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GEOLOGICAL AND GEOPHYSICAL REPORT

ON THE

"TOTEM CLAIM GROUP"

Oceanica Mining Division

British Columbia

for

TOTEM MINERALS LIMITED

Totem Group I. II. III. IV. V. VI

Totem 26 Miles North of Old Hogen  
(125° 56' S.W.)

Lundberg Explorations Limited

Hans Lundberg

August 1 to 20, 1957  
June 15 to July 15, 1958

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## M A P S

- #1 Map No. 1 The results of the magnetometer survey  
(Scale, 1: 10,000)
- #2 Map No. 2 An interpretation of the results of the  
Geophysical survey  
(Scale, 1: 10,000)
- #3 Map No. 3 An interpretation of the results of the  
Geological survey  
(Scale, 1: 10,000)
- #4 Map No. 4 Group of the Totem Claims  
(Scale, 1: 50,000)

## DIGEST

Early in the summer of 1957 a rather strong magnetic anomaly was obtained in the airborne reconnaissance near the Osilinka River.

The central portion of this anomaly was staked and recorded in July, 1957.

In all, 64 claims were staked, forming a square, and thought to completely cover the main portion of the anomaly. Later in the summer - during the latter part of August - a geological and prospecting campaign was carried out over the claims and detail magnetic surveys were performed at approximately the same time. The highest magnetometer reading was in excess of 20,000 gamma with a negative effect noted to the northeast of the main maximum. During the prospecting campaign, outcrops and floats were studied and where possible, the overburden was removed to expose the rocks. Samples were taken, crushed and panned in all streams draining the area. Dip needle observations were taken to complete the magnetic picture and reference traverses were run to obtain sufficient detail for the geological mapping. Seven men were employed in this work and two Geologists carried out the geological and test work on the claims.

### LOCATION AND ACCESS

The area is located on the drainage of the Osilinka River about 25 miles west of Uslika Lake. It is between east-west coordinates of  $125^{\circ}45'$  and  $125^{\circ}25'$  and north-south coordinates of  $56^{\circ}5'$  and  $56^{\circ}10'$ .

The area is easily reached by float plane to Uslika Lake and then by helicopter in to the anomaly. There are only three or four spots where the helicopter can land but these are clearly visible.

There is also a trail - shown on the Fort Grahame Map - which follows the Osilinka River, from the southwest corner of Uslika Lake and heading in the direction of the anomaly and ending at Haha Creek which is about the half-way point from Uslika Lake. A road from Prince George - passable by truck in good weather - runs by Germansen Landing and passes Uslika Lake. Pack horses may be obtained from either Mr. Carl Hagen at Germansen Lake or Mr. Don Cileland at Germansen Landing. The anomaly may be reached by horse following Haha Creek; the Osilinka River however would have to be forded once.

### TOPOGRAPHY

The area is typical of the Rocky Mountains

B. Rock Types Encountered:

(i) Syenite:

Pink coloured, composed of orthoclase feldspar and hornblende. The crystals were medium-sized to fine and occur in massive texture. No economic mineralization was present but small grains of pyrite were visible in places.

(ii) Diorite:

A white rock composed of plagioclase feldspar and hornblende. This rock has medium grain size and has a massive texture.

The metallic mineral associations are pyrite which occurs in small crystals as in the syenite.

(iii) Syenodiorite:

This rock has an uneven appearance and is light in colour. Its composition is orthoclase and plagioclase with hornblende. The texture is medium grained and the texture is massive. As with the syenite and diorite, small scattered crystals of pyrite are seen.

with average relief of about 3,000 feet. Several fast streams are present in the valleys which all drain into the Osilinka River.

On the east side of the main ridge there are three perpendicular spurs with almost vertical sides. Except at the ends, the east side of the main ridge is also impossible to climb due to its sheer nature. Rock slides occur frequently.

The claims cover this ridge, the foot of the adjoining mountain on the west, and extend almost to the Osilinka River as shown on the map.

Forest growth stops at about the 4,900 foot level and the area above timberline is mostly covered with grass and scattered patches of dwarf spruce.

### GEOLOGICAL CONDITIONS

#### A. Distribution of Outcrop:

The valleys are heavily covered with glacial drift and no outcrops were found below timberline. The east side of both the mountains is bare rock and most prospecting was carried out there. Wherever the overburden appeared to be thin, attempts were made to reach bedrock for examination and sampling.

The three rock types described cover the whole area with the exception of the dikes and the basic 'plug.' Where the streams cut through to bedrock on the east side, the exposure usually showed diorite and this was the same on the north side.

On the second mountain at the edge of the claims on the west side, large porphyroblasts of pink feldspar were seen which were absent on the east edge of the claims, suggesting that the west side might have undergone slightly greater metamorphism.

(iv) Crystalline Feldspar:

Pink in colour and in elongated crystals.

This rock bounded the basic rock on the south side of the main ridge.

Also a feldspar dike was found on top of the main ridge, about 20 feet in width and striking at about  $40^{\circ}$ .

(v) Brown Weathering Rock:

This rock has a brown weathered surface with a dark, fine grained, magnetic, non-weathered interior. It occurs as a dike about 30 feet in width and appears to strike approximately  $40^{\circ}$ .



A second brown weathering rock, strike about  $40^{\circ}$  and about 50 feet in width was also found. This rock was so highly weathered that it was impossible to get a fresh surface to determine its composition.

(vi) Basic Rock

Dark in colour, this rock falls in two categories:

(a) hornblende, biotite and their resultant mixtures;

(b) dark, fine grained, heavy, highly magnetic basic rock.

The basic rock types (a) and (b) appear to be about 4,000 feet long and about 1,000 feet wide. The hornblende biotite mixture appears to form a halo around the dark magnetic rock which occurs in the middle of the basic group shown in red on the map.

The grain size varies from a skarn-type (large crystals of hornblende) at the ends of the basic rock to the fine-grained rock in the middle. Widespread throughout all the basic rock are small flecks of white feldspar. These are more frequent towards the south end.

At a few locations there are small patches

of what appears to be secondary copper mineralisation.

At the fault zone shown on the map, there are two red feldspar veins about 6 feet apart, 2 inches in width striking at  $140^{\circ}$  and dipping about  $20^{\circ}$ E. These carry chalcopyrite and what is probably fine grained galena; many samples were taken.

Magnetite is very common throughout the basic rock and is found in small scattered grains.

Samples were taken at 300 foot intervals along the top of the ridge. The highest point was considered as '0' and positive readings were in the south direction and negative in the north.

C. Structure:

The region appears to be composed of primary rocks which have undergone metamorphism, with the rocks on the west being altered slightly more than on the east.

The basic rock appears to be pushed up near the centre of the anomaly, possibly by faulting, as there does not appear to be an aureole surrounding it.

Abundant evidence of faulting was shown by slickensides and abrupt contacts. There appear to

be several small faults running perpendicular to the main ridge. The major fault shown on the map is a deep, steep gorge with a stream at its bottom. The rock on the west is the diorite and on the east is the basic rock and the feldspar vein. There are numerous lichensides on the rocks and also there are other streams of comparable size on the east which have not cut down to any great extent.

#### D. Economic Geology

The copper vein observed contains patches of chalcopyrite and galena scattered throughout the 9" lower feldspar vein which dips  $20^{\circ}$  E. into the mountain at strike of  $140^{\circ}$ . The mineralization is not commercial unless widths and grades increase with depth. Unfortunately the samples taken are selected and do not convey a true average as a good part of the vein is barren. Small traces of secondary copper mineralization were found but these were fairly scarce.

Magnetite was found frequently throughout the basic rock in small scattered crystals. No outcrops of high grade material were found but it would seem plausible that the strong magnetic anomaly must be caused by magnetite concentration at greater depth.

THE SURVEYS

## (a) GEOLOGICAL

Control for the geological survey was obtained from an enlarged copy of aerial photograph B.C. 2061:3 British Columbia Air Photographs and the line grid shown on the accompanying maps. Because of the extremely precipitous topography on the northeast side of Totem mountain some portions of the outcrop areas were not examined in detail. However, where possible the slide rock immediately below the outcrop was examined. Trenching was carried out on the southwest slope of the mountain, samples were taken and susceptibility tests and assays made on them.

## (b) GEOPHYSICAL

The magnetic survey was conducted with an Askania Schmidt-type magnetic balance having a sensitivity of 42 gamma per scale division. Although it was necessary to augment the scale of the instrument with three auxiliary magnets, no off scale readings were encountered. Readings were taken at one hundred foot intervals on the line grid shown on Map No. 1. Pace and compass lines were put in wherever possible with the Askania Instrument. However as it was impossible to keep the tripod of the instrument stationary in the talus areas, a W. and L.E. Gurley Lake Superior type Dip needle having a sensitivity of 200 gamma per degree was used. The vertical component of the magnetic field was measured by taking the readings perpendicular to the

meridian and the results converted to gamma. Positioning of the dip needle and magnetometer traverses was done on an enlarged aerial photograph.

#### RESULTS OF THE SURVEYS

Four maps accompany this report.

- Map No. 1 Shows the results of the magnetic survey on the Totem Claim Group (Scale: 1: 10,000)
- Map No. 2 Shows an interpretation of the magnetic results (Scale: 1: 10,000)
- Map No. 3 Shows an interpretation of the results of the geological survey (Scale: 1:10,000)
- Map No. 4 Shows the grouping of the claims (Scale: 1: 50,000)

Magnetic observations, either Askania or dip needle or both, were taken on all claims of the Totem Group. The location and intensity of the readings are shown on Map No. 1. From these readings the contour pattern shown on Map No. 2 was drawn. The lack of detail traverses northeast of the main ridge did not permit contouring closer than 5000 gamma on the more intense portions of the anomaly. Correlation of the magnetic and geological results indicate that the magnetite rich portion of the basic intrusive is enclosed approximately by 10,000 gamma contour. The most intense reading encountered was at the highest point of the ridge. However, it is thought that the peak of the anomaly lies somewhat east of the main

ridge.

Outcrops were mapped on most of the claims in the Totem Group and on at least four claims in any individual group. Descriptions of the rock encountered appear under General Geology in the preceding sections of this report. Susceptibility tests of some of the basic rock made with a Mount Sopris ~~SA~~ Susceptibility Meter show the following values:

(1)	2050 K
(2)	1740 K
(3)	2100 K
(4)	1974 K
(5)	1860 K

The similarity of these results suggests a relatively uniform dissemination of magnetite in the samples. Crushing and magnetic separation of the same samples yielded between 20 and 30 per cent magnetite. The low susceptibilities of the samples indicate that the anomaly may be caused by a massive body of magnetite at depth, in addition to the basic rock.

### CONCLUSIONS

From the ground investigation it appears that the strong magnetic anomaly must be caused by a magnetic body at greater depth. Owing to the existence of the positive and negative effects recorded both in the airborne detail work and in the ground magnetic surveys, the magnetic body appears to

be of finite character which would rule out its being caused by a large intrusive mass.

While the copper mineralization does not appear significant, it may improve with depth.

Diamond drilling is recommended. The holes should be aimed to reach a depth of some 500 or 600 feet below the maximum of the magnetic anomaly.

Respectfully submitted,

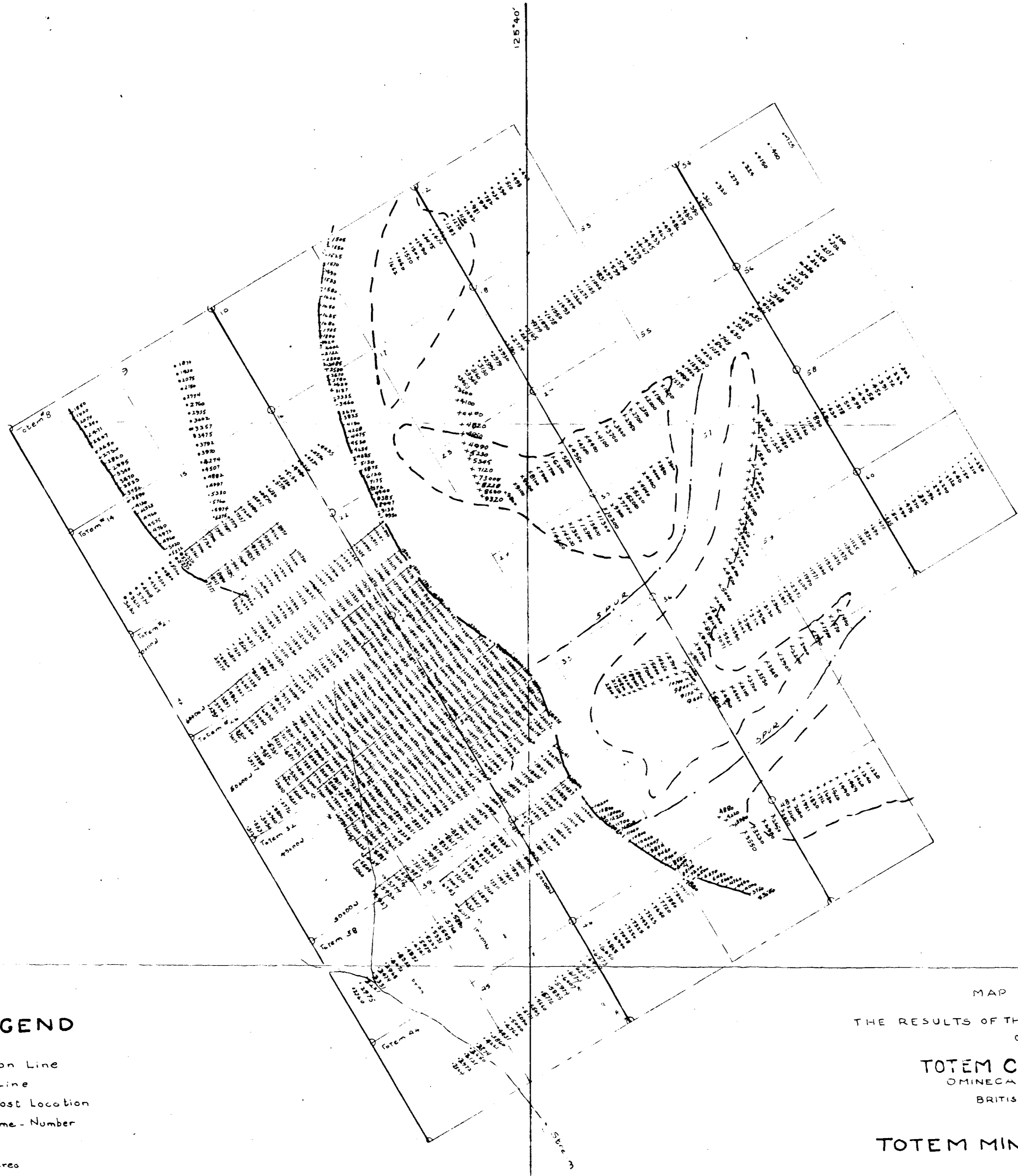
Lundberg Explorations Limited



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Hans Lundberg  
President

September 1958



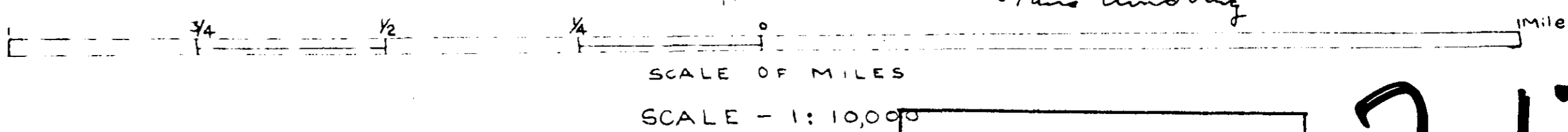
**LEGEND**

- Location Line
- Claim Line
- Claim Post Location
- Claim Name - Number
- TALUS Area
- Ridge
- GAMMA Values on picketed Lines - Askania Magnetometer.
- GAMMA Values - placed Lines - Askania Mag.
- Dip Needle Traverses in precipitous Areas

MAP SHOWING  
 THE RESULTS OF THE MAGNETOMETER SURVEY  
 ON THE  
**TOTEM CLAIM GROUP**  
 OMINECA MINING DIVISION  
 BRITISH COLUMBIA  
 FOR  
**TOTEM MINERALS LIMITED**

To Accompany a Report by  
 Lundberg Explorations Limited  
 TORONTO-CANADA  
 Sept. 1958

*Hans Lundberg*

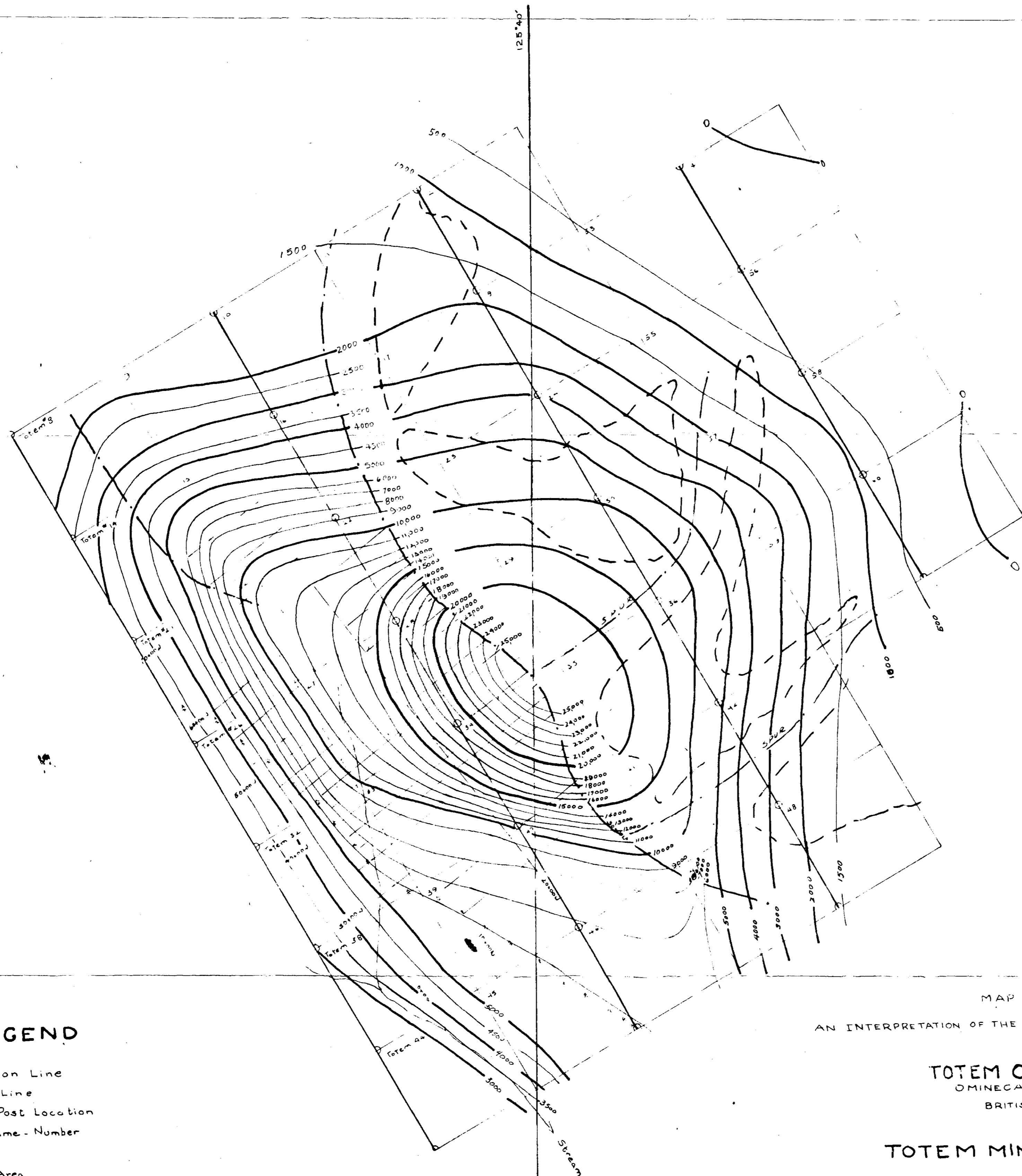


SCALE OF MILES  
 SCALE - 1:10,000

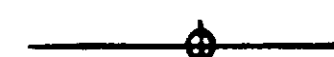

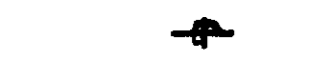




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 MAP No. 1





**LEGEND**

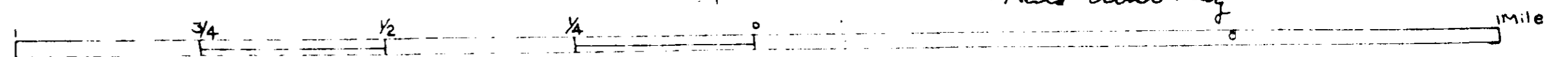
-  - Location Line
-  - Claim Line
-  - Claim Post Location
-  - Claim Name - Number
-  - TALUS Area
-  - Ridge
-  - Magnetic Contours - Values in gamma.

MAP SHOWING  
AN INTERPRETATION OF THE RESULTS OF THE GEOPHYSICAL SURVEY  
ON THE

**TOTEM CLAIM GROUP**  
OMINECA MINING DIVISION  
BRITISH COLUMBIA  
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SCALE OF MILES  
SCALE - 1: 10,000

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56° 5'  
**217**

MAP No. 2



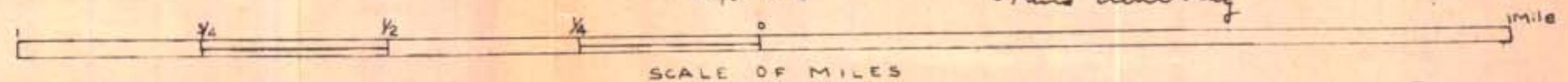
- Geology**
- Outcrop Assumed
- 4 - Syenite-syenodiorite
  - 3 - Weathered dykes
  - 2 - Basic Rocks - diorite, gabbro, biotite gabbro, anorthite
  - 1 - bio-gabbro

- LEGEND**
- Location Line
  - Claim Line
  - Claim Post Location
  - Claim Name - Number
  - Talus Area
  - Fault
  - Geological contact - observed
  - Assumed fault
  - Outcrop boundary
  - Sample Locations

MAP SHOWING  
 AN INTERPRETATION OF THE RESULTS OF THE GEOLOGICAL SURVEY  
 ON THE  
**TOTEM CLAIM GROUP**  
 OMINECA MINING DIVISION  
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SCALE OF MILES  
 SCALE - 1:10,000

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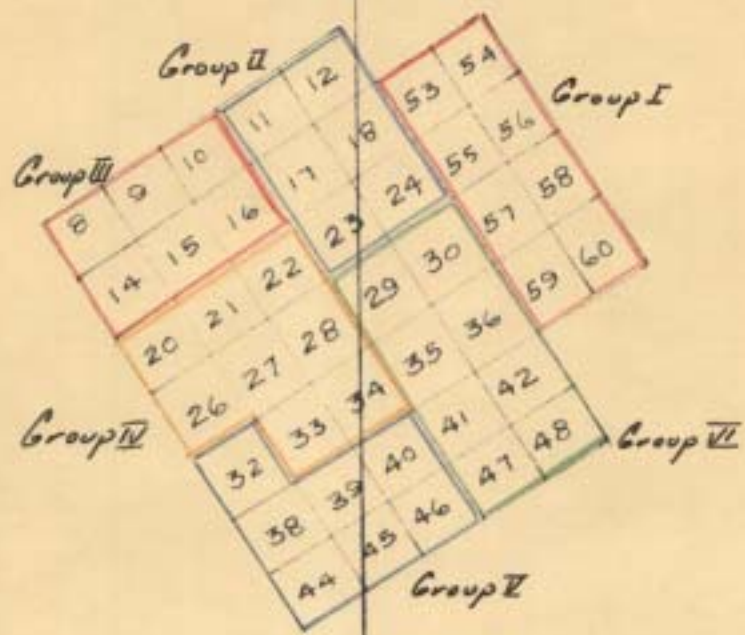
MAP No. 3

56°5'

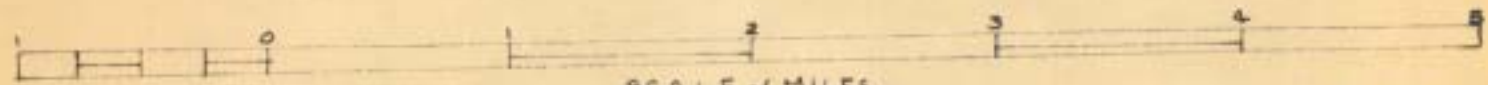
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**217**



TOTEM CLAIMS  
Grouping of Claims



SCALE of MILES  
Scale: 1:50,000

Map No. 4