



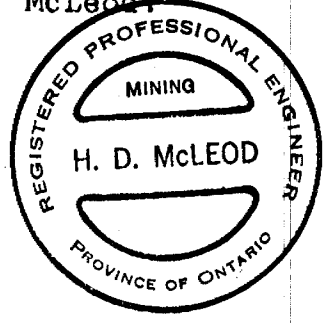
KEEVIL MINING GROUP LTD.
PROJECT IVANHOE - 679
GROUP 38 - HELLYER TWP.

REPORT ON THE
GEOLOGY & GEOPHYSICAL SURVEYS

REPORT NO. 29P N.T.S. 42 B/2.

November 1, 1965.

H. D. McLeod P. Eng.
H. D. McLeod



SUMMARY, CONCLUSIONS & RECOMMENDATIONS

Group 38, Hellyer Township, staked to protect A.E.M. conductors located by a survey flown in June 1964, was explored by geophysical surveys and geological mapping.

Strong magnetic anomalies, moderate intensity self potential anomalies and two weak conductors were located.

Geological mapping proved the area to be underlain by gently dipping granite gneisses, the magnetic-self potential anomalies being caused by narrow interbedded horizons of magnetite and pyrite. No definite explanation of the conductors was obtained.

The airborne conductors are reported to be very weak features as was proved on the ground. The two conductors outlined are very weak considering that the area is covered by very shallow overburden and the sections of better conductivity are short. The mineralization located explains the magnetic and self potential anomalies and similar mineralization, possibly with some associated graphite, would explain the conductors.

The third airborne conductor zone was not ground checked due to the disappointing results on the first two.

No further work on the claims and no further checking of the airborne results is recommended.

ACCOMPANYING MAPS

- | | | | |
|-----|-----------|---|--|
| (1) | Dwg. 2886 | - | "Magnetometer Survey - West Grid". |
| (2) | Dwg. 2887 | - | "Vertical Loop E.M. Survey - West Grid". |
| (3) | Dwg. 3026 | - | "Self Potential Survey - West Grid". |
| (4) | Dwg. 3027 | - | "Geology Map - West Grid". |
| (5) | Dwg. 2895 | - | "Magnetometer Survey - East Grid". |
| (6) | Dwg. 2894 | - | "Vertical Loop E.M. Survey - East Grid". |
| (7) | Dwg. 2955 | - | "Self Potential Survey - East Grid". |
| (8) | Dwg. 2980 | - | "Geology Map - East Grid". |

INTRODUCTION

Keevil Mining Group Ltd. group no. 38 consists of 45 contiguous claims, numbered S127679 to S127702 inclusive and S128105 to S128125 inclusive, in Hellyer Township. The claims were staked and recorded in December 1964 to protect A.E.M. conductors located by a survey flown in June 1964. The claims are presently registered in the name of R.M. Butler, Suite 1000, 11 Adelaide St. W., Toronto, Ontario.

Exploration work consisting of line cutting, geophysical surveys and geological mapping was carried out during the period January 3 to June 12, 1965. The surveys were done by Geophysical Engineering and Surveys Ltd. personnel under the direct supervision of the writer. The magnetometer and electromagnetic surveys were done by A. McClemens, 83 Algonquin Blvd. E., Timmins, Ontario, the self potential survey by W. Borland, Ottawa, Ontario and the geological mapping by A. Matulich and R.W. McGinn of Timmins, Ontario.

LOCATION AND ACCESS

The claims are located in the north central part of Hellyer Township, Sudbury Mining division, a distance of approximately 30 miles to the northeast of Chapleau, Ontario. Approximate co-ordinates are $48^{\circ} 00'$ north $82^{\circ} 48'$ west.

Access to the claims is by trails from highway 101, all of the group lying from $\frac{1}{2}$ mile to 3 miles to the south of the road.

DESCRIPTION OF SURVEYS

Two grids totalling $4\frac{1}{2}$ miles and $3\frac{1}{2}$ miles of line respectively were cut in the north part of the group from east-west base lines. Lines were cut north and south at 400-foot intervals for distances varying from 1000 to 1400 feet. This work was done in the winter so further cutting and brushing was necessary in order to complete the surveys in May.

A magnetometer survey was done with a Sharpe Fluxgate Model M.F.1 magnetometer having a constant of 20 gammas per scale division. Readings were taken at 100-foot intervals along all the picket lines with fill-in readings at 50-foot intervals in areas of high magnetic relief. Diurnal readings at 1 to 1½ hour intervals were taken on permanent base stations. The readings were corrected, plotted and contoured as shown on the accompanying map.

Approximately 715 readings were taken.

A vertical loop electromagnetic survey was done with a Sharpe S.E. 200 unit fitted with an amplifier and special batteries to increase the range to 600 feet. Readings were taken at 100-foot intervals along all the picket lines using the parallel-line method. In this method each reading is taken with the transmitter and receiver set up at the same station on adjacent lines. The transmitter-receiver interval thus is the line spacing, in this case 400 feet. All conductors located were then checked by the detail or fixed transmitter method. In this method the transmitter is set up on a known or suspected cross-over and readings taken at 50-foot intervals on the adjacent line or lines. In this way the conductor is traced from line to line and accurately located within 25 feet on every line.

Approximately 770 readings were taken. The results were plotted as profiles as shown on the accompanying map.

A self potential survey was done using the long wire method. In this method base stations are established at each line on the base line and a reading taken on every station on each line up to 1300 feet from the base line with the instrument pot on the base station. Should readings be necessary on any line beyond the 1300-foot limit of the wire, then a new base station is established and the instrument pot moved to this location. All readings were corrected to a common base, plotted and contoured as shown on the accompanying map. Approximately 466 readings were taken.

RESULTS OF SURVEYS

WEST GRID - The magnetometer survey has outlined ^{TWO} zones of high and low magnetic anomalies trending across the grid system, both extending beyond it to the east and west. One strikes N55°E from 5700 South on the most westerly line to the north end of line 32700E. The second or southerly zone strikes N55°E from 11700S on line 8700E to 5700S on line 16700E, then assumes an east-west strike to line 24700E before changing to a N70°E strike to the east edge of the grid. The two zones thus converge going west before assuming parallel strikes in the west part of the area.

Both zones consist of long linear and lensy high and low anomalies ranging in magnetic relief from 1600 gammas below to 6700 gammas above background. They are interpreted to represent magnetite-bearing horizons in the underlying formations.

The electromagnetic survey outlined one conductor striking roughly east-west in the eastern part of the grid. In general, this is a weak conductor with relatively poor conductivity however, on line 28700E it exhibits strong conductivity. The conductor would appear to cross the trend of the magnetic anomaly in that area but a close study of the magnetics reveals a high reading adjacent to it on every line.

The self potential survey outlined a number of moderate intensity anomalies, every one associated with high magnetic anomalies. There is no correlation with the conductor.

EAST GRID - The magnetometer survey outlined a number of lensy high and low magnetic anomalies forming two or three trends striking N70°E across the grid and extending beyond the grid in both directions. Magnetic relief ranges from 2500 gammas above background. The anomalies appear to represent magnetite-rich horizons in the underlying formations.

The electromagnetic survey outlined one conductor striking N60°E in the west part of the grid area. This is a weak feature showing poor conductivity with the exception of one short section of good conductivity on line 28700W. Erratic one-line cross-overs were located on lines 0700 and

4/00W between 4/00N and 7/00N but none could be delineated into a definite anomaly. The main conductor has magnetic correlation on lines 32/00W and 28/00W but diverges from the magnetic anomalies going east. In this section, however, it is a very weak and doubtful feature.

The self potential survey outlined four moderate anomalies coinciding, in every case, with magnetic anomalies. The stronger sections lie over negative magnetic anomalies suggesting that they are caused by magnetite.

GEOLOGY

WEST-GRID - The west grid area is mostly high ground with scattered small outcrops which indicate that the area is underlain by biotite-quartz-feldspar gneisses and hornblende-quartz-feldspar gneisses striking N60°E to N70°E and dipping at 25° to 40° to the north. Trenching revealed the magnetic and self potential anomalies to be caused by 1' to 4' wide horizons containing 10% to 25% magnetite and 30% to 60% pyrite interbedded with the gneisses. No outcrop could be found in the vicinity of the conductor.

Structure in this area from the mapping appears to be simple, however, the geophysical results suggest the possibility of a fold.

Grab samples of the mineralization gave no values.

EAST GRID - Considerable outcrop area was located in the central part of the grid. This consists of biotite-quartz-feldspar gneisses striking east-west to N70°E and dipping at 25° to 40° to the north. The magnetic-self potential anomalies were proven in places to be caused by interbedded narrow zones carrying 10% to 20% magnetite and 40% to 70% pyrite. No outcrop was located adjacent to the main anomaly zone on lines 28/00W and 32/00W so no explanation for the better section of the conductor is available. The east extension of the anomaly passes through an outcrop area with nothing present to explain the conductivity.

Grab samples of the mineralization gave no values.

ASSESSMENT CREDITS

The following assessment credits have been applied to each of claims S127679-80-81, S127698-99-~~700~~-01-02, S128108-09, S12111-12-13, S128116-17 and S128119-20;

Magnetometer survey	-	14.7 days
Electromagnetic survey	-	17.1 days
Self potential survey	-	16.0 days
Geological mapping	-	<u>14.8</u> days
Total-		62.6 days

LOCATION OF CLAIM GROUPS

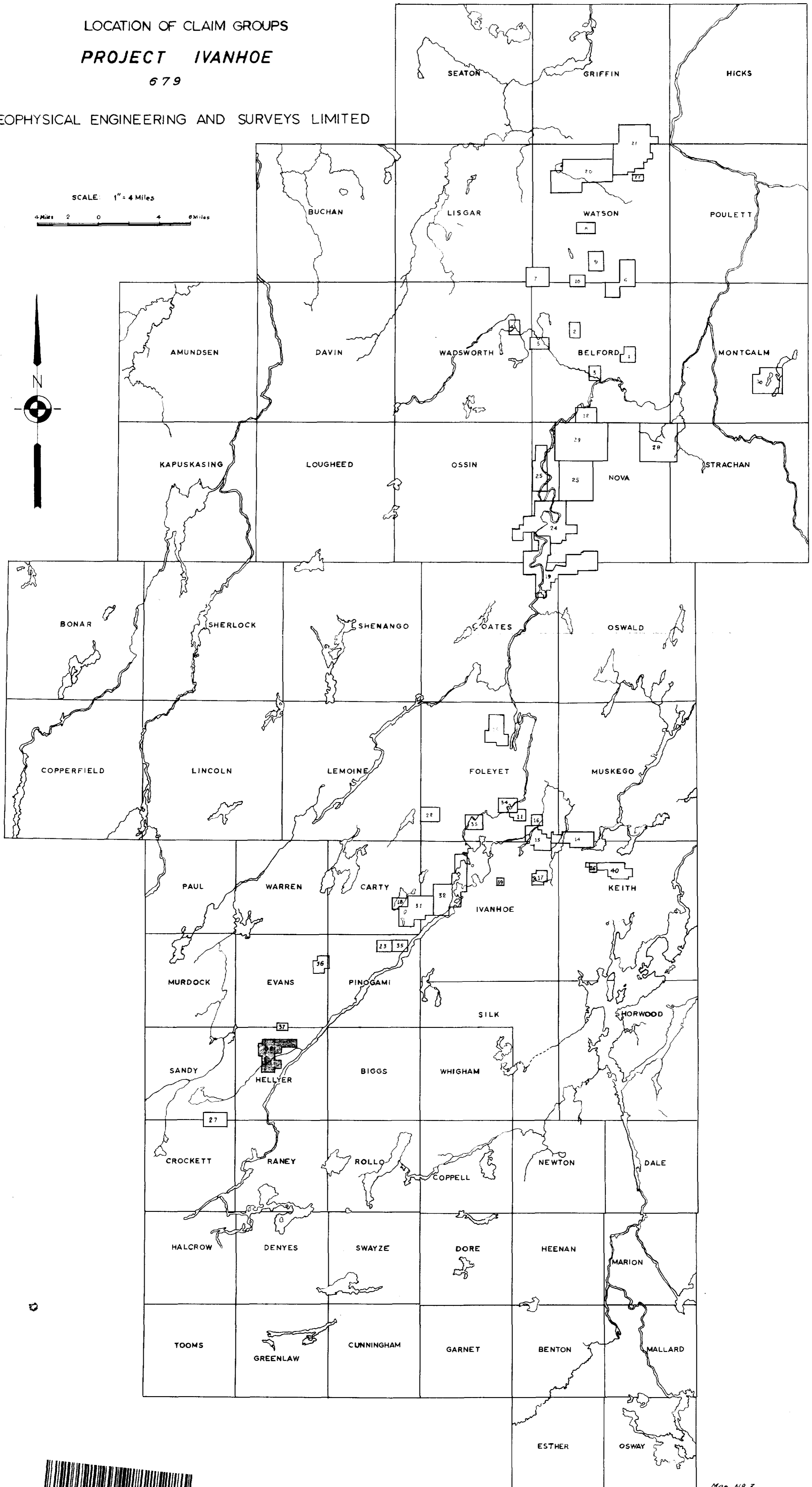
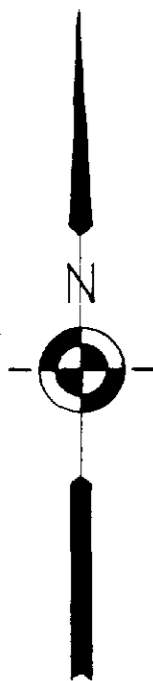
PROJECT IVANHOE

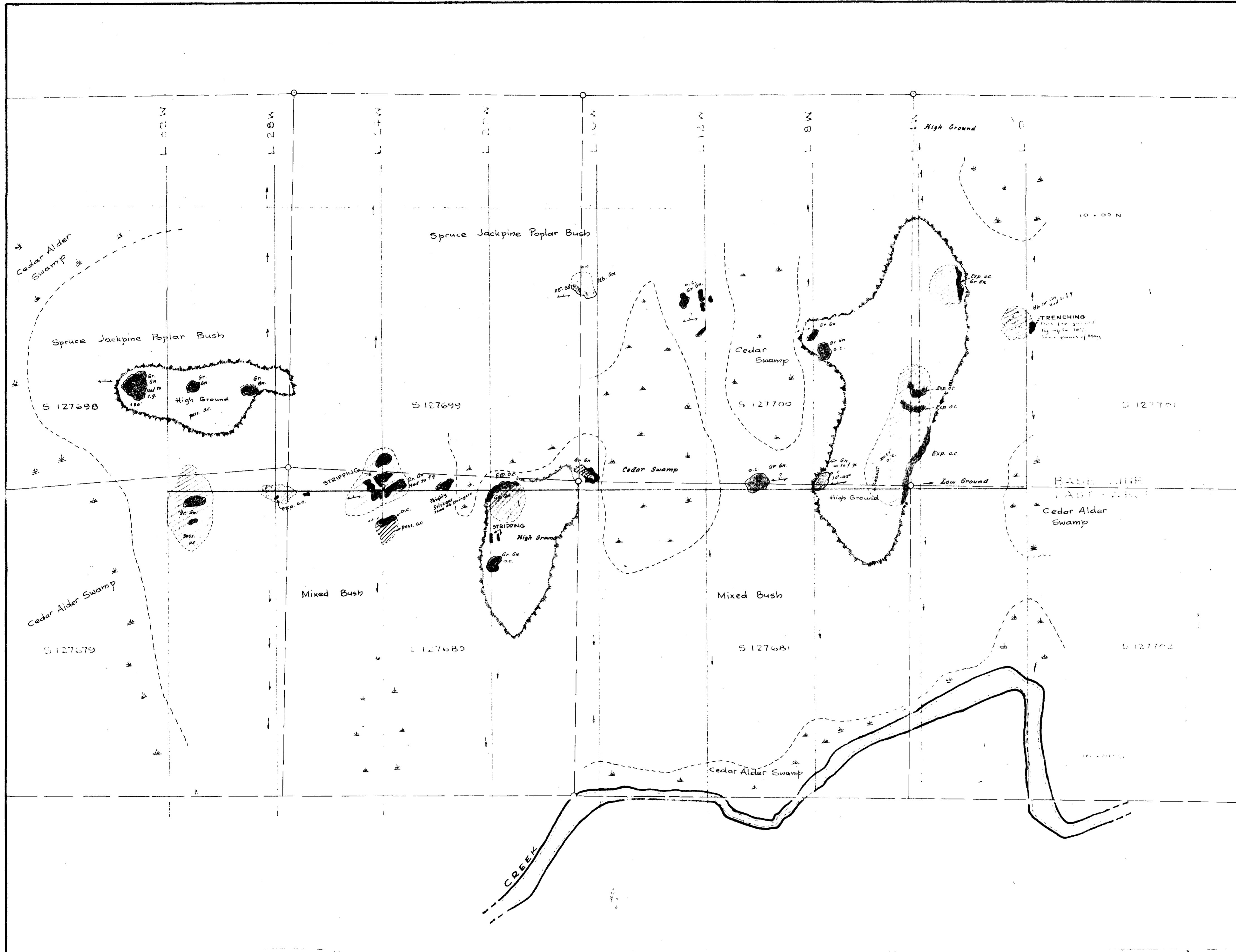
679

GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

SCALE 1" = 4 Miles

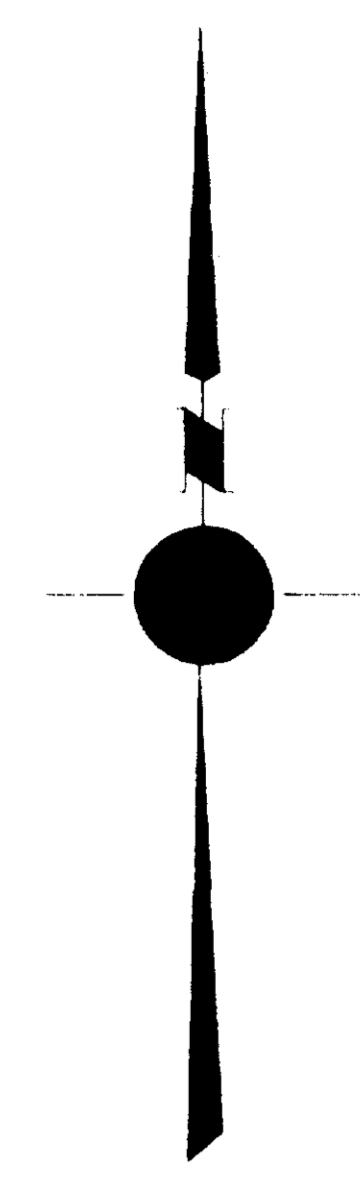
0 Miles 2 0 4 8 Miles





LEGEND

- Granite
- Granite-Gneiss
- Medium to Fine-Grained
- Medium to Coarse-Grained
- Hornblend-Gneiss
- Biotite
- Angular Boulders
- Round Boulders
- Outcrop
- Strike & Dip
- Strike & Dip of Joint
- Elevation
- Swamp
- Trenching
- Stripping
- Pyrite
- Magnetite



GEOLOGY MAP

PROPERTY 38
 TOWNSHIP OF HELLYER
 PROVINCE OF ONTARIO

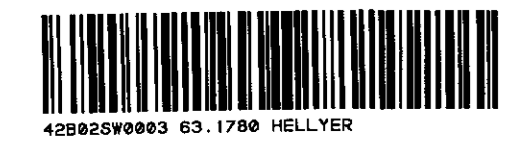
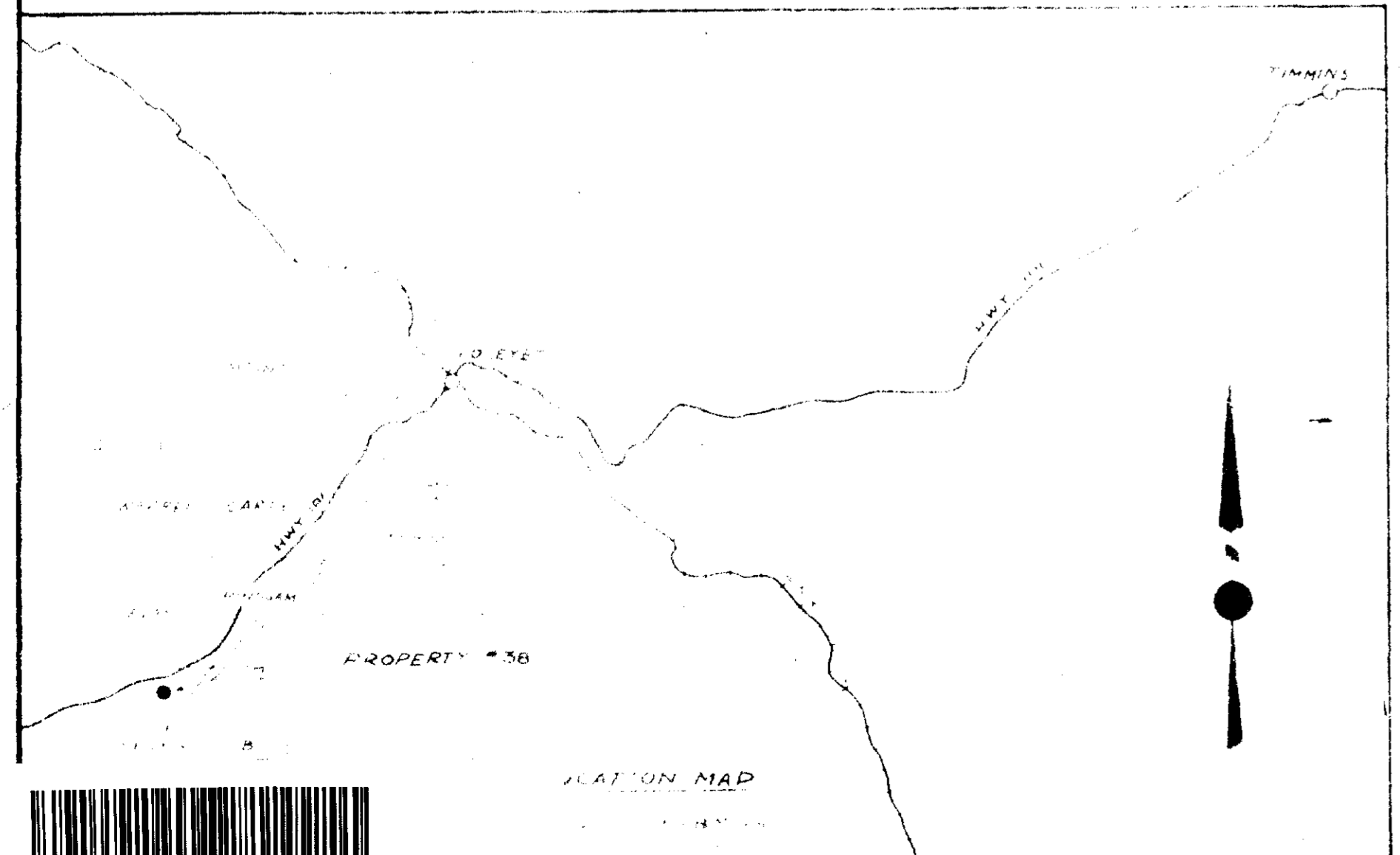
KEEVIL MINING GROUP LTD.
 BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

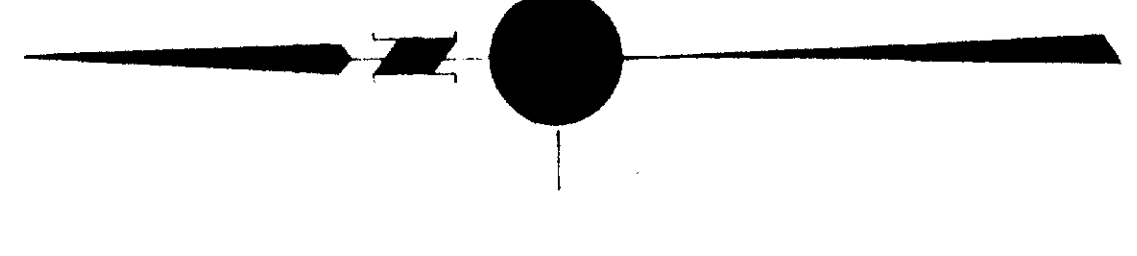
SCALE 1 INCH = 100 FEET



EAST GRID

Drawn by: [Signature] N.T.S. 42 1/2 FEB. 1985 JOB 679 DWG. 2980





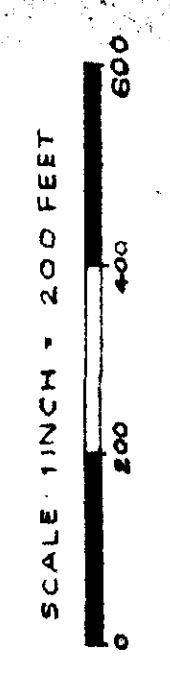
LEGEND

- Granite
- Granite - Gneiss
- Medium to Fine Grained
- Medium to Coarse Grained
- Hornblende Gneiss
- Basalt
- Pyrite
- Magnetite
- Angular Boulders
- Round Boulders
- Outcrop
- Strike & Dip
- Strike & Dip at Joint
- Elevation
- Swamp
- Trenching
- Stripping



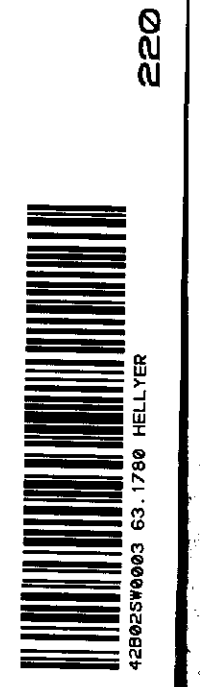
GEOLOGY MAP
 OF
PROPERTY 38
 TOWNSHIP OF HELLYER
 PROVINCE OF ONTARIO

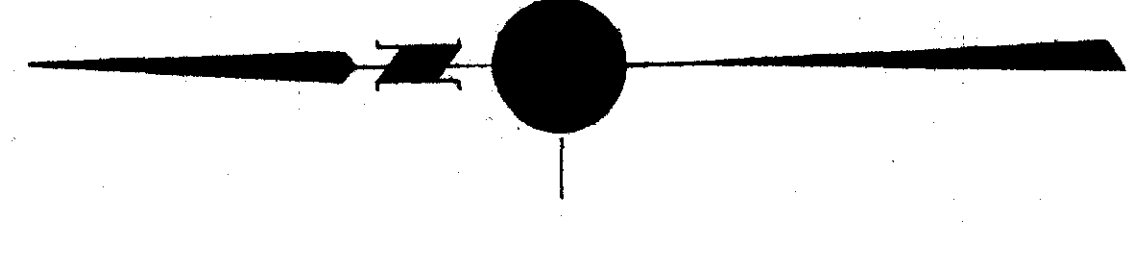
FOR
KEEVIL MINING GROUP LTD.
 BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED



SCALE 1 INCH = 200 FEET
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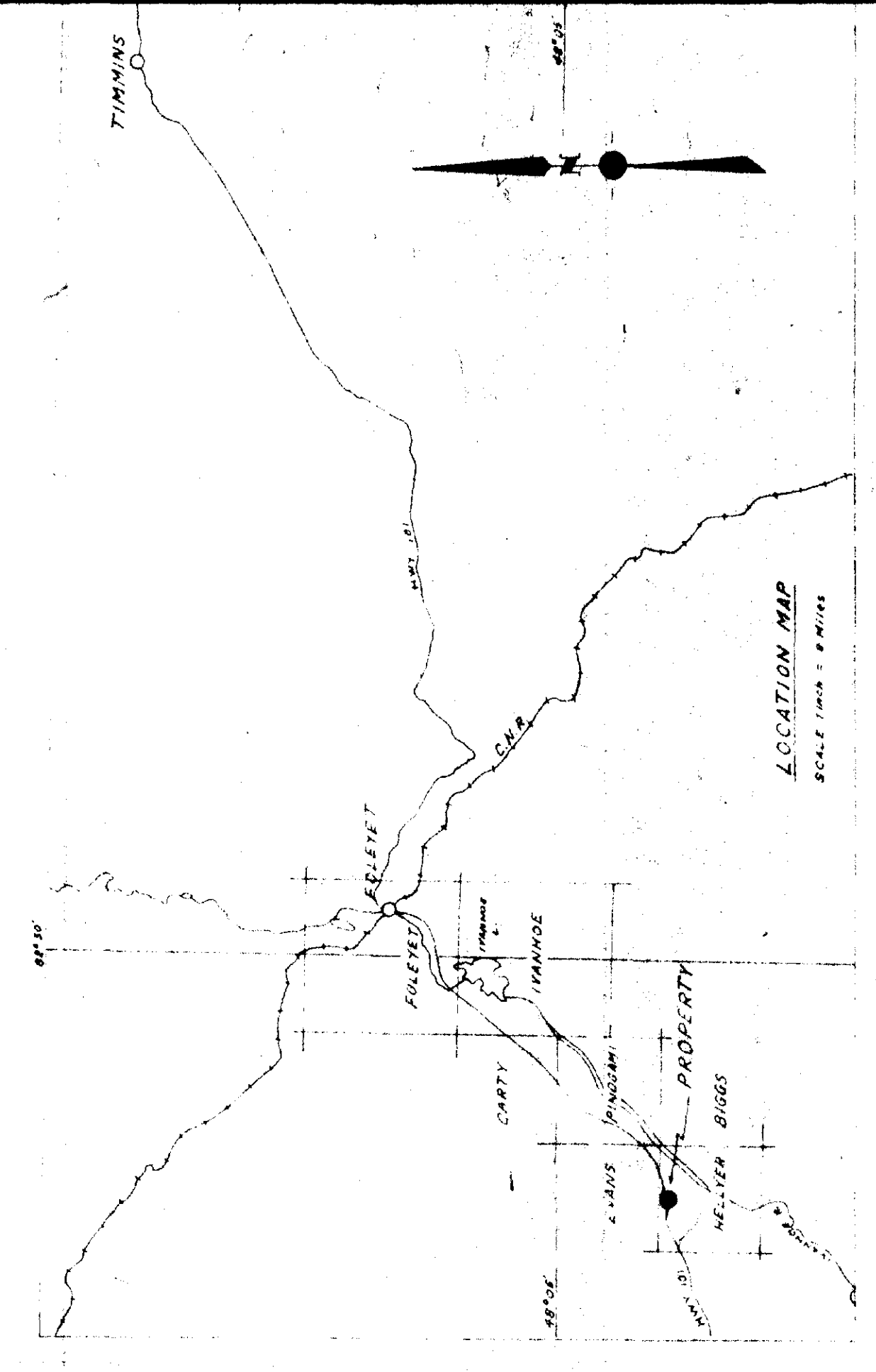
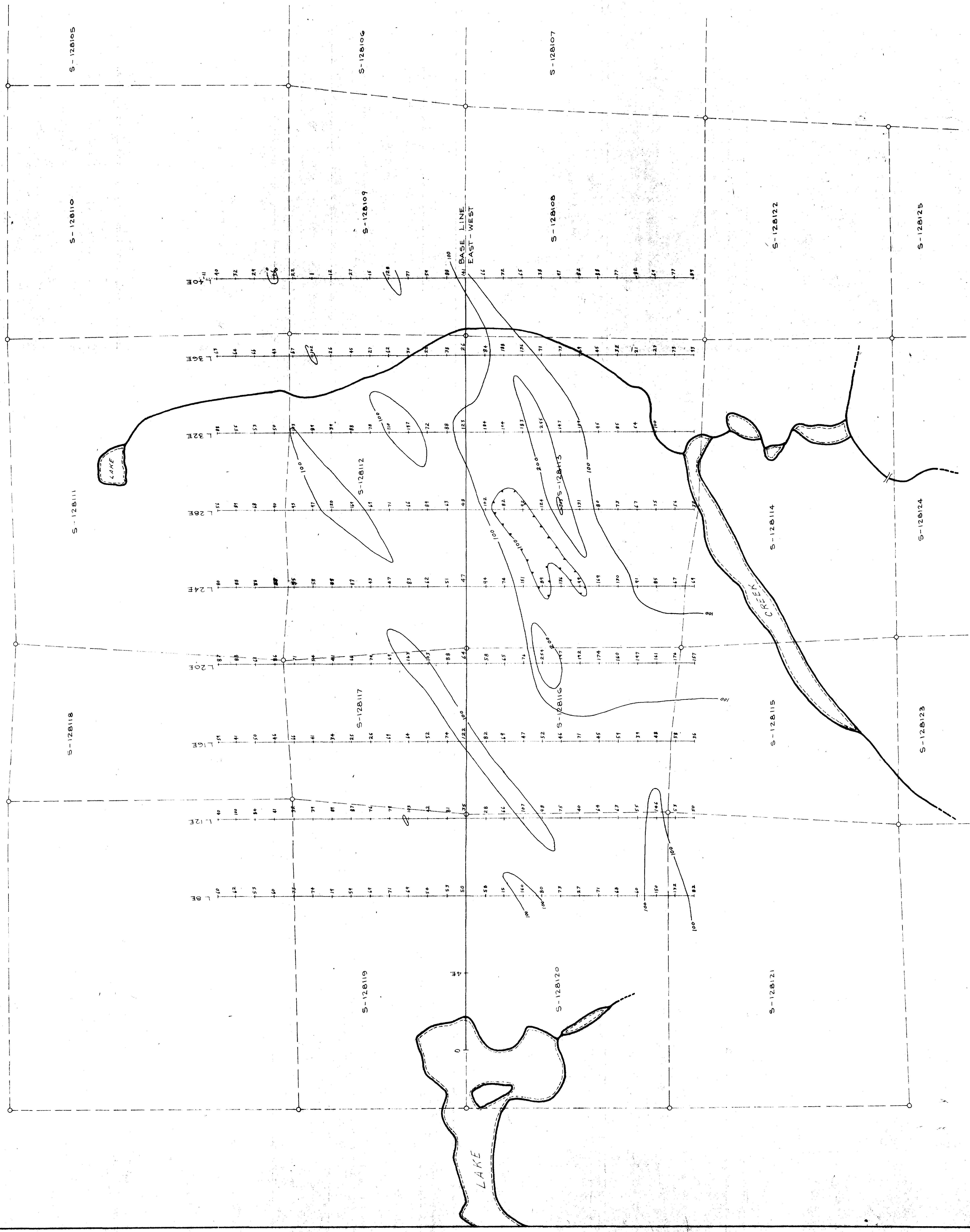
WESTGIRD





Note: Values shown thus \pm are in Negative Millivolts Except As Noted
Contour Interval 100 Millivolts.

Operator: W. Barford. Helper: A. Parrier.

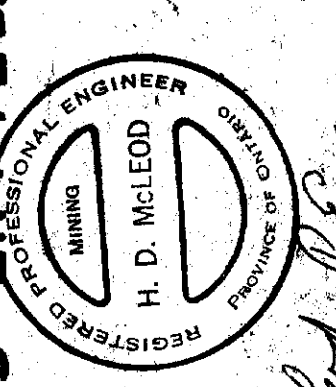


SELF POTENTIAL SURVEY

OF PROPERTY 38

TOWNSHIP OF HELLYER
PROVINCE OF ONTARIO.

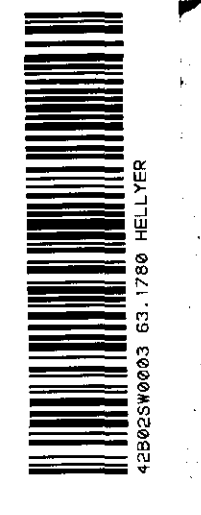
FOR
KEEVIL MINING GROUP LTD.
BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

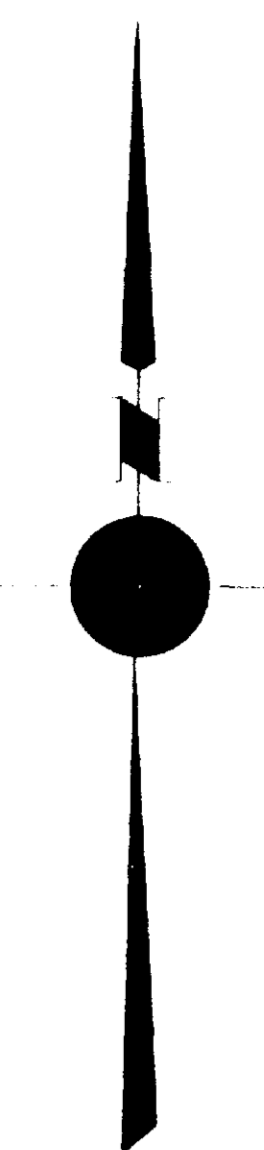
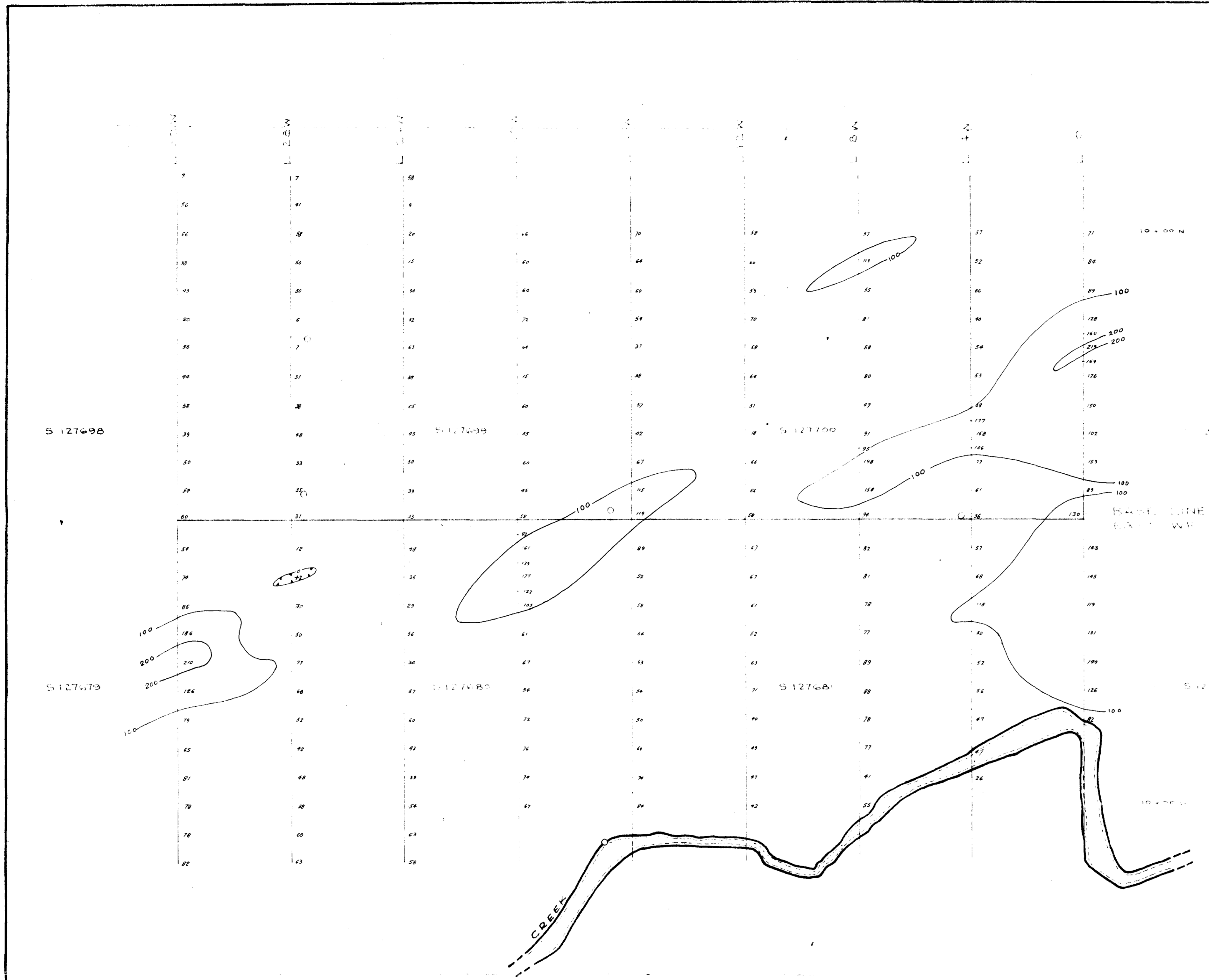


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Checked by: A.H. H.T.S. 42 2
FEE 1965 JOB 679 DWG. 3026

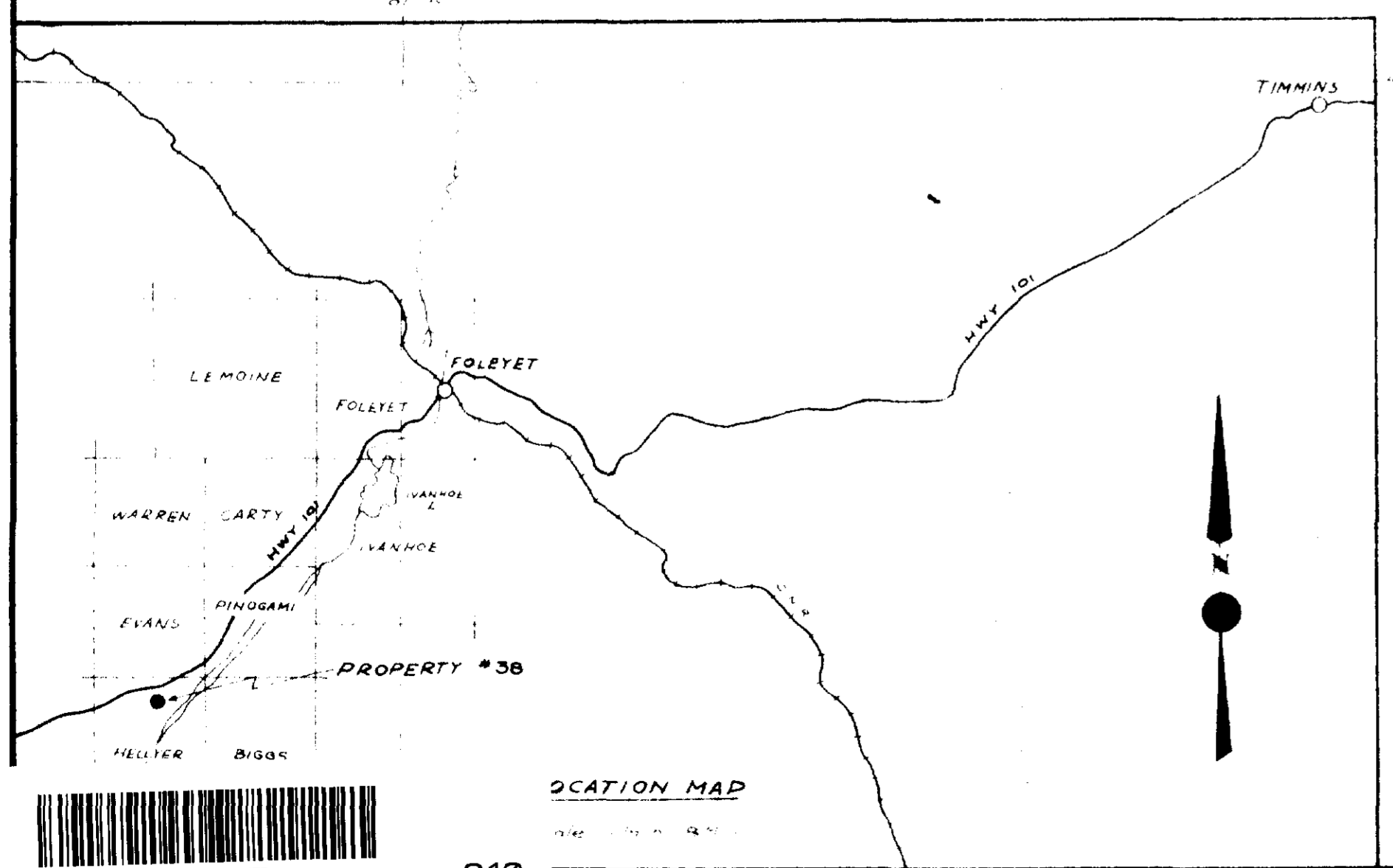
WEST GRID.





Note:
 Values shown thus are in Negative Millivolts (except as noted)
 Contours shown thus at 100 millivolt intervals

Operator: W. Borland



SELF POTENTIAL SURVEY.

OF
PROPERTY 38
 TOWNSHIP OF HELLYER
 PROVINCE OF ONTARIO

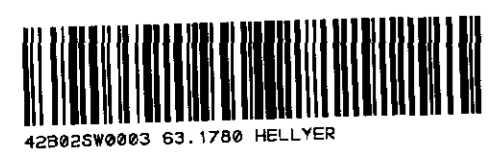
FOR
KEEVIL MINING GROUP LTD.
 BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

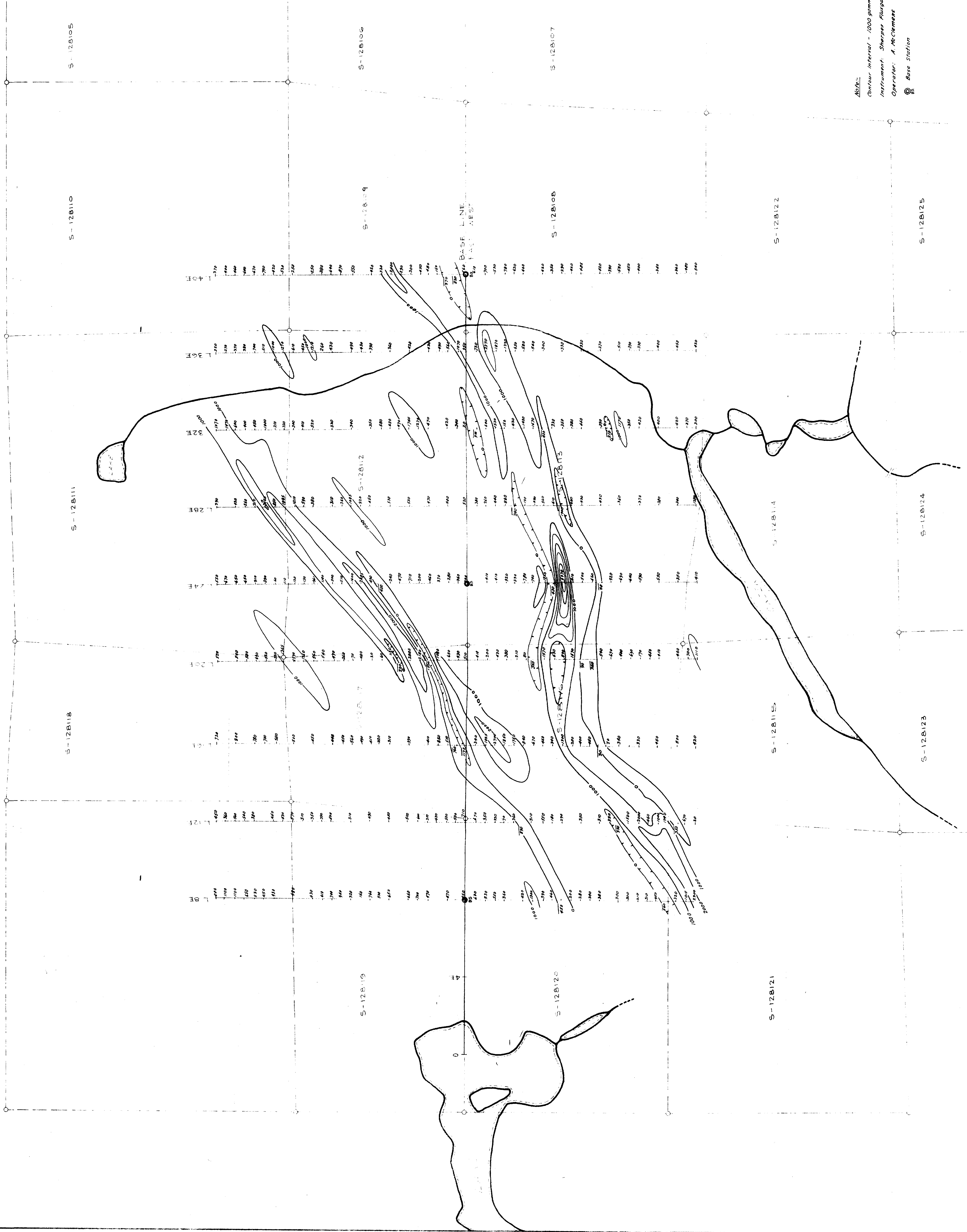
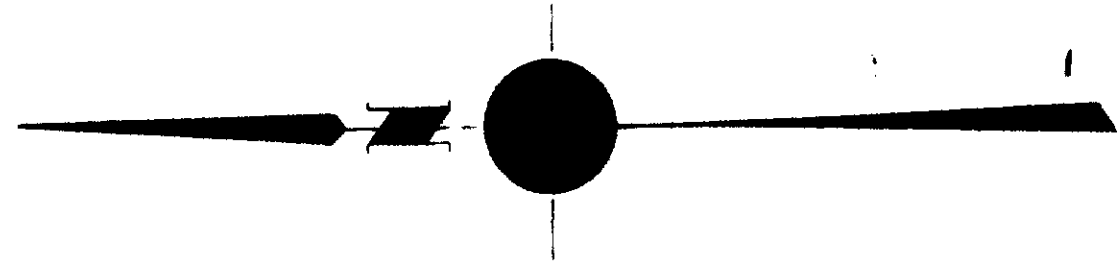
SCALE: 1 INCH = 100 FEET

EAST GRID

H. D. McLeod
DWG. 2955

Drawn by J.R.N. N.T.S. 1/4" = 100' FEB 1968



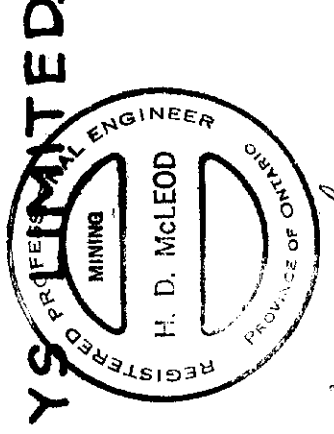
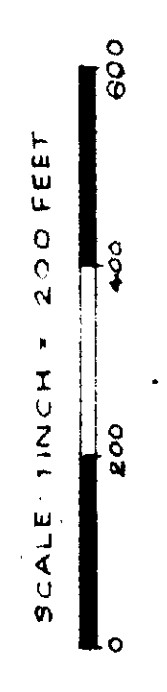


ABX-1
 Contour Interval - 1000 gamma
 Instrument - Shorrock Ring-type Magnetometer, Model M-1
 Operator - A. McCLENNAN
 Base Station

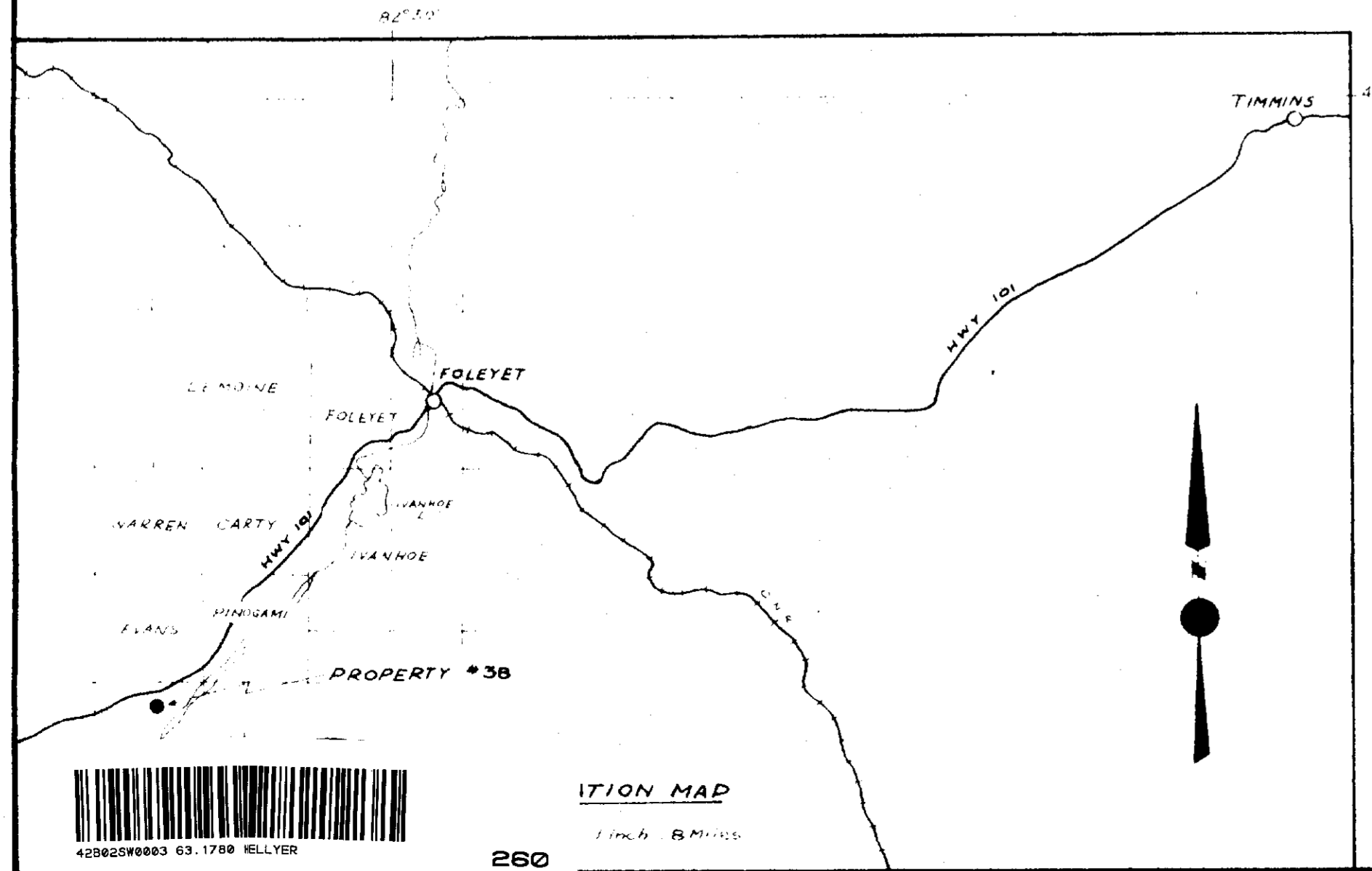
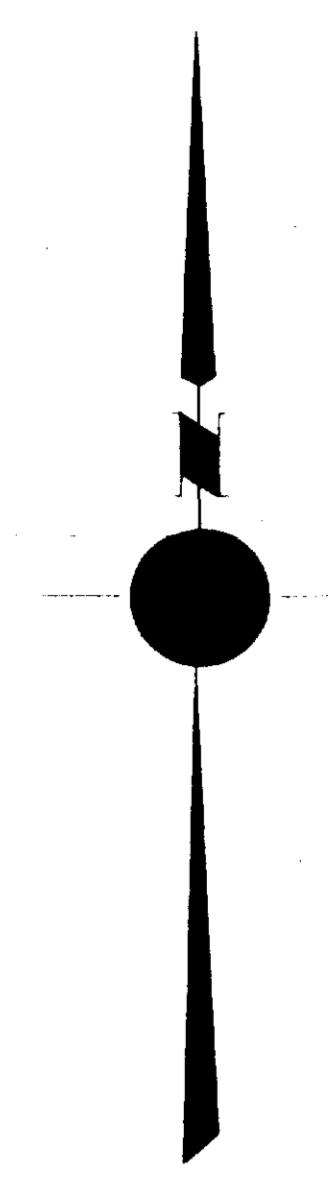
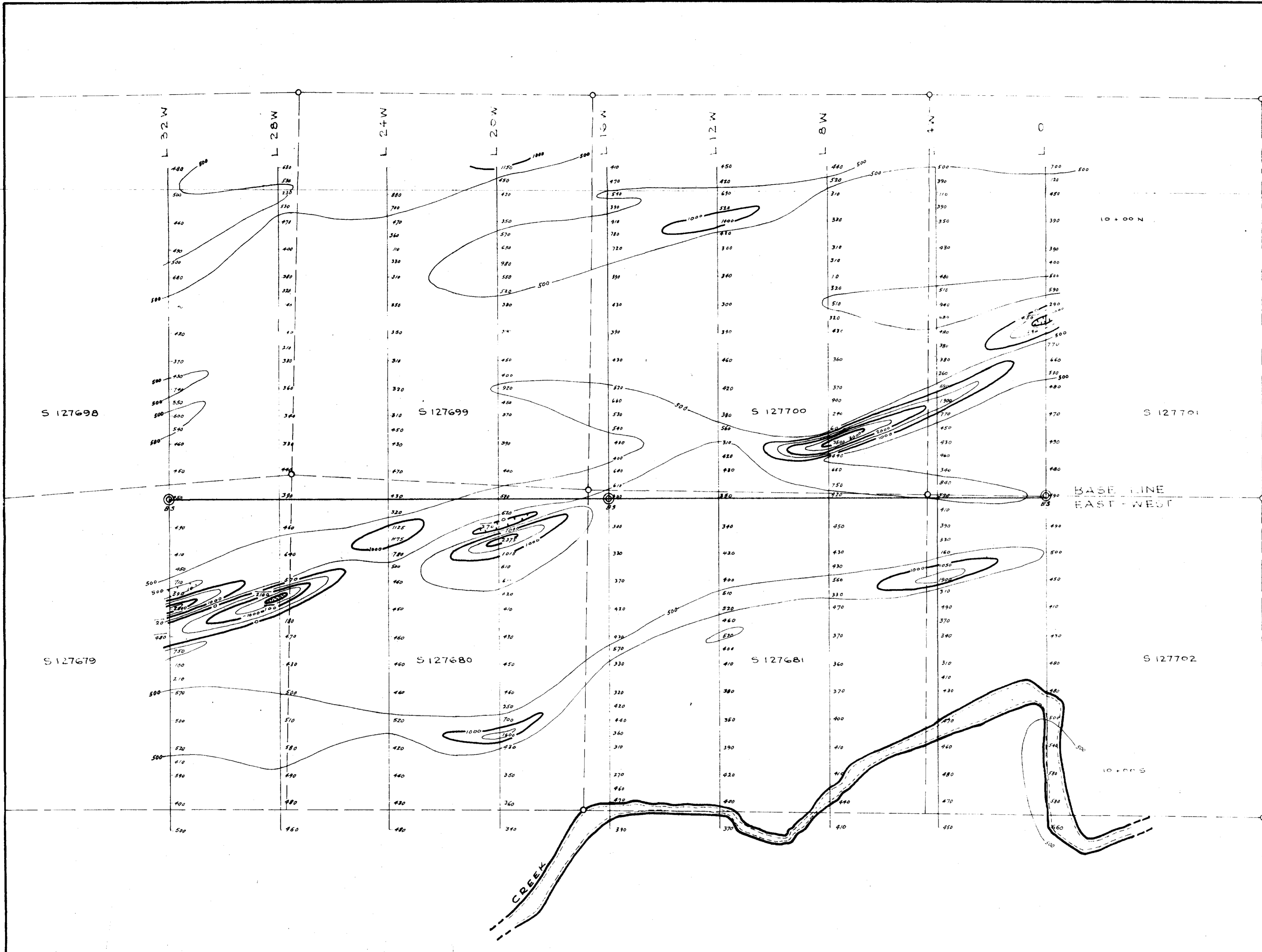
MAGNETOMETER SURVEY

PROPERTY 38
 TOWNSHIP OF HELLYER
 PROVINCE OF ONTARIO.

KEEVIL MINING GROUP LTD.
 BY
GEOPHYSICAL ENGINEERING AND SURVEYS



WEST GRID



Note:
 Values shown thus 1100 are in gammas
 Contours shown thus 1000 at 500 gamma intervals

Instrument: Sharpes Fluxgate MF1 Magnetometer
 Operator: A. M. Clemens
 © Base Station

MAGNETOMETER SURVEY

OF
PROPERTY 38
 TOWNSHIP OF HELLYER
 PROVINCE OF ONTARIO

FOR
KEEVIL MINING GROUP LTD.

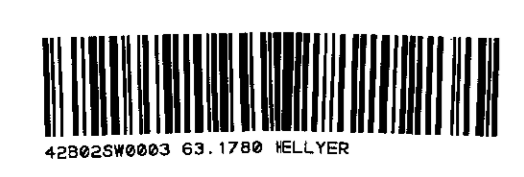
BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED

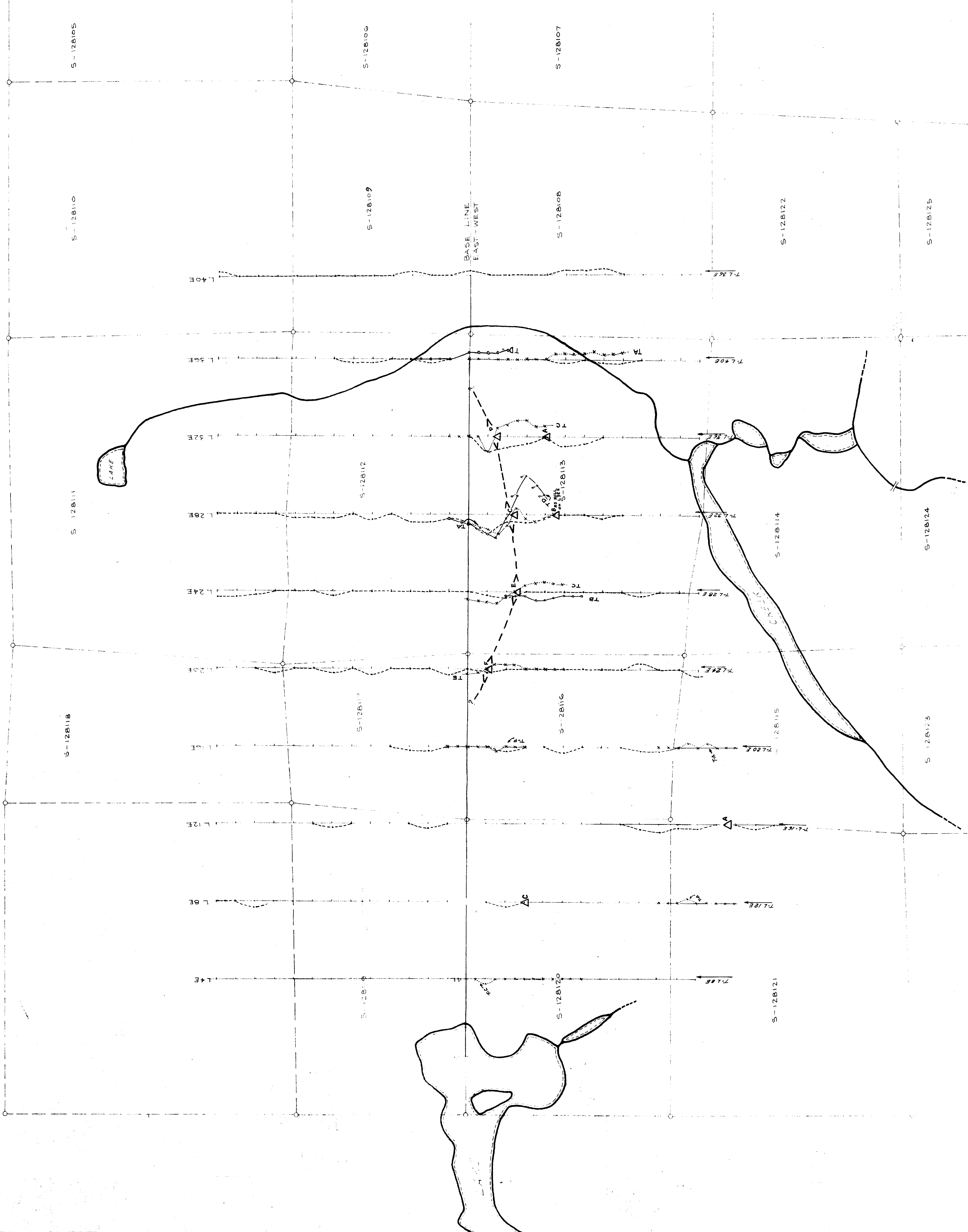
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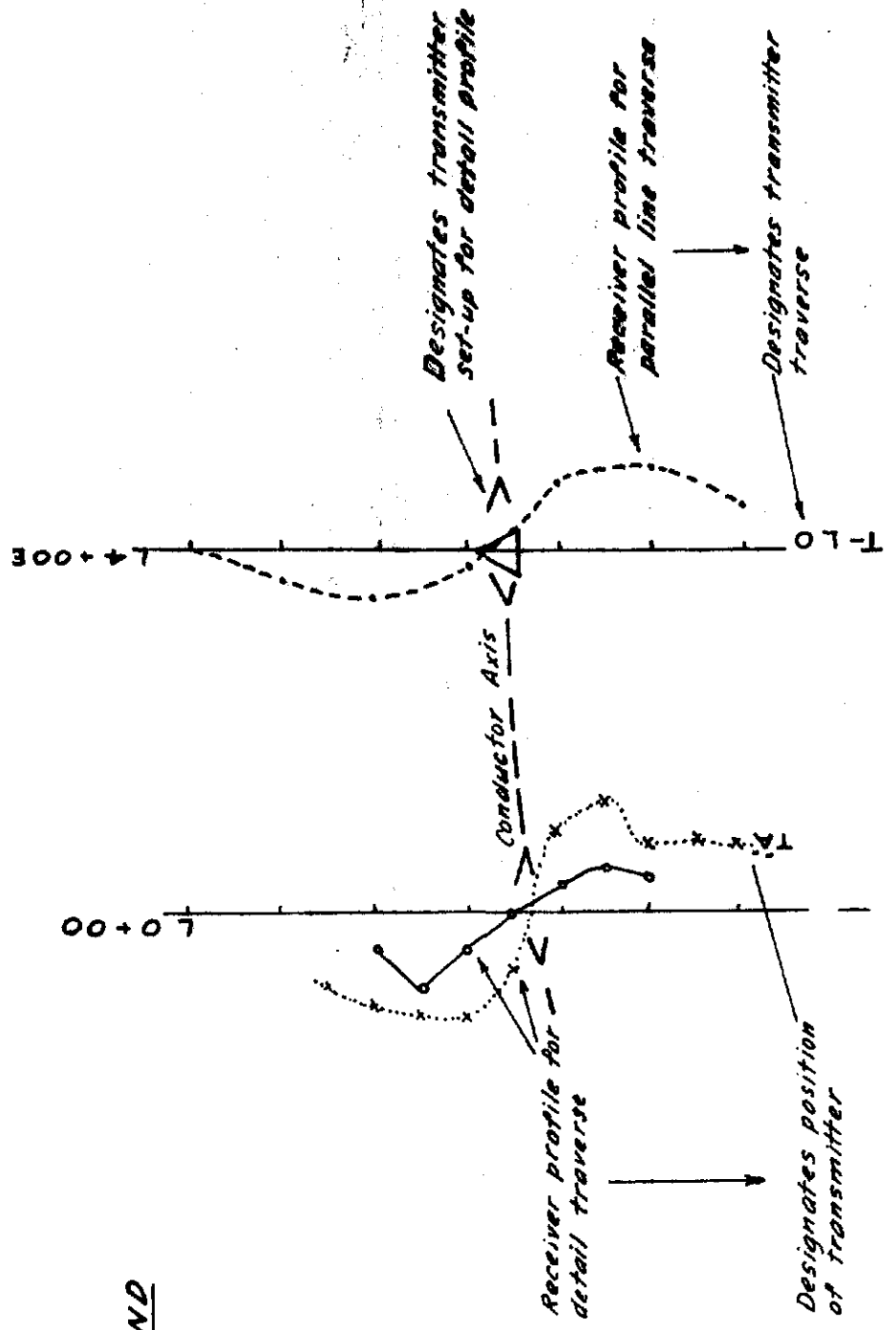
EAST GRID

Drawn by: A.M. Checked by: N.T.S. 42 1/2 FEB. 1965 JOB 679 DWG. 2895

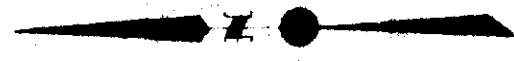
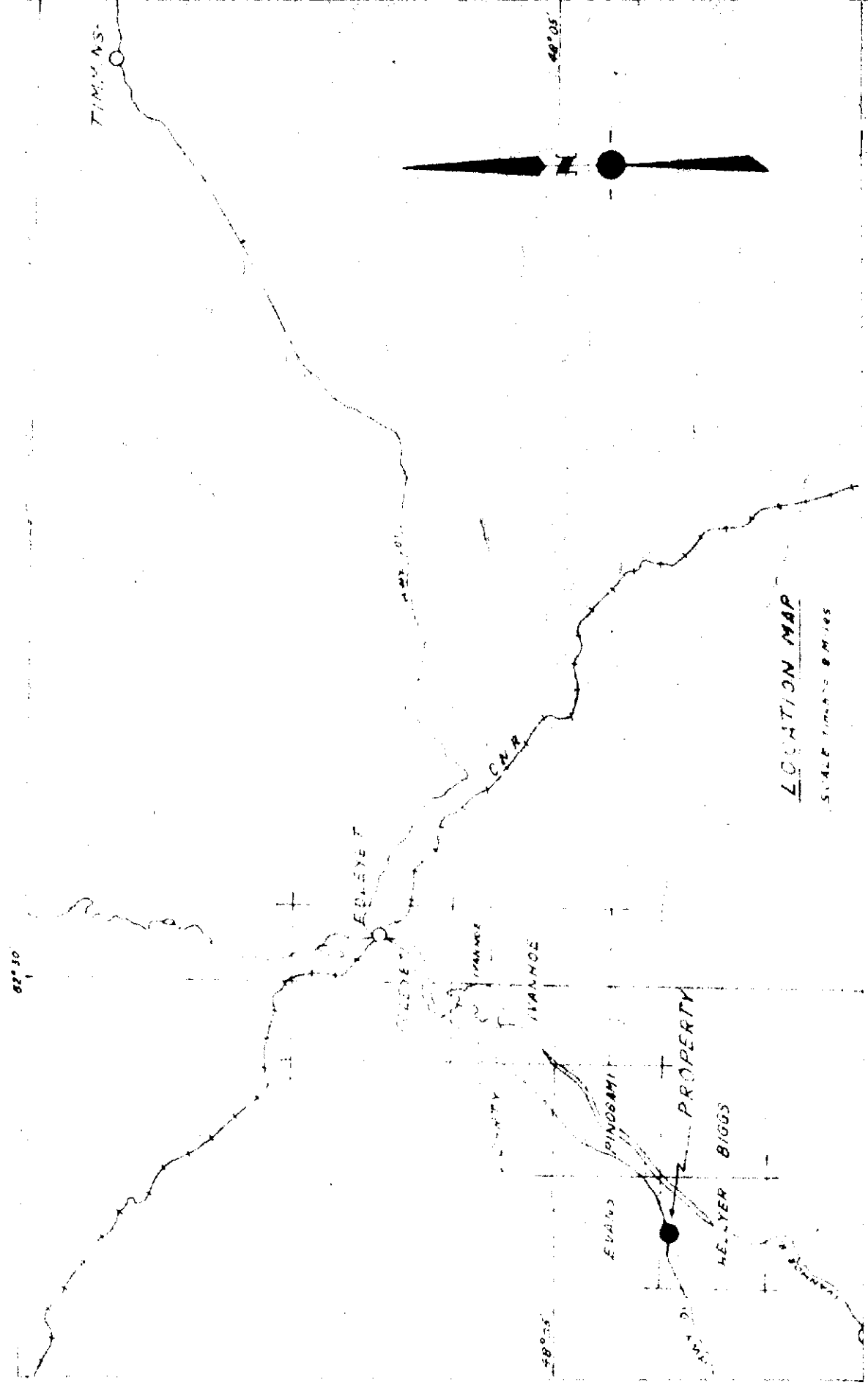




LEGEND



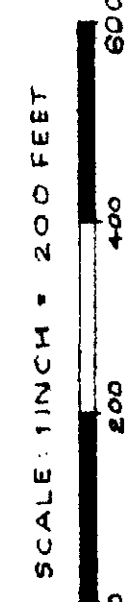
30° North
South
dip angles
Instrument: Sinescope 25000 VEH
Operator: A. MacLennan



**VERTICAL LOOP
E.M. SURVEY**

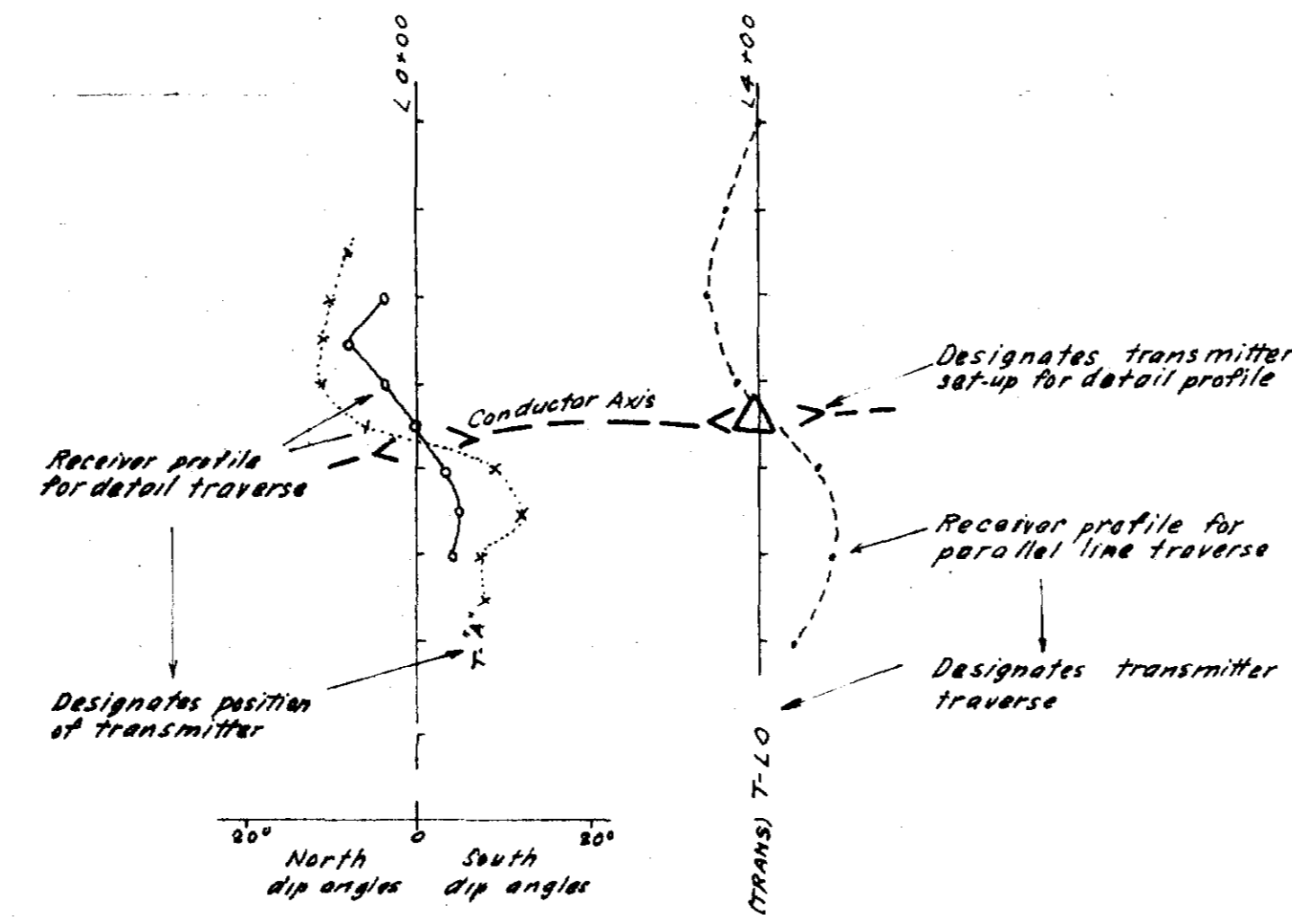
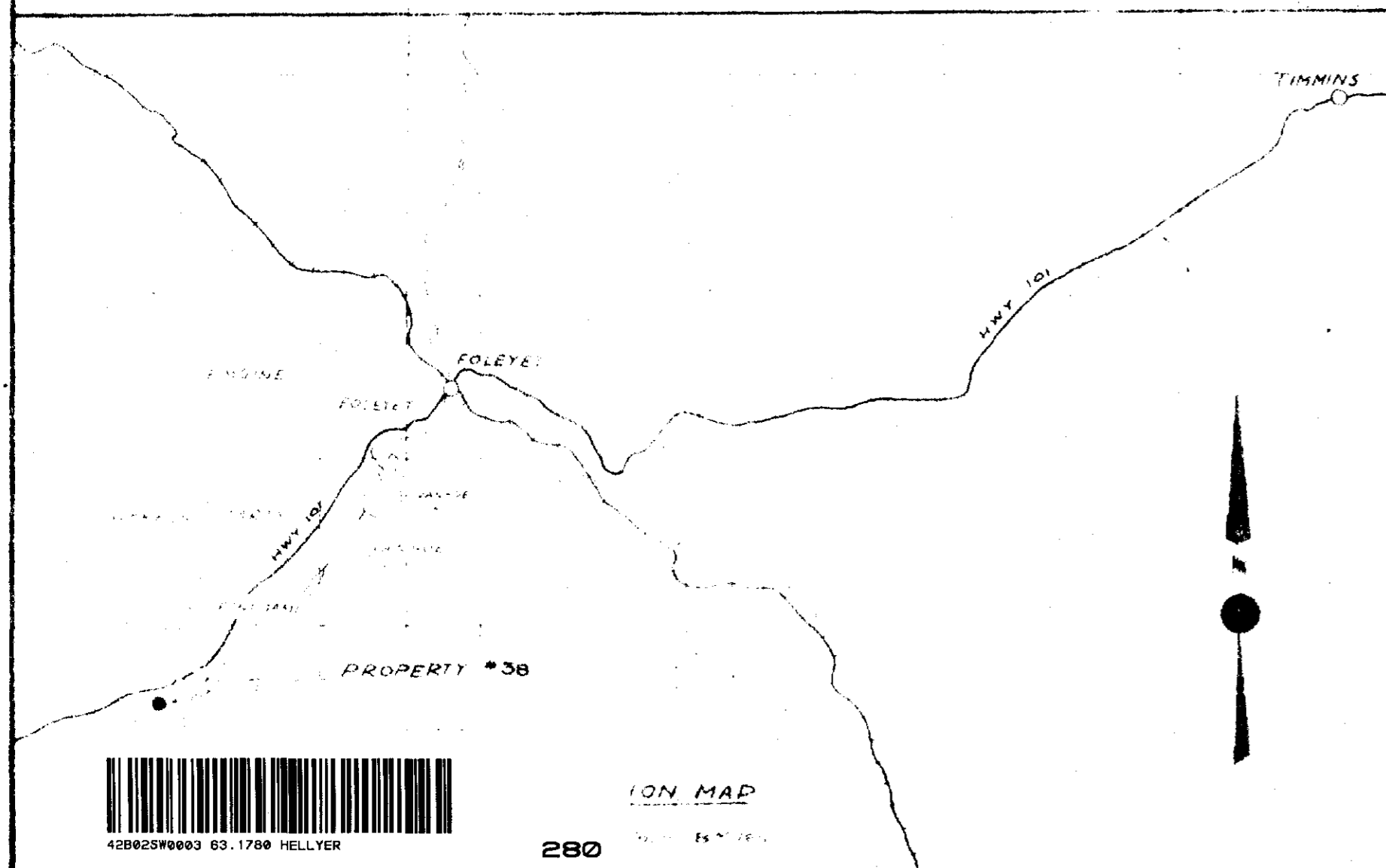
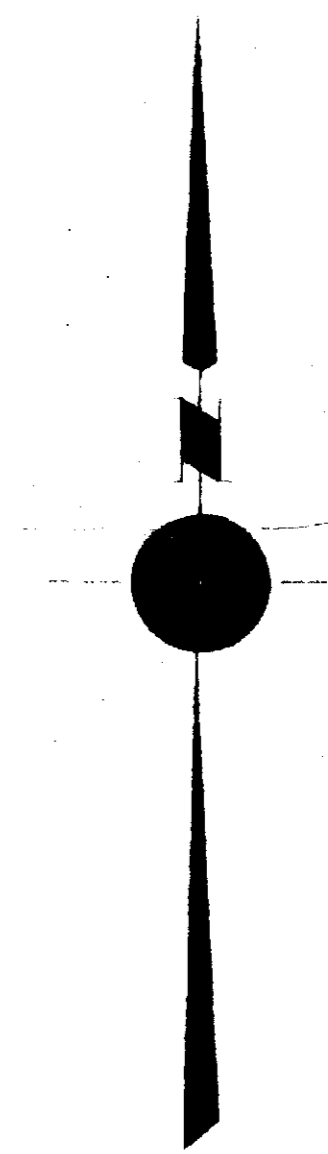
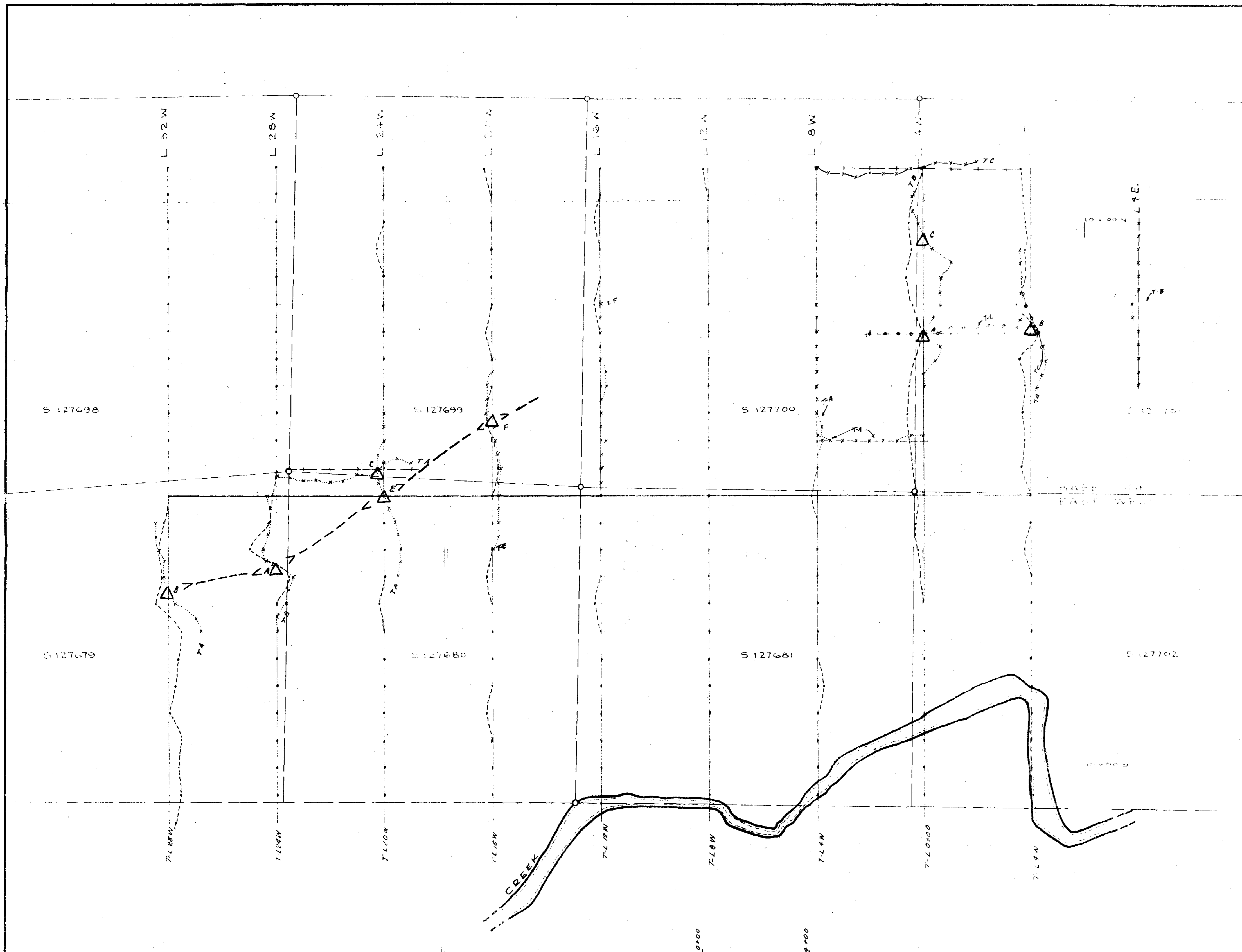
OF
PROPERTY 38
TOWNSHIP OF HELLYER
PROVINCE OF ONTARIO.

FOR
KEEVIL MINING GROUP LTD.
BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED



WEST GRID





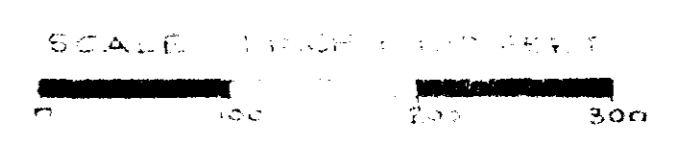
Instrument: Sharpes SE-200 VEM.
Operator: A. McLeods

VERTICAL LOOP E.M. SURVEY.

OF
PROPERTY 38
TOWNSHIP OF HULLYER
PROVINCE OF ONTARIO

KEEVIL MINING GROUP LTD.

BY
GEOPHYSICAL ENGINEERING AND SURVEYS LIMITED



H. D. McLeod
DWG 2894

EAST GRID



ION MAP
280