are covered by one report as the work was done as one project. This also makes for a better interpretation of the results.

## PROPERTIES AND LOCATION

The claim groups covered in the airborne magnetic survey are distributed through several townships in the Sudbury Mining Division. The townships involved are Raney, Denyes, Rollo, Swayze, Genoa, Marion and Mallard. A total of ten separate claim groups are involved and these are shown on three maps included with this report. The following is a description of each claim group involved in the survey.

GROUP NO. 1 - RANEY \& DENYES TOWINSHIPS - SEE MAP NO. 1
This group actually is made up of two separate claim blocks but since it was surveyed as one block, it is being referred to as one group. It is owned by Claw Lake Molybdenum Mines and the location is the southern portion of Raney township and the northwest corner of Denyes township. One group includes 42 claims in Raney township registered with the Department of Mines and Northern Affairs
under the following numbers:

| S 255576 to $S 255593$ | inclusive |
| :--- | :--- | :--- | :--- |
| S 278751 to $S 278769$ | $n$ |
| S 278692 to $S 278693$ | $" \prime$ |
| S 278695 to $S 278697$ | $n$ |

The other group includes 8 claims in Raney township and 21 claims in Denyes township registered as follows:

> S 278711 to S 278719 inclusive
> S 278771 to 278790

GROUP NO. 2 - ROLLO TOWNSH IP - MAP NO. 1
This group consists of 20 claims situated in the southwest corner of Rollo township, about one mile east of Group No. l. It is likewise owned by Claw Lake Molybdenum Mines.

The claims are registered under the following numbers:

$$
\text { S } 278857 \text { to } S 278876 \text { inclusive. }
$$

GROUP NO. 3 - DENYES TOWNSH IP - MAP NO. 1
Group No. 3 is owned by Claw Lake Molybdenum Mines and is situated in the northeast portion of Denyes township, some two miles south of Group No. 1.

This group consists of 41 claims registered under the following numbers:

|  | 278807 to S 278815 | inclusive |
| :---: | :---: | :---: |
| S | 278796 to S 278797 | " |
| S | 278799 to S 278806 | " |
| S | 278517 to S 278526 | $\prime$ |
| S | 255946 to S 255948 | \% |
| S | 256709 to S 256711 | " |
| S | 255950 (278850) |  |
| S | 256534 |  |
| S | 278798 |  |
| S | 255111 |  |
| S | 255105 to S 255106 |  |

## GROUP NO. 4 - ROLLO \& SWAYZE TOWNSH IPS - MAP NO. 1

This property is owned by Claw Lake Molybdenum Mines and it consists of 25 claims. The group is situated in the southeast corner of Rollo township (21 claims) and the northeast corner of Swayze township ( 4 claims).

The claims are registered under the following numbers:

| S 256730 to S 256741 | inclusive |
| :--- | :--- |
| S 278699 to $S 278710$ |  |
| S 278720 |  |

## GROUP NO. 5 - GENOA \& MARION TOWNSHIPS - MAP NO. 2

This group consists of 36 claims with 6 located in the northeast corner of Marion township and the remaining 30 in Genoa township. The claims are registered under the following numbers:

Marion Township: S 256025 to S 256030 inclusive

Genoa Township: S 256024
S 298934 to S 298938 inclusive
S 256032 - S 256033
S 256036 - S 256037
S 279869 to S 279875 "
S 279155 - S 279156
S 279882 to $S 279887$ "
S 279890 to S 279893 "
S $26 \$ 257$

GROUP NO. 6 - GENOA TOWNSHIP - MAP NO. 2
Group No. 6 is just southeast of Group No. 5 and
is situated in the central part of Genoa township. It
includes a total of 20 claims registered as follows:

| S 265261 to S 265264 | inclusive |  |  |
| :--- | :--- | :--- | :---: |
| S 279167 | to S 279171 | $\prime \prime$ |  |
| S 279173 to S 279175 | " |  |  |
| S $279180-S$ | S 279181 |  |  |
| S 279185 | - | S 279186 |  |
| S 265273 to S 265276 | $\prime \prime$ |  |  |

GROUP NO. 7 - GENOA TOWNSHIP - MAP NO. 2
This group is southeast of Group 6 and includes 40 claims, as shown on Map No. 2. The claims are registered as follows:

| S 279925 | to $S 279928$ | inclusive |
| :--- | :--- | :--- |
| S 279914 |  |  |
| S 279842 | to S 279861 | $\prime \prime$ |
| S 279317 | to S 279328 | $\prime \prime$ |
| S 278721 to S 278723 |  |  |

Now: 279319-80-25-26, 278:23 wee not covered dewreen.


-le tao no ittol gums. ficentio.

GROUP NO. 8 - MALLARD \& MARION TOWNSHIPS - MAP NO. 3
The claim group is situated in the north-central portion of Mallard township and the south-central part of Marion township, as shown on Map No. 3. It consists of 20 claims registered as follows:

Marion Township: S 279389 to $S 279394$ inclusive Mallard Township: S 279409 to S 279422 "

GROUP NO. 9 - MALLARD TOWNSHIP - MAP NO. 3
Group No. 9 is located southwest of Group 8 and consists of 25 claims registered as follows:

$$
\begin{aligned}
& \text { S } 292142 \text { to S } 292149 \text { inclusive } \\
& \text { S } 292152 \\
& \text { S } 292155 \text { to } S 292170 \quad n
\end{aligned}
$$

GROUP NO. 10 - MARION TOWNSHIP - MAP NO. 3
Group No. 10 is situated northeast of Group No. 8 and consists of 19 claims registered as follows:

$$
\begin{aligned}
& \text { S } 256509 \text { to S } 256515 \text { inclusive } \\
& \text { S } 279127 \text { to S } 279136 \\
& \text { S } 279138 \text { - } S 279139
\end{aligned}
$$

## GEOLOGY

The geology of the area is shown on Preliminary Map P 675, published by the Ontario Department of Mines and

Northern Affairs, issued in 1971. The geology of some of the groups is also shown on Maps 44g and 2067, also published by the Ontario Department of Mines.

Claim groups 1, 2, 3 and 4 are located along a belt of metavolcanics and metasediments that trend in a general east-west direction across Swayze and Denyes townships. The claim groups appear to be underlain largely by metavolcanic rocks that include tuffs, agglomerates and rhyolite, as well as su of the intermediate metavolcanics. Numerous mineral occurrences containing gold, chalcopyrite and galena are known in the area.

Claim groups 5, 6, 7, 8, 9 and 10 are located some. 20 miles to the east of the other groups and they are underlain largely by a granite-diorite complex, granite, and in some cases, they cover the volcanic contact with the granite. These properties are in the Rush Lake area where Parr Mines made a copper discovery that suggested possibilities of a porphyry-copper type deposit in the intrusive rocks.

EQUIPMENT
The equipment used was a Gulf type fluxgate
magnetometer mounted with a continuous tape recorder. The magnetometer was built by Dominion Geophysics Ltd. and was mounted within the aircraft. The magnetometer operates on two scales, from 0 to 4,000 gammas and 0 to 10,000 gammas, and it can be readily switched from one scale to the other. A continuous magnetic profile is recorded on the tape so that immediate appraisal can be made of any magnetic anomalies and detail work can be readily carried out. The accuracy of the survey is approximately $\pm 50$ gammas as taken from the tape.

The equipment was mounted in a Beaver aircraft equipped with a gyro compass for more accurate flying. All flying was done by Austin Airways Ltd. from their base in South Porcupine.

## PROCEDURE

The flight lines were laid out in a north-south direction on a previously prepared base map on a scale of 4 inches to the mile. The base map showed the roads and topographic features and fiducial points were marked on the flight lines to coincide with these features, as shown on the accompanying map. This map was used in the
aircraft for flight control and was also used as the base for the final contoured map. The flight lines were laid out at approximate $1 / 8$ mile intervals.

The crew consisted of two men and the pilot during the survey. The flying height was maintained as nearly as possible at 200 feet. The altitude control was by means of an altimeter but this was not attached to the recorder. Any variations in the altitude were relayed from the pilot to the operator. In flight, the operator marks all fiducial points on the tape as the aircraft flies over the points. Any other pertinent data, such as drift or variation in altitude, is also noted on the tape. It should be pointed out that the survey was carried out in relatively calm weather, thus avoiding any noticeable drift and variations in the profile due to excessive tilting of the aircraft. Diurnal measurements were not recorded as each group was flown in a short interval of time.

The surveys were carried out at two separate times as bad weather prevented completing the entire programme. Groups 1, 2, 5, 6, 7, 8 and 9 were flown on October 29, 1971,
at which time approximately 400 line miles were flown including the turn arounds. The weather was still bad up to November 4 and the remainder of the programme was flown after freeze-up, between December 18 and 21.

## DISCUSSION OF RESULTS

The magnetic results are presented as a contoured map on a scale of 1 inch to $1 / 4$ mile and the contour interval used was 50 gammas. A brief description of the results on each claim group follows:

$$
\text { GROUP } 1 \text { - MAP NO. } 1-\frac{\text { Total line miles of survey }}{52.1 \text { miles. }}
$$

The northern section of Group 1 shows fairly uniform magnetic readings with the greatest variation roughly 100 gammas. This indicates that the underlying rocks are fairly uniform and magnetic variations probably due to variations in overburden depth. The contours are quite irregular and no trends can be observed.

The lower property shows a distinct north-south anomaly at the west end which may represent a fault or lineament. The balance of the property shows uniform magnetic readings.

## GROUP 2 - MAP NO. $1-\frac{\text { Total line miles survey }}{\text { miles. }} 20.5$

This group is very similar to Groun 1 with only minor variations in the magnetic intensity over the oroperty. One small area of above normal values exists in the central part of the property near the south boundary. This trends northeast and may well represent a sliphtly more basic underlying rock formation. The same condition may exist at the east end of the property.

$$
\text { GiROUP } 3 \text { - MAP NO. } 1-\frac{\text { Total }}{\text { miles }} \text { ine miles survey }-28.5
$$

This claim group again has fairly uniform magnetic readings but they are roughly 100 to 150 gammas hipher than those on groups 1 and 2. This is explained by the fact that it is underlain by mafic to intermediate metavolcanics as compared to the felsic rocks underlying the other groups. There appears to be a magnetic anomaly in the southwest corner of the property but its extent or trend cannot be determined as the survey terminates here. The geological map shows a gold-copper-lead occurrence in this area.

## GROUP 4 - MAP NO. 1 - Total line miles survey - 20 miles.

This claim group appears to be underlain by felsic metavolcanic rocks but there is a distinct mapnetic anomaly in the southwest corner of the property. This may possibly represent a more basic phase of volcanics in this portion of the property.

## GROUP 5-MAP NO. 2 - Total line miles survey - 28 miles.

This group shows a strong magnetic anomaly trending, in an east-west direction and correlation with the geological map indicates this represents a band of iron formation.

The geolopical map also shows all of the southern part of the property to be underlain by granite. Magnetically, this portion is lower which is what one would expect from granite as contrasted to volcanics. However, there is a small anomaly of about 200 gammas on claim 279883 which could be of interest within the intrusive.


This claim group has fairly uniform low magnetic
readings as compared to the other groups. Geologically, it appears to be entirely underlain by granite which would account for the lower readincs. In the southwest corner there appears to be a north to northwest trending anomaly that may represent a diabase dyke as there are quite a few in the area.

$$
\text { GROUP } 7 \text { - MAP NO. } 2-\frac{\text { Total line miles survey }-23}{\text { miles. }}
$$

This claim block again is underlain by granite but the marnetic survey indicates two possible diabase dykes cutting across the claim group. The trend anpears to be north-northeast but on such small coverage it is difficult to obtain an accurate trend.

$$
\text { GROUP } 8 \text {-' MAP NO. } 3-\frac{\text { Total line miles survey }-13}{\text { miles. }}
$$

As mentioned under peology, this proup is largely underlain by an intrusive complex consistinp of igneous and hybrid rocks. There are two interesting anomalous areas, one at the north and one at the south end of the property. Since we are looking for norphyry-copper type deposits, these are worthy of investigation.

$$
\text { GROUP } 9 \text { - MAP NO. } 3-\frac{\text { Total line riles survey }-15}{\text { miles. }}
$$

The mannetic readings are all sliphtlv higher than proup 8 to the northeast and they supeest a northerly trend. These Kigher readings probably represent the volcanic contact with the intrusive complex.

GROUP 10-MAP NO. $3-\frac{\text { Total line miles survey }}{\text { miles. }}=25.5$
The magnetic values in the west end of the property are flat whereas those in the east end are slightly higher. The trend here is about north-south and this again probably represents a geological contact.

## CONCLUSIOIS' AND RECOMMENDATIONS

The airborne magnetic survey carried out on the ten claim rroups outlined some geological contacts and more basic rock formations such as diabase dvkes. Groups 5 to 10 are within the intrusive rocks of the Rush Lake area and some magnetic anomalies were found within the intrusive or along the contacts. These could be favorable for porvhyry type mineralization and warrant further investigation.

Prior to any ground investigation, the geophysical data should be closely correlated with any recent exploretion in the area. This could be followed by prospecting and ground reconnaissance geophysical surveys of the anomalous areas indicated in the present survey.

Respectfully submitted, PROSPECTING GEOPHYSICS LTD.


Montreal, Que. January 8, 1972.







Rollo Twp. - M. 1082


THE TOWNSHIP
OF 2.2145

## SWAYZE

DISTRICTOF

PORCUPINE
MINING DIVISION
SCALE: $1-\mathrm{INCH}=40 \mathrm{CHAINS}$

## LEGEND

PATENTED LAND
CROWN LAND SALE
LEASES
LOCATED LAND
LICENSE OF OCCUPATION
MINING RIGHTS ONLY
SURFACE RIGHTS ONLY
ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED
NOTES
40O SURface Rights Reservation along
the shores of all lakes ond rivers.
$400^{\circ}$ Surface Rights Reservation along
the shores of all lakes and rivers.
the shores of all lakes and rivers.

DATE OF ISSU
JUL-6 1976
SURVEYS AND MAPPING
BRAMCH

PLAN NO- M.II50
ONTARIO
NATURAL RESOURCES
MINISTRY OF NATURAL RESOURCES




# MAI ARD <br> SUDBURY MINING DIVISION DISTRICT OF SUDBURY 

Scale-40Chains - 1 Inch

MARION






## AIRBORNE MAGNETIC SURVEY

GENOA and MARION TOWNSHIPS, SUDBURY DISTRICT, ONT.
O.D.H. 2.136

PGL) PROSPECTING GEOPHYSICS LTD.

LEGEND
$\longrightarrow$ Flight lines (Direction and Fiducial Points)
ISOMAGNETIC CONTOURS
altitude 200 Fee

