pertaining to instrumental methods, ground control and coverage are described in the Appendix.

A graphical representation of the survey results is included with this report in Map JS 1, drawn to a scale of 1 inch equals 200 feet. Contour lines are plotted through points of equal vertical magnetic intensity as determined by the relative value measured at each station. The following discussion is based upon this map and upon JS 2 which shows the magnetic anomalies and some of the topography on a scale of 1 inch equals 400 feet.

For practical purposes, a magnetic anomaly is here defined as any appreciable and continuous departure from the normal vertical magnetic intensity of the environment.

An overall analysis of the maps indicates three generalities:

- (a) Complex geological structure and magnetic anomalies of a high order in the central area comprising approximately one third of the property.
- (b) Relatively simple geological structure with a general strike of N 45°W in the remaining two thirds of the property.
- (c) Anomalies of a low order passing through and along the strike of the known copper-nickel-platinum ore.

Thirty-nine anomalies have been outlined on the maps. High or low readings at one or two stations, surrounded by normal readings are considered to be erratics and are not counted as anomalies. The following notes refer only to those where something of the geology is known.

NO.1 ZONE Readings at and near Trenches 1 and 2 showed a rise of only 2 to 5 divisions over the normal and it was necessary to diminish the station network to 50 x 100 feet and to check against control stations very frequently. It should be noted that when the drilling was done in 1947, some specimens of the massive nickel-bearing core were found to attract the compass needle to a much lesser degree than others.

Anomalies Y and Z which pass through Trenches 1 and 2 in this zone have been traced for a length of 900 feet. Anomalies X, EE and FF are of slightly higher order and are similar in character; they may represent continuations

of the ore structure. These anomalies total an additional 2100 feet in length. A specimen of magnetic clastic rock was taken near the north end of Y.

NO.2 ZONE Slightly subnormal readings were found in the vicinity of the vein. One very low value was obtained near the centre of the zone but no significance is attached to it, since the steel drilling machinery and stand pipe in the holes are within a few feet of it.

This zone consists of quartz vein-matter with galena, sphalerite and pyrite mineralization and is not in the magnetic copper-nickel classification.

ANOMALIES M,N AND Q Apart from the fact that these are high, persistent and well-defined, very little can be said. A specimen of greenstone bedrock in N where it crosses the +34 line was found to be magnetic enough to attract a compass needle, and non-attracting greenstone was observed at the northwestern extremity of M.

ANOMALIES A,B,OO AND PP These areas of high magnetic permeability parallel the northwesterly strike of the formations. Three rock specimens from within them are composed of slatey greywacke; two of these attract the compass needle and contain pyrrhotite. The southwest margin of this group of indications probably represents the contact between the greywacke and quartzite beds which outcrop to the southwest.

ANOMALY CC is slightly above normal in permeability and well-defined. All six of the specimens obtained from within it consist of a highly altered, basic intrusive rock. The boundaries of the anomaly are probably nearly coincident with the boundaries of the intrusive.

#### CONCLUSION

The diamond drilling performed in 1947 was limited by available capital and was, in effect, a sampling of Zone 1 and Zone 2 to determine whether ore grade and width was present in the copper-nickel-platinum showing and in the lead-zinc-gold showing. Of six holes bored in zone No.1, four encountered ore which varied in width from approximately 13 to 30 feet and in combined value from approximately \$13 to \$37 per ton in copper, nickel and platinum. Palladium is also present. No attempt could be made at that time to investigate the length and depth of the occurrence. The ore here consists of a complex suite of sulphides, including magnetic pyrrhotite and pentlandite.

Nickeliferous pyrrhotite commonly displays variable magnetic properties and pentlandite, a sulphide of iron and nickel, is non-magnetic. These two minerals are difficult to distinguish visually.

The Jonsmith survey has proven the existence of a

well-defined, persistent anomaly which passes through No.1 Zone for a length of 900 feet. This anomaly is of low positive intensity, even immediately over the known ore. It is probable that most of the nickeliferous sulphide is pentlandite and weakly magnetic pyrrhotite. Other anomalies of the same intensity in the immediate vicinity total a length of 2100 feet.

Several anomalies also were found in the general vicinity of No.1 Zone, which are large, well-defined and of very high intensity.

In consideration of these facts, the highly complex character of the magnetic pattern exhibited in an area totalling over six claims in the neighborhood of No.1 Zone presents sufficient promise of additional copper-nickel-platinum ore to warrant the expenditure of considerable capital for exploration. The program outlined below entails a cost estimated at approximately \$33,000 exclusive of assaying.

#### RECOMMENDATIONS

Diamond drilling is considered to be the only effective means of investigating the magnetic anomalies on the Jonsmith property. The following table gives the location, direction, dip, and depth of 41 holes, totalling 13,750 feet of diamond drilling, recommended. These holes are laid out on the two sheets of Map JS 1.



RECOMMENDED DRILL HOLES

<u>HOLE NO.</u>	<u>ANOMALY</u>	<u>LOCATION</u>	<u>BEARING</u>	<u>LOCATED FROM LINE</u>	<u>DIP</u>	<u>LENGTH</u>
14	Z	+1615 -190	N 60° E	+16	-45°	175'
15	Z	+1800 -150	N 45° E	+18	-45°	175'
16	Y	+2130 -80	N 90° E	+21	-45°	200'
17	Y	+2275 +35	N 90° E	+22	-45°	250'
18	X	+2330 +275	S 35° E	+23	-45°	300'
19	X	+2460 +50	NORTH	+24	-45°	200'
20	V	+3045 -180	N 75° E	+30	-45°	200'
21	W, X	+3000 -500	N 78° E	+30	-45°	750'
22	W	+2660 -550	N 90° E	+26	-45°	200'
23	W	+2430 -780	N 70° E	+24	-45°	200'
24	W	+1820 -930	N 65° E	+18	-45°	200'
25	DD	+1400 -1450	N 45° E	+14	-45°	200'
26	DD	+2000 -1400	N 45° E	+20	-45°	300'
27	GG	+1500 -2325	N 90° E	+14	-45°	300'
28	HH	+520 -2150	N 45° W	+6	-45°	200'
29	KK	-475 -2035	N 58° W	-4	-45°	200'
30	BB	+1970 -3260	N 33° W	+20	-45°	300'
31	S	+2640 -2610	N 62° E	+26	-45°	250'
32	N	+2800 -2220	N 45° E	+28	-45°	500'
33	N	+3230 -1780	N 55° E	+32	-45°	500'
34	N	+3420 -1070	S 55° W	+34	-45°	200'
35	M, N	+3810 -650	S 48° W	+38	-45°	600'
36	L	+3600 -410	N 45° E	+36	-45°	350'
37	U	+3400 +180	N 45° E	+34	-45°	300'
38	L	+4400 -300	N 45° E	+44	-45°	275'
39	L to M	+4235 -350	S 45° W	+42	-45°	350'
40	M, N	+4235 -580	S 45° W	+42	-45°	650'
41	Q	+4235 -1010	S 41° W	+42	-45°	650'
42	Q	+3965 -2000	S 75° W	+40	-45°	300'
43	Q	+3800 -2000	S 45° E	+38	-45°	600'
44	R	+4700 -2200	N 90° E	+48	-45°	300'
45	P	+5480 -1235	N 70° W	+56	-45°	350'
46	G	+4815 +720	S 40° W	+48	-45°	325'
47	A	+6200 +2100	N 45° E	+62	-45°	600'
48	B	+7450 +1650	N 45° E	+74	-45°	600'
49	C	+8080 +1460	S 10° W	+80	-45°	250'
50	EE	+1075 -100	N 07° E	+11	-45°	200'
51	EE	+680 +10	N 20° E	+7	-45°	200'
52	FF	+160 +150	N 08° E	+2	-45°	200'
53	NN	-1900 -1175	N 15° W	+18	-45°	300'
54	OO	-3170 +3330	N 75° E	+32	-45	550'

The foregoing campaign would be most efficiently carried out during the summer months, using two machines drilling A or E core.

Any of the holes may be flattened to a dip of  $35^{\circ}$  and shortened to cover the same horizontal distance if the collar is in a convenient location.

Because the geophysical work was done during the winter season, an important phase of the work proposed should consist of surface examination of all anomalous areas. No hole should be deleted from the program unless the magnetic anomaly can be accounted for by features which are obviously not related to nickel-bearing sulphides.

In the above connection it should be observed that  
 (a) <sup>not</sup> disseminated <sup>Pyrrhotite</sup> in the rock cannot be considered sufficient reason for the deletion of drilling, but rather to the contrary, since this condition is often found in rocks surrounding an ore body; and (b) high or low magnetic intensities in any anomaly occur beyond the boundaries of the body to which they are due, and sometimes for a considerable distance, so that they may not relate to the rock immediately below them.

Not all of the anomalies are considered worthy of drilling, but a thorough surface examination should also be made of those on which no holes are laid out.

Haileybury, Ont.,  
 April 16, 1948.

  
 W.P. CORKING

APPENDIXSURVEYING

A zero point was set up on the line between Lot 4 and Lot 5, near the southeast corner of Claim S42316. The lot line was then cleared out and picketed for some hundreds of feet and a base line was turned off in the direction of  $N 45^{\circ} W$  from the zero point. Polaris observations fixed the true astronomic bearing of the base line to be  $N 44^{\circ}52' W$ .

The base line was cut, picketed and surveyed in both directions to the property boundaries according to measurements on a plan of Parkin Township (H.R. McEvoy, 1898) filed in the office of the Surveyor-General at Toronto. It was then tied in to the intersection of the Lot 4-5 line and the Concession I-II line, and again at the intersection of the Lot 6-7 line and the tip of a small lake in Claim S48291, which point is described in McEvoy's field notes.

Section lines, bearing  $N 45^{\circ} E$  and  $S 45^{\circ} W$  were turned off by transit at intervals of 200 feet along the base line. All of these lines were cut and picketed to the property boundaries except in Claims S48891, northeast half of 48892, northeast half of 39838, 42320, southwest half of 42321, and southwest half of 5481, where alternate lines only were run to the property boundaries.

In order to complete the southeast corner of the claim block, the -36 section line was surveyed and a subsidiary base line established to bear S 44°52' E from -3600 +2800. Section lines were cut from it in the same manner as above.

All section lines were tied in by chainage from one to another at points near the ends most distant from the base line.

The diamond drill holes bored in 1947 were tied in to the nearest section lines, and an offset survey was made of the lake on which the camp is situated, and carried by transit to the base line.

Location of any point is designated by a coordinate system, the ordinates and abscissae being plus or minus according as they are northwest or southeast of the zero point and northeast or southwest of the base line. Thus a point described as +4200 -1000 lies 1000 feet southwest of the base line on the section line which passes through the base line 4200 feet northwest of the zero point.

#### GEOPHYSICAL METHODS

A minimum number of three readings was taken with a Watt vertical variometer at each station spaced at 100 foot intervals along the section lines. Additional stations were set up wherever the results indicated this to be advisable -- with the discovery of the low order of positive

magnetic disturbance at No.1 Zone the necessity arose for a closer network of stations than would otherwise exist.

The value assigned to each station was determined as the average of the three or more readings, corrected for diurnal, temperature and instrumental variations by reference to control station readings which were made several times daily.

To avoid unnecessary confusion the values at each station were plotted on the field map but were not transferred to the final copy. Contour lines were plotted through points of equal intensity of the vertical component of the earth's magnetic field, and anomalies have been outlined by reference to the fields about an ideal magnet in various positions. Contour values are in scale divisions as read from the instrument. The sensitivity of the instrument is given as approximately  $30 \times 10^{-7}$  gauss per scale division.

During the performance of the work brief topographic field notes were made with respect to hills, swamps, lakes, overburden and rock exposures. Wherever possible, specimens of bedrock were broken off, labelled and catalogued.

*W.P. Corking*

W.P. CORKING.

*There were  
necessary for  
the A.T. Dept. of  
Mines*

COPY

April 21st, 1948.

Jonsmith Gold Mines Limited,  
17 Queen Street East,  
Toronto, Ontario,

IN ACCOUNT WITH

E. G. BISHOP & W.P. CORKING  
812 - 67 Yonge Street,  
Toronto

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GEOPHYSICAL SURVEY	Report and maps in triplicate		
	1270 acres @ \$5.00		\$6350.00
	160 acres @ \$3.50		560.00
	514 extra stations @ 2.00		1028.00
			<u>7938.00</u>
CAMP CONSTRUCTION			474.64
CAMP MAINTENANCE			208.00
COOKERY:	Total cost	1581.44	
	Absorbed by contractor		
	518 @ 2.00	<u>1036.00</u>	
	Balance payable by		
	Jonsmith	545.44	545.44
MISCELLANEOUS: July 6, 1947:	Telephone to Toronto	1.73	
	Return call	1.56	
8	Swearing affidavits	3.50	
	Telephone to Sudbury	.75	
	Ont. Dept. Mines Notes	3.75	
Dec. 22	Telephone to Sudbury	.95	
	Wilson - 2 days work		
	recording assessment		
	in June	<u>15.00</u>	
		27.24	<u>27.24</u>
			<u>9193.44</u>

H.C.B.

COPY

Break Down of Man Days actually required  
for Geophysical Survey in Parkin Township  
carried out by Jonsmith Gold Mines Limited  
(attached to Assessment Work Application.

	<u>Man days required</u>
(a) Line outters (including chain and picket men) name of contractors under whom the work was done - Messrs. E. G. Bishop and W. P. Corking, Geologists, 67 Yonge St., Toronto, Ont.	153
(b) Instrument operators and technical assistants Chief Operator - Mr. C. D. Wilson	116
(c) Consultants (i) Field Work, Mr. W.P.Corking (ii) Office Work, Mr. W.P.Corking	90 75
(d) Draughtsmen - (no work claimed for)	
(e) Others - cooks, packers, etc. - (no work claimed for).	
Total man days required	<u>434</u>

Total assessment work at 4 days  
allowance for each man day's work -  
4x434 1736 days

Total assessment work applied for,  
40 days per claim for 17 claims 680 days.

Toronto, Ont.  
Nov. 24, 1948.

J.H.C.B.

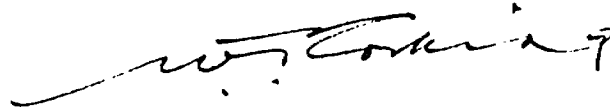
April 16th, 1948,

The President and Directors,  
JonSmith Gold Mines Limited,  
17 Queen Street East,  
Toronto, Ontario.

Gentlemen,

Please receive herewith my report  
on the geophysical survey carried out on your  
property in Parkin Township, District of  
Sudbury, Ontario.

Yours respectfully,

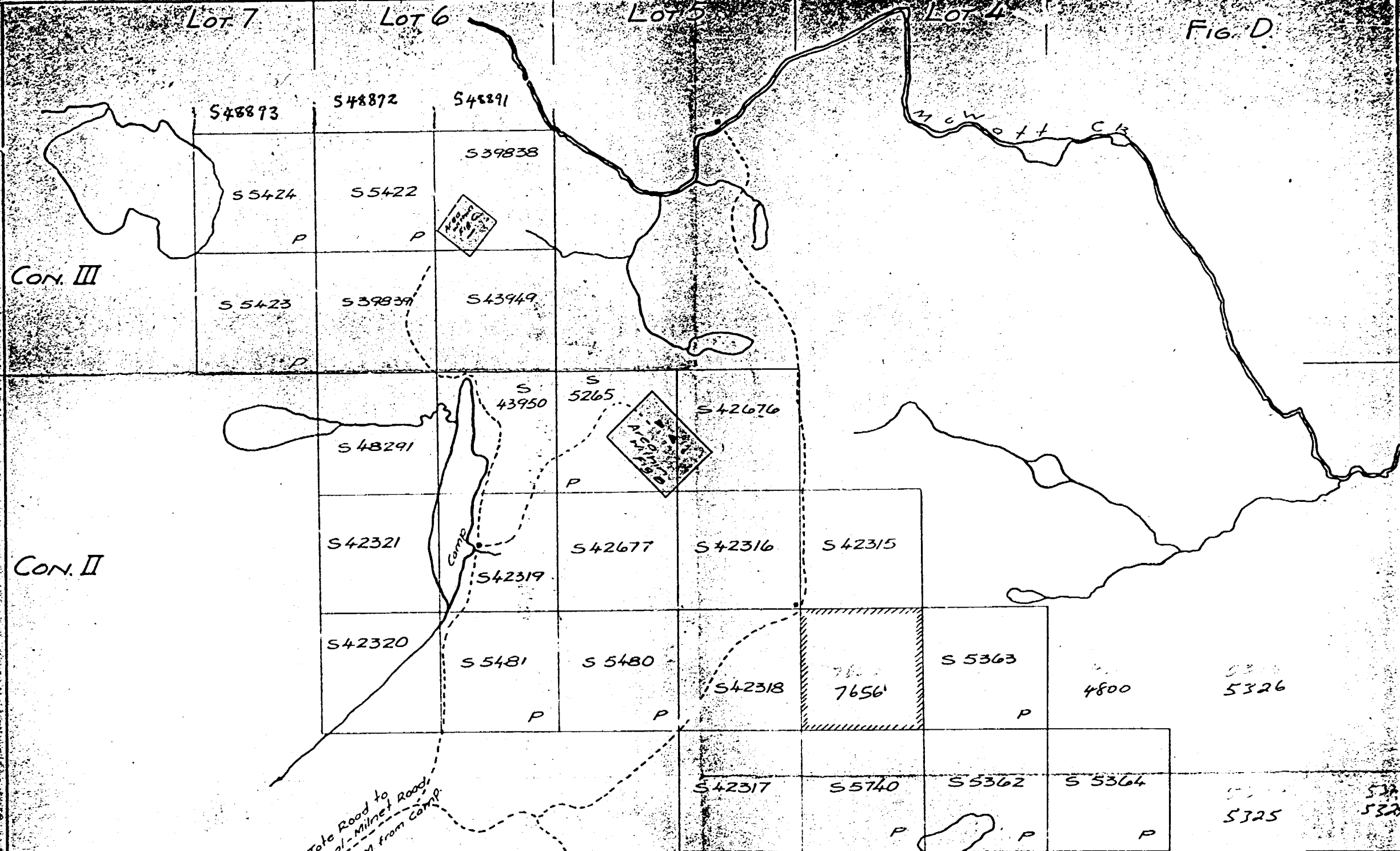


W.P. CORKING.

812 - 67 Yonge Street,  
Toronto, Ontario.





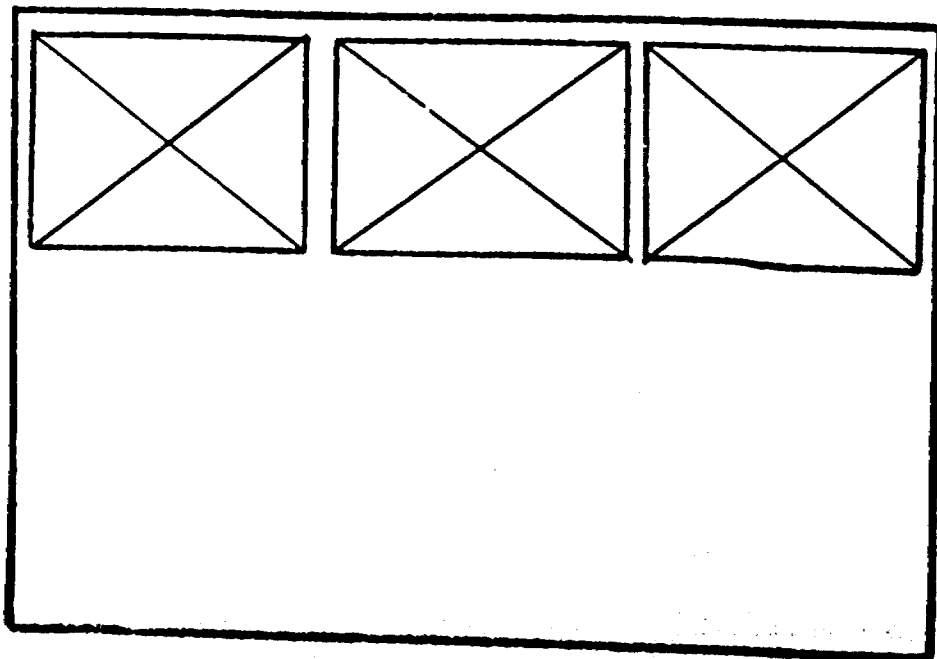


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**JONSMITH GOLD MINES LTD.**  
**PARKIN TWP.**  
**CLAIM PLAN**  
 SCALE 1 INCH = 1000 FEET

SEE ACCOMPANYING  
MAP(S) IDENTIFIED AS  
PARKIN-0030, #1, 2

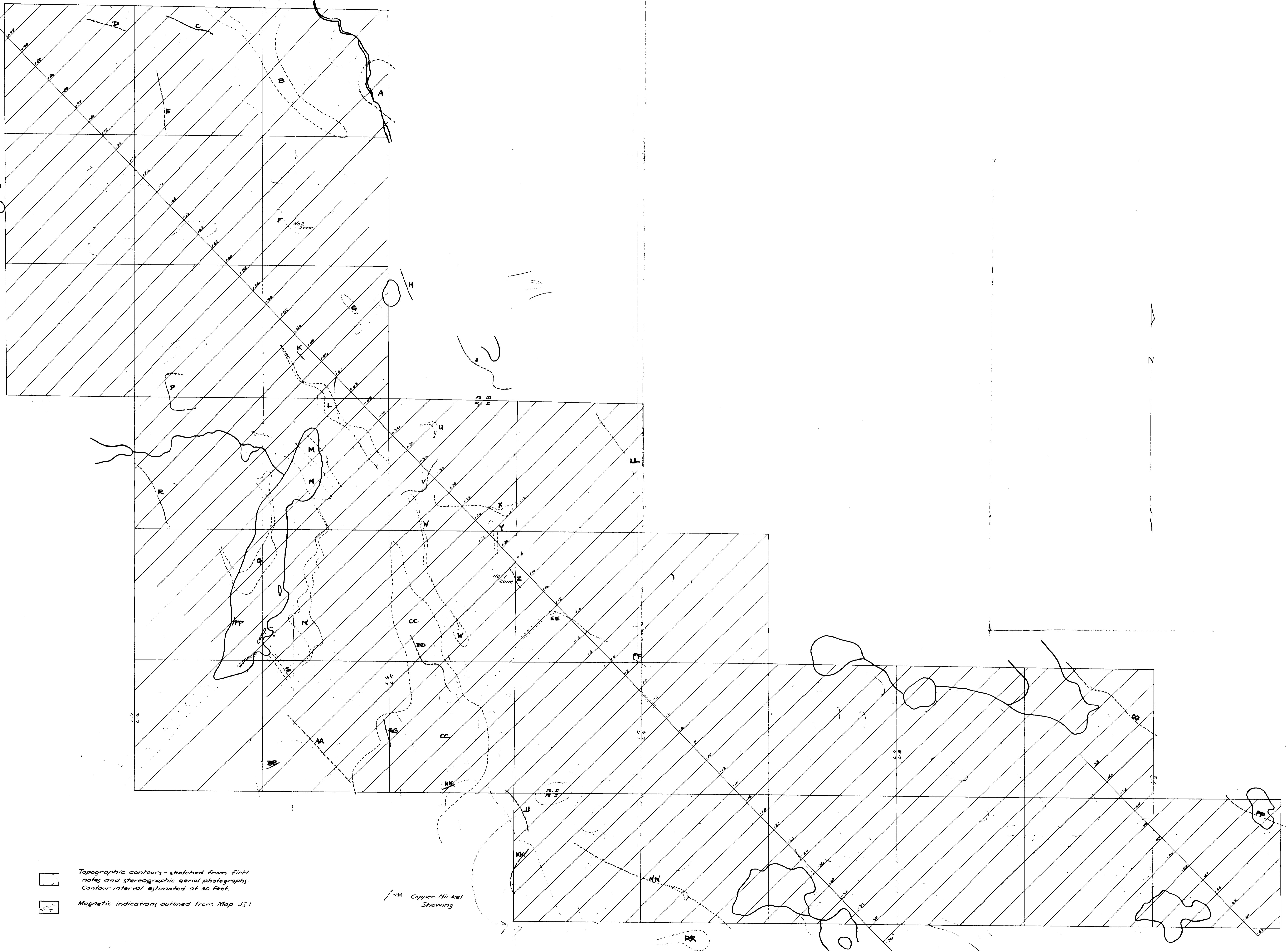
LOCATED IN THE MAP  
CHANNEL IN THE FOLLOWING  
SEQUENCE (X)





FOR ADDITIONAL  
INFORMATION

SEE MAPS:

PARKIN-0030#3-5



 Topographic contours - sketched from field notes and stereographic aerial photographs. Contour interval estimated at 30 feet.  
 Magnetic indications outlined from Map JS1

 NM Copper-Nickel Shoring

JONSMITH GOLD MINES LTD.  
 PARKIN TOWNSHIP  
 GEOPHYSICAL SURVEY  
 TOPOGRAPHIC MAP WITH MAGNETIC INDICATIONS  
 SCALE: 1 INCH = 400 FEET



200

PARKIN-0030, #1

MAP JS2

W.P. Cook  
April, 1968





EAST SHEET

JONSMITH GOLD MINES LTD.

GEOPHYSICAL SURVEY

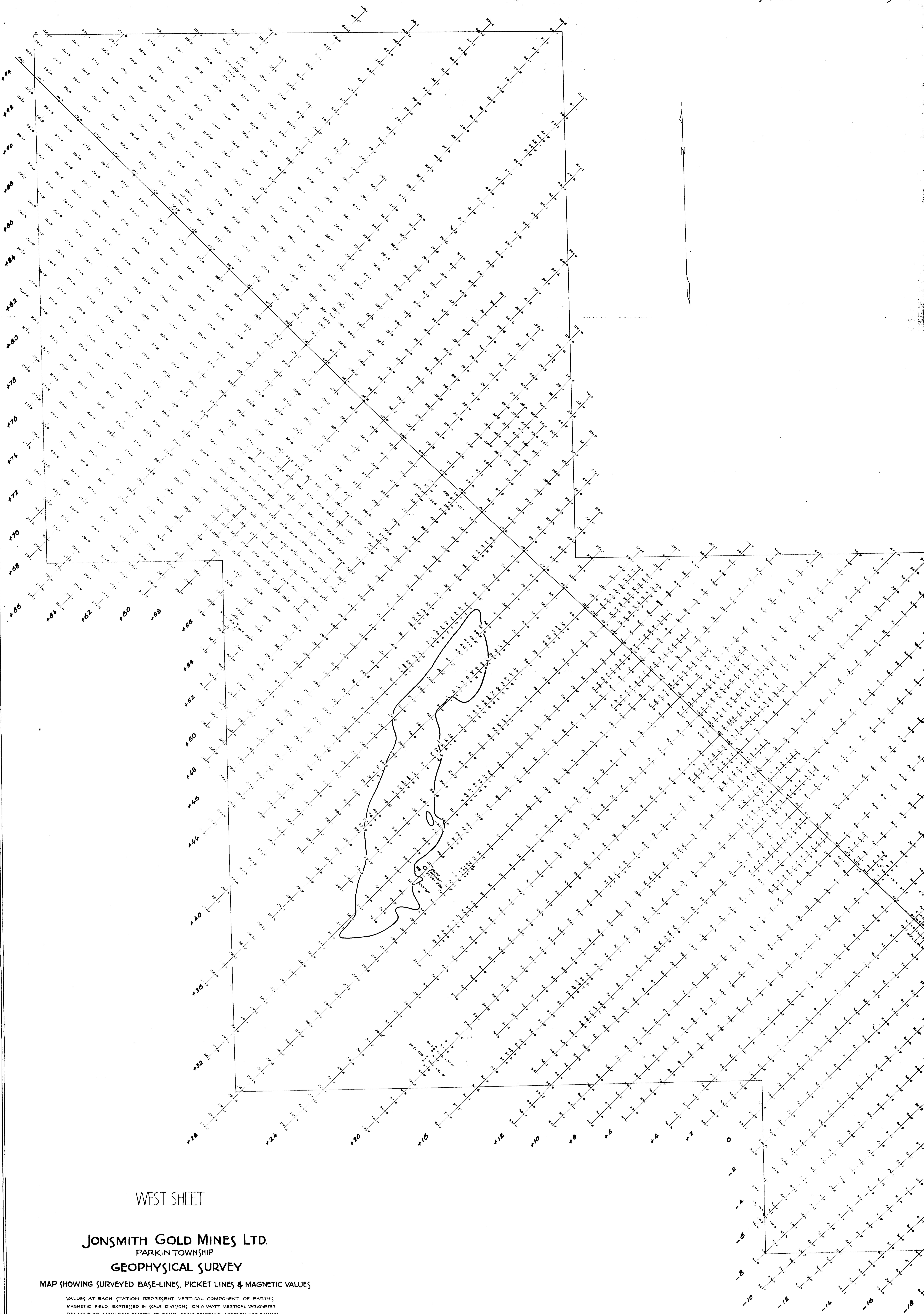
SCALE: 1 INCH = 200 FEET

JSI

PARKIN-0030, #3



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WEST SHEET

**JONSMITH GOLD MINES LTD.**  
 PARKIN TOWNSHIP  
**GEOPHYSICAL SURVEY**

MAP SHOWING SURVEYED BASE-LINES, PICKET LINES & MAGNETIC VALUES

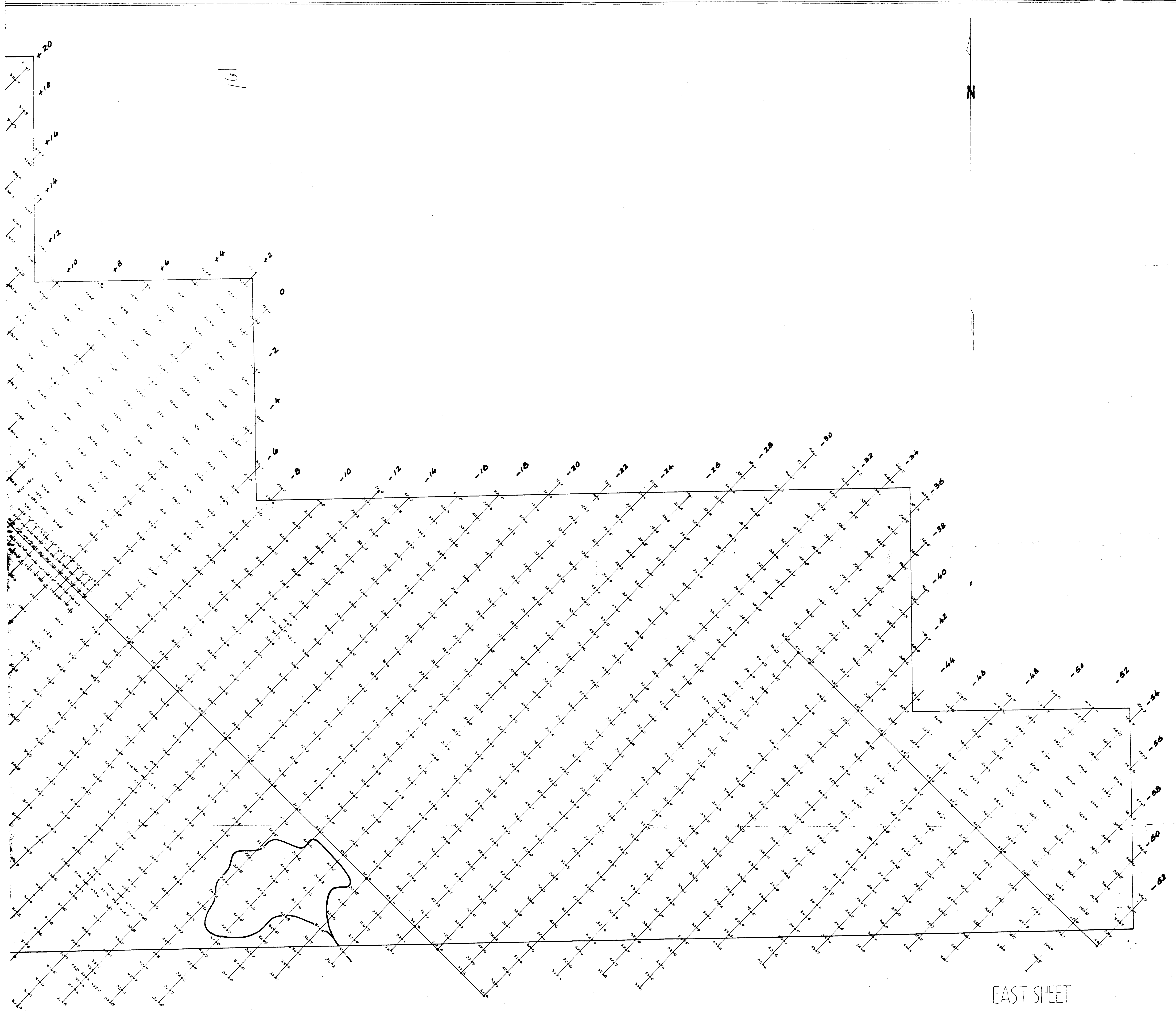
VALUES AT EACH STATION REPRESENT VERTICAL COMPONENT OF EARTH'S  
 MAGNETIC FIELD, EXPRESSED IN SCALE DIVISIONS ON A WATT VERTICAL VARIOMETER  
 RELATIVE TO MAIN BASE STATION AT CAMP. SCALE CONSTANT = 1 DIVISION = 30 GAMMAS

SCALE 1 INCH = 200 FEET



230





101

N

EAST SHEET

JONSMITH GOLD MINES LTD.

PARKIN-0030, #5

