



42A12NE0621 2.108 LOVELAND

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GEOMAGNETIC

LOVELAND NO. 4 GROUP

LOVELAND TOWNSHIP

HOLLINGER MINES LTD

INTRODUCTION

A group of claims was acquired in an area where acid flow rocks are known to occur. The possibility of a contact with these rocks and basic lavas is suspected within the boundaries of the property. Diabase dykes are known to intrude the volcanic sequence.

The purpose of this survey is to obtain additional information about the subsurface geology.

PROPERTY LOCATION AND ACCESS

Loveland #4 Group comprises eighteen contiguous claims that were recorded in Timmins on August 12, of 1968.

These claims are:

P. 98973 to P.98981 inclusive
and P. 99035 to P.99043 inclusive

The property, six claims long in an east-west direction and three claims wide from north to south, is in the center part of Loveland Township along the Robb-Loveland Township line.

Loveland Township is located 20 miles Northwest of the Town of Timmins, Ontario and is accessible via highway No. 576 that terminates in Robb Township then via an unimproved bush road that crosses into Loveland Township near the Kamiskotia river. Although this river crosses the south-east corner of the property it is not a very convenient means of access because of shallow waters and rapids. Instead a Trail one and a half mile long extends into the center of the group.

PREVIOUS WORK

Since as early as 1956 there has been known airborne geophysical coverage of the property with both electromagnetic and magnetic methods. Known to the author, the following systems of electromagnetic airborne surveying have been employed:

- a) In-phase and out-of-phase along east striking lines.
- b) Dual frequency out-of-phase along northeast striking lines.
- c) In-phase and out-of-phase along northeast striking lines.
- d) Transient pulse (Questor) along northeast striking lines.

In all cases, magnetometers recorded variations but only when accompanying systems (a) and (b) above, were aeromagnetic contour maps prepared with the results.

In 1964 and 1965 Mespil Mines Ltd. then owners of a much larger group of claims that included all the present Hollinger property performed geophysical Surveys. In the eastern half of the property they used Shoot-back electromagnetic (Crone J.E.M.), horizontal loop electromagnetic and magnetic methods along cut and chained picket lines striking 71° and separated by 200 feet. The remainder of the claims were surveyed with a Shoot-back electromagnetic unit along pace and compass lines bearing 111° .

The geology of the entire township was mapped by L.G. Berry and S. A. Ferguson in 1940 and 1943. (O.D.M. Annual Report 1944 Volume 3 part 4 with map 53C). In 1956 O.D.M. published a compilation map of Loveland Township on a scale of four inches to one mile (double the previous scale) and included the aeromagnetic contours from the G.S.C. Geophysics Paper No. 299G.

More recently, in July of 1969 Hollinger contracted the services of A. Boudreau R.R. #2 Timmins, Ontario, to establish new survey lines on the claims. In the west half of the property a base line striking 44° was surveyed originating from the four mile

post along the Robb-Loveland Township line, Using this 5922 ft long base line, cross lines 400 feet apart were cleared and measured in a direction normal to the base line. In the east half of the property the previously mentioned Mepsi grid was rendered useful by clearing.

In the summer of 1969 limited vertical loop electromagnetic survey work revealed the presence of a weak conductor near two airborne electromagnetic anomalies in the east half of the property.

GEOLOGY

Three outcrops are known to occur on the property. All are recorded as containing acid flow rocks. One, on the extreme, north-westerly corner of the property is nearly 500 feet in diameter. The outcrop along the north bank of the Kamiskotia river is much smaller but probably represents a larger area of shallow overburden because nearby upstream, the bedrock can be seen along the river bank near the three mile post on the Township line.

Bearings of the foliation taken from the outcrop along the river are north-east.

This direction is nearly perpendicular to the suspected strike of the geological contacts in the east and north-east as well as the west center part of the township.

From Middleton's map (O.D.M. map P.598) at least one diabase dyke is shown to enter the property from the south in Robb Township.

PROCEDURE

The geomagnetic Survey was performed over the entire group along lines no less than 400 feet apart at a station interval of 100' or less. The previously mentioned 44° bearing grid originating from the four mile post was used to cover the west half of the property while the east and north-east portion was

surveyed along older grid lines that had been cut by a previous owner. These latter are separated by 200 feet and were all traversed in this survey. Along the township line, where the Kamiskotia river enters the property for a short distance, no cleared lines were available. This area was surveyed along blazed pace and compass lines, 400 feet apart, from the 25W base line that extends from the east grid. South of the Kamiskotia river similar but north bearing lines were traversed between the township line and the river.

A relatively standard procedure was employed for removing instrument and atmospheric drift from the observations. A single instrument was used and closed traverses were made between a previously established but arbitrary magnetic base near the bridge along the Kamiskotia river. Additional repeated closed loops established base station values with a high degree of accuracy at or near the north and south ends of the three base lines. These are the 00 base line in the west, the 60W base line at the center and the 25W base line near the east boundary of the property. The base lines were then read twice between and beyond these bases every 200 feet.

When surveying the cross-lines, the base stations were occupied whenever the base line was intersected. With this method, good record of the drift-diurnal combination was kept showing that throughout the survey the largest change was 22 gammas per hour.

INSTRUMENT

The survey was performed using a tripod mounted MZ-4 torsion magnetometer (serial No. 4539) that measures variations in the vertical component of the earth's magnetic field. This instrument has a sensitivity of 9.9 gammas per scale division. The observations are made by rotating a micrometer screw until the torque applied to a fine thread carrying a magnet is sufficient to return the plane of the magnet to zero position.

At every station it is necessary to level the instrument, and also to orient it in a constant direction thus minimizing the effects of improper adjustment of the levels.

FIELD PRODUCTION

All the cut lines on the property were surveyed with the magnetometer by R. Collins of Timmins, Ontario on a contract basis with Hollinger Mines Ltd. This work began on the 27th of June 1970 and was completed on the 16th of July, 1970. During this period there were nine working days, the balance being due to lack of production because of weather, magnetic disturbances and holidays.

The reconnaissance lines in the south portion of the east half of the property were surveyed by the writer also of Timmins. A departure from the previously mentioned base station control procedure had to be made, because of the nature of the terrain and grid pattern, for this day's work.

R. Collins made 1482 observations and surveyed 24.04 miles. Later 100 observations were made and two miles of reconnaissance lines were surveyed.

The totals for this survey are then 1582 readings taken along a total of 26.04 miles of survey.

RESULTS

The results of the geomagnetic survey are presented as isomagnetic contours on two accompanying maps of the south half of Loveland township at a scale of 1 inch to 400 feet. One sheet is titled S. E. Loveland, Geomagnetic Survey, the other S.W. Loveland, Geomagnetic Survey.

The contours chosen are: 800, 850, 900, 925, 950, 975, 1000, 1025, 1050, 1075, 1100, 1150, 1200, 1300, 1500, 1700, 2000, 2500 and 3000 gammas respectively.

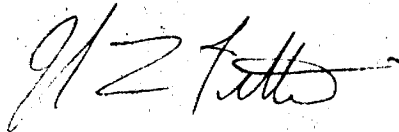
The range in magnetic intensity within Group #4 is 1315 gammas or from a low of 762 gammas to a peak of 2077 gammas. These two extreme values are part of the same anomaly and probably reflect a considerable decrease in the depth of overburden. Elsewhere in the survey area anomalies are seldom more than 100 to 200 gammas in intensity. The previously mentioned diabase dyke extending north from Robb Township forms the most outstanding anomaly. All the positive magnetic anomalies occurring on the west grid can be attributed to small diabase dykes striking a few degrees west of north. The isomagnetic contours on the accompanying maps do not readily show this but on close examination, no less than seven of these small dykes can account for all the magnetic peaks and these are all west of a wider diabase dyke striking north through the center of claims P. 99038, P.99039 and P.99040. Again through the center of claims P.99035, P.99036 and 99037, the anomaly pattern suggest another north striking dyke. Along the boundary between claim P.98975 and P.98976. There appears to be a 600 foot wide zone of increased magnetic intensity striking 110° . Where this zone intersects the prominent dyke feature, another magnetic trend originates and continues beyond the north boundary of the property at a strike of 325° . This feature may be caused by material that is not dyke forming. Along line 20N near the three mile post two magnetic peaks are of unknown origin. In the northeast corner of the property a northwest striking anomaly undoubtedly originates with a younger dyke of olivine diabase that has been mapped by Berry and Ferguson farther to the northwest in a granite outcrop. The remaining anomaly, immediately west of the 25W T.L. is not likely due to a diabase dyke. This anomaly trends east of north and fails to reveal the linearity normally displayed by dykes. However, faulting can be associated with this formation. Another fault or a fault contact is suggested along with the widest dyke. The magnetic intensity of the rocks west of the feature are on the average 50 gammas lower than to the east.

CONCLUSIONS

A horizontal loop electromagnetic survey using a separation of 400 feet between the coils, should be carried out over the entire property on existing lines. Vertical loop

electromagnetic surveys should be conducted in the areas of the four positive magnetic anomalies that are not suspected of being due to dyke material.

Respectfully submitted.



H. Z. Tittley.

HOLLINGER MINES LIMITED
TIMMINS, ONTARIO

October 5, 1970.

Thorburn Twp. (M.60I)

THE TOWNSHIP OF
CLAIM MAP
LOVELAND

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

- PATENTED LAND Ⓟ
- CROWN LAND SALE C.S.
- LEASES Ⓛ
- LOCATED LAND Loc.
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS —
- IMPROVED ROADS —
- KING'S HIGHWAYS —
- RAILWAYS —
- POWER LINES —
- MARSH OR MUSKEG —
- MINES Ⓜ
- CANCELLED C

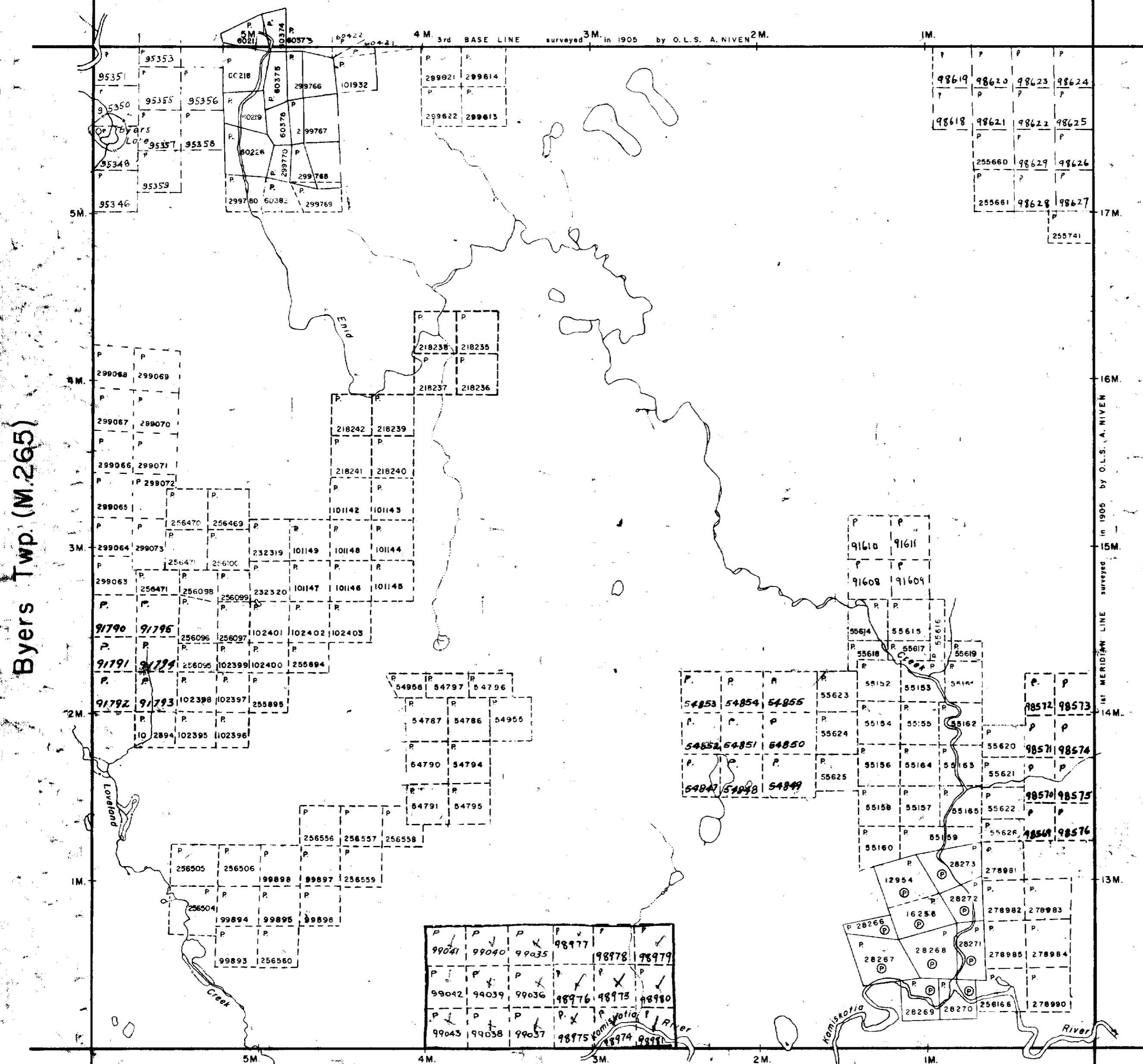
NOTES

400' Surface Rights Reservation around all lakes and rivers.

DATE OF ISSUE
DEC 18 1970
ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

PLAN NO. M-293

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS



Robb Twp. (M.309)



LEGEND

2000 +
1700
1500
1300
1100
1000
900
800

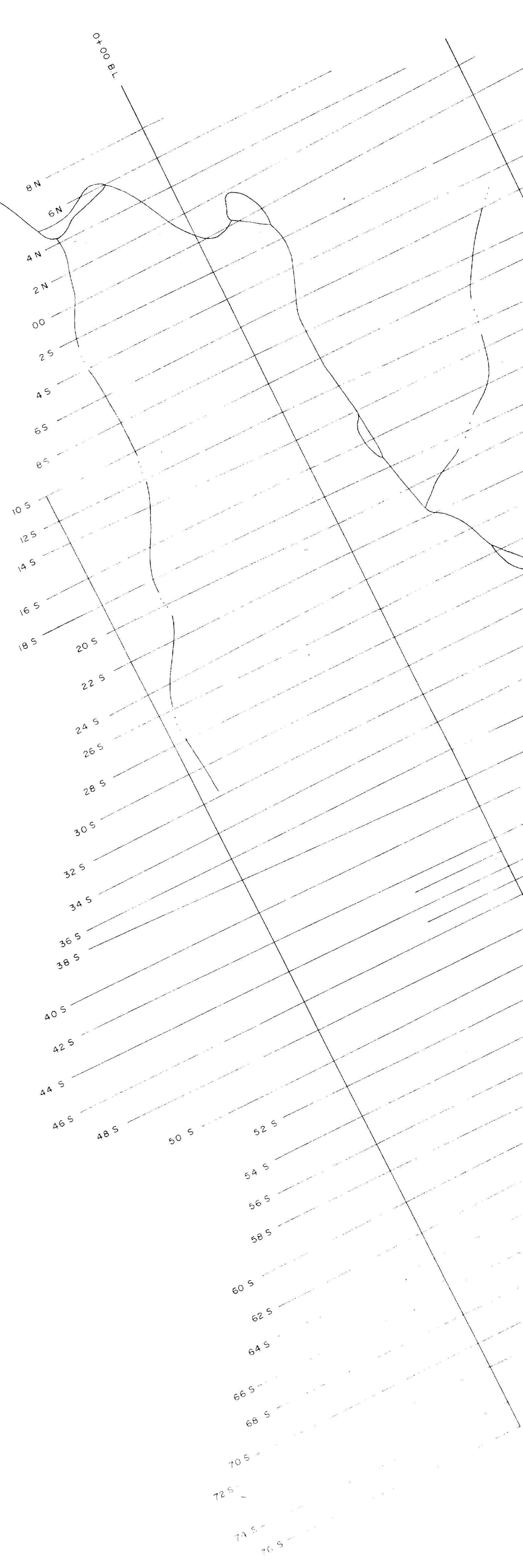
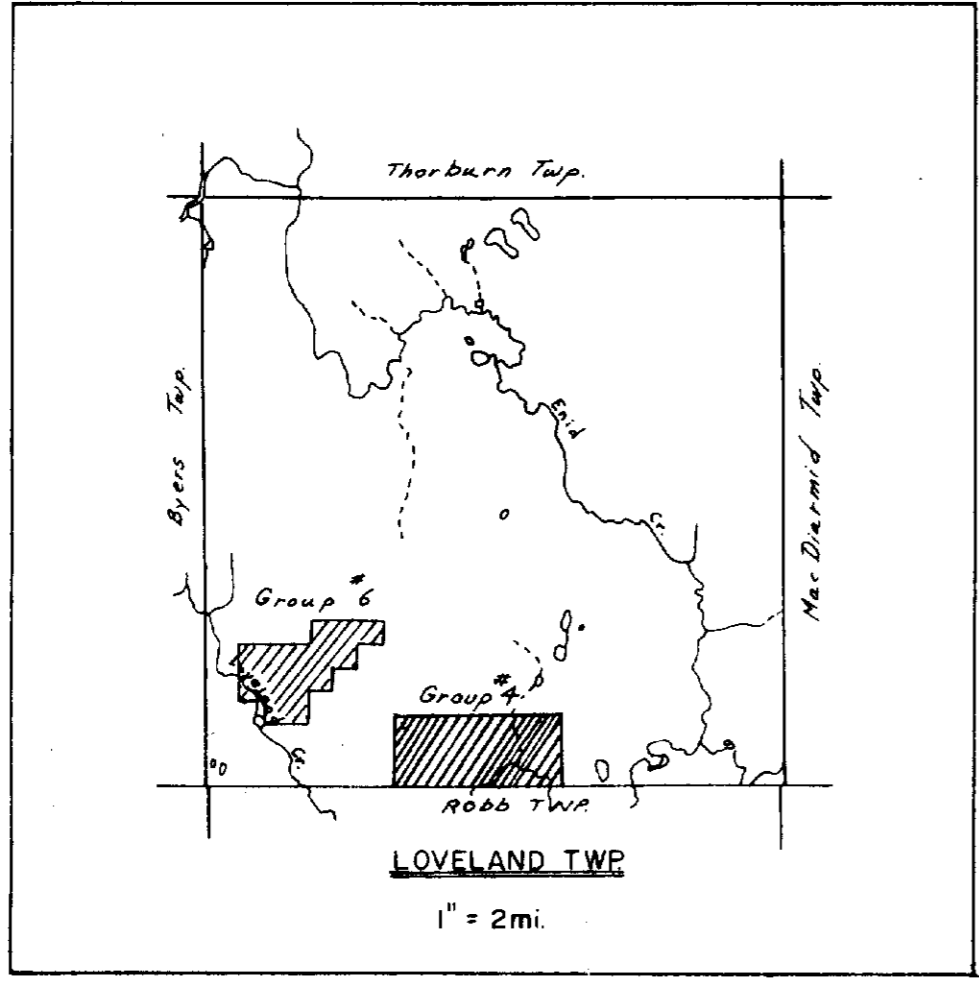
CONTOUR INTERVALS:

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- - - 1075 - - -

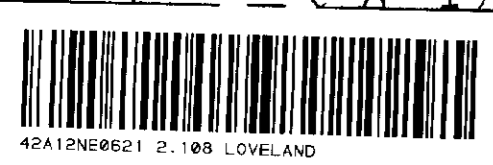
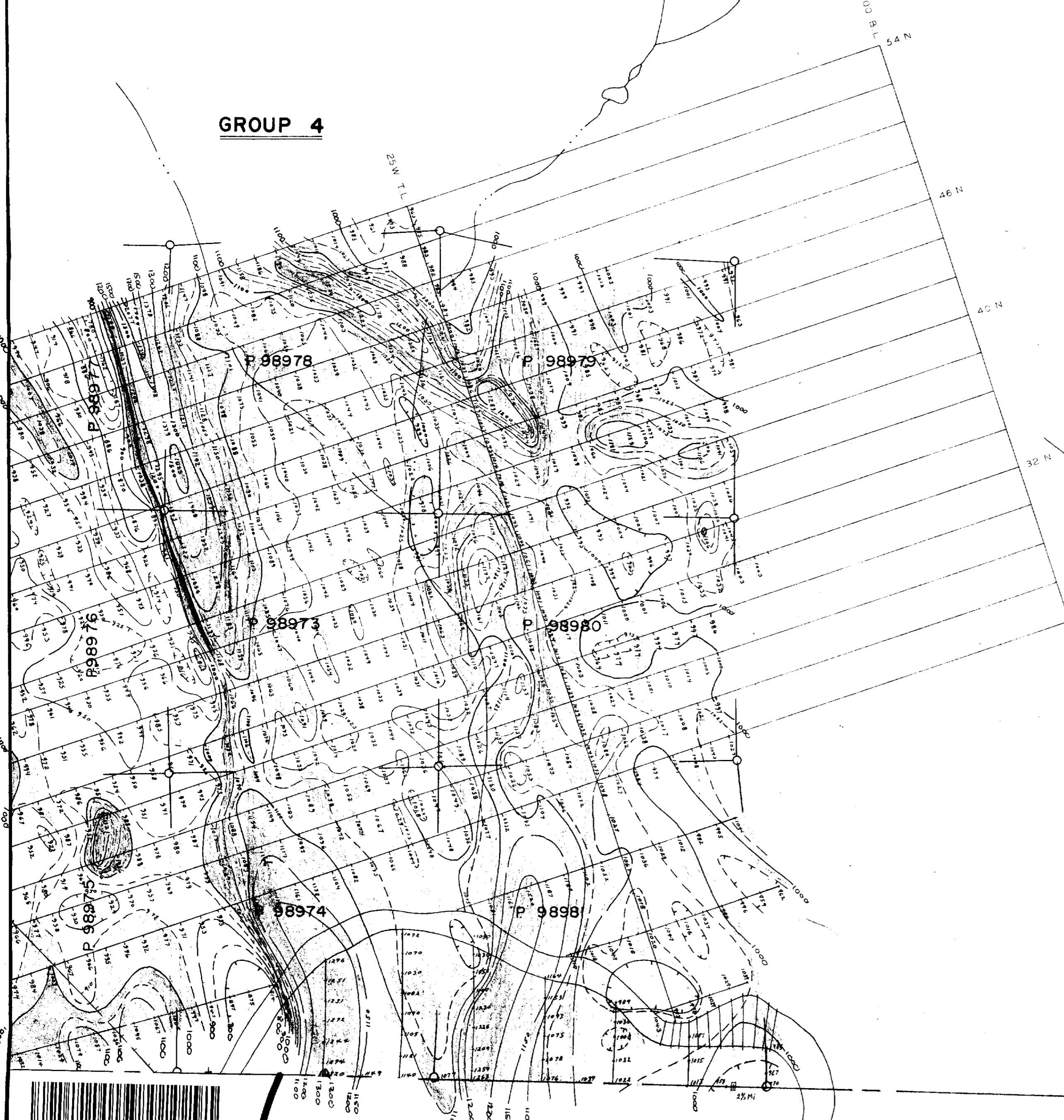
H. C. Little
HOLLINGER MINES LIMITED
TIMMINS, ONTARIO
HOLLINGER MINES LTD.

GEOMAGNETIC SURVEY
LOVELAND TWP

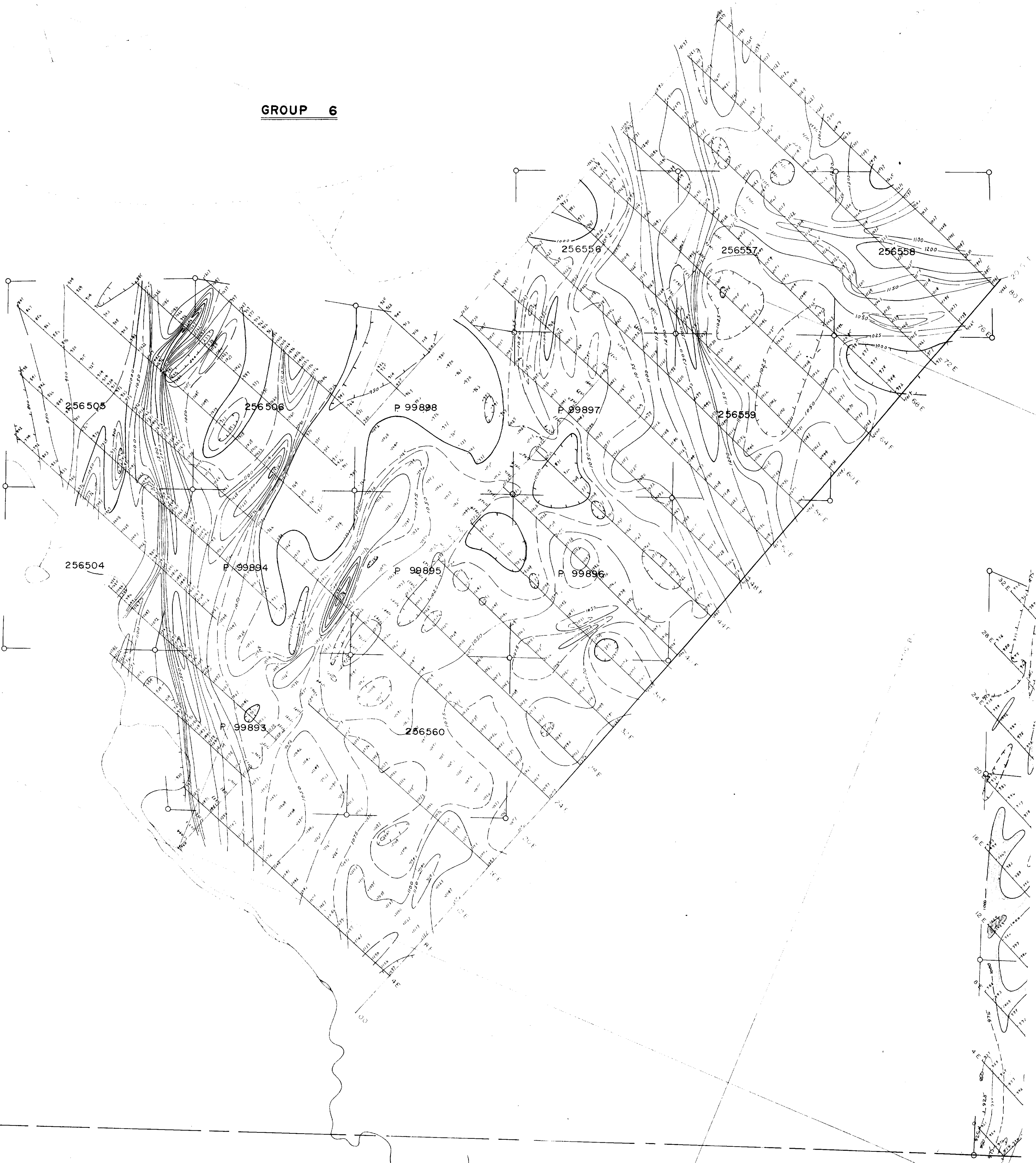
SCALE: 1 INCH TO 400 FEET
2. 108



GROUP 4



GROUP 6



BYERS TWP.

LOVELAND TWP.

PC9B TWP.

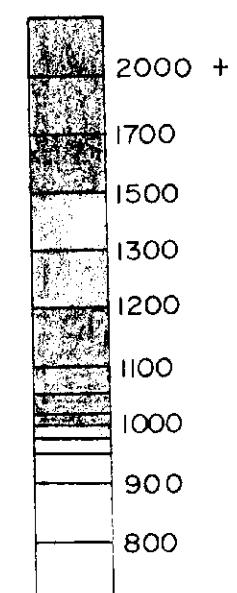




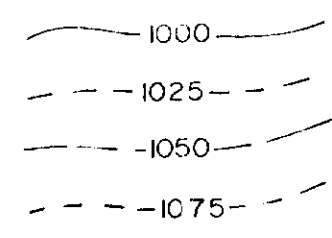
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52S
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76S

SE TL

LEGEND



CONTOUR INTERVALS:

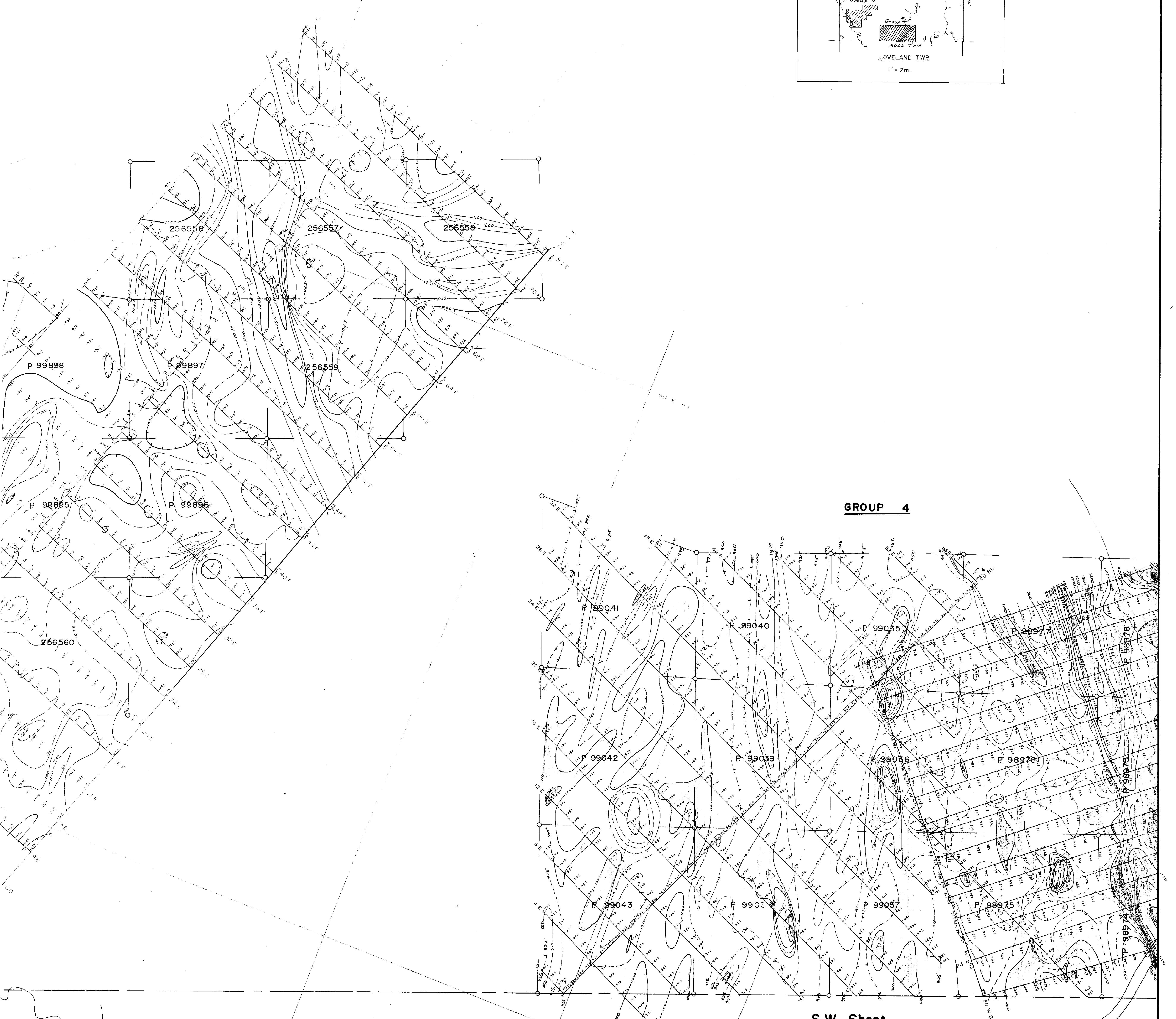
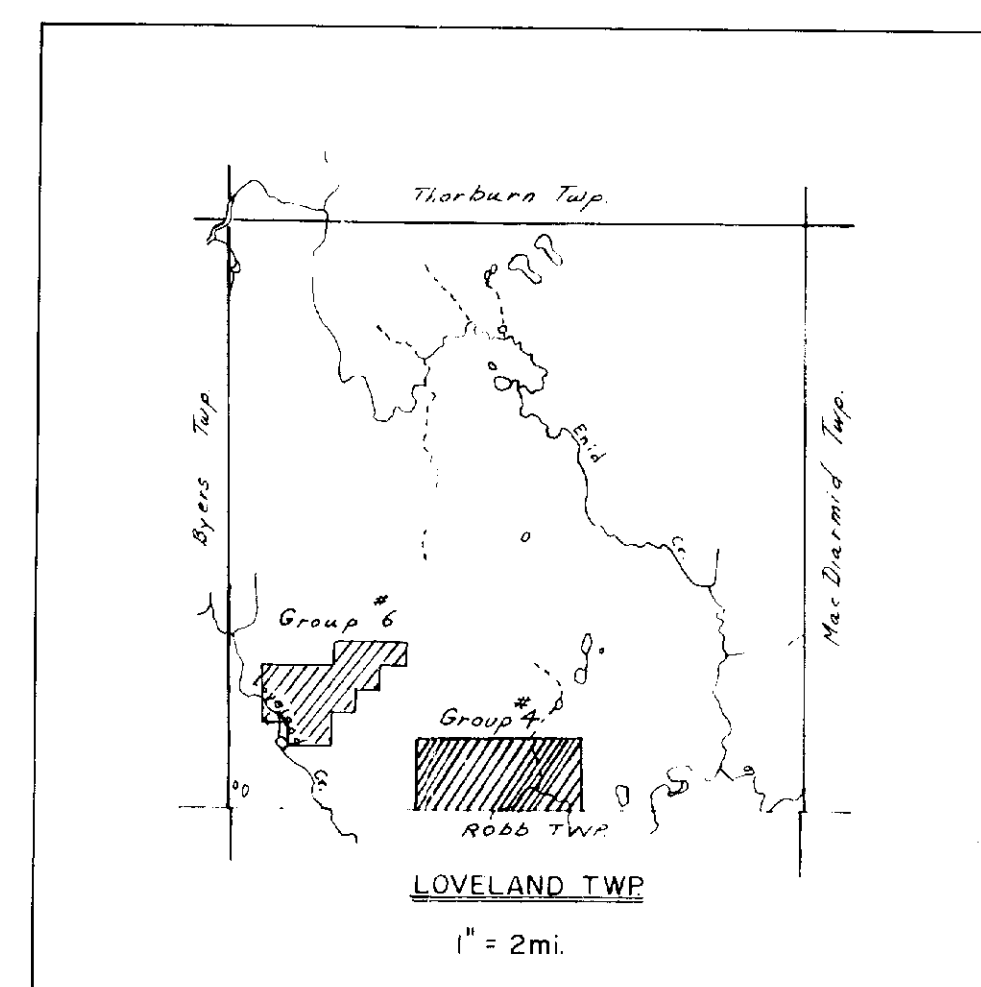


HOLLINGER MINES LTD.

GEOMAGNETIC SURVEY

LOVELAND TWP

SCALE: 1 INCH TO 400 FEET
HOLLINGER MINES LIMITED
TIMMINS, ONTARIO 2108



GROUP 4

S.W. Sheet