REPORT ON GROUND MAGNETOMETER SURVEY LANGMUIR TOWNSHIP CLAIMS

INTRODUCTION

A group of claims were staked by the Dominion Gulf Company in Langmuir Township to investigate the structural and geological features causing the aeromagnetic anomaly in the area. The aeromagnetic survey was performed by the Dominion Gulf Company in 1949.

The ground magnetometer survey was performed to provide detailed geophysical data for the interpretation of the area. This survey was carried out during the months of July and August 1951 by a Dominion Gulf Company magnetometer party consisting of R. Hodgins and R. McDonald. The party was supervised and directed by Mr. B. M. Middleton, a company geophysicist.

Magnetometer observations were made at 100-foot intervals along picket lines cut 400 feet apart. Additional readings were made in areas of extreme gradient or where necessary to substantiate anomalous readings. A total of 1,321 stations were read along 21.57 miles of profile.

An Askania magnetometer of the Schmidt-balance type was used in making the survey. The sensitivity setting of the instrument was approximately 25 gammas per scale division.

The contoured magnetometer data and interpretation is presented on a map of the claims at a scale of 1 inch to 400 feet. This map was prepared in the offices of the Dominion Gulf Company by the interpretation staff.

INTERPRETATION

The claim block may be divided into three dissimilar magnetic areas. The central portion is characterized by an extremely complex series of magnetic highs and lows. Outcrops of serpentinized lavas are abundant in this section and confirm the geophysical interpretation. The extremely local magnetic anomalies are no doubt caused by local segregations of magnetite which accompanied the serpentinization.

Surrounding the serpentinized area is a belt of relatively flat magnetic relief corresponding to the pillowed andesites of the area. Apparently these lavas have not been subjected to the intense alteration from hydrothermal solutions, which characterizes the central anomaly zone. As a result, these lavas have a relatively uniform magnetite content, and consequently the magnetic relief is quite flat.

In the south-eastern corner of the claim block (claims P-36532, P-36533 and P-36534) an area of higher magnetic base level, and more continuous magnetic anomalies is underlain by amphibolite and syenite. Since the amphibolite appears to be a contact phase of the syenite it is assumed that the amphibolite has a higher magnetite content than syenite, due to digestion of the lavas.

A diabase dyke has been traced across the area, from a correlation of outcrops and magnetic data. In this case, the magnetite content of the diabase is lower than that of the neighbouring rocks, and as a result the diabase occupies the magnetic troughs. This dyke has been offset by a recent fault in claim P-36525, the movement being east side north, about 125 feet. The fault cannot be traced for any great distance due to the complexity of the magnetics.

A study of the geology and the magnetic data suggests that a lava series has been intruded by syenite. The serpentinized lava of the central anomaly zone is possibly underlain by a syenitic stock. Hydrothermal solutions from the stock may have caused the serpentinization and the segregation of the magnetite which causes the small local anomalies in this section.

J. H. Ratcliffe

JHR:C
Dec. 18/51

Introduction:

This group consists of twenty-five claims - P-36698 and P-36517 to P-36540 inclusive - in the southeastern corner of Langmuir Township, N.W. Cowganda Area, Ontario.

It is situated on the east side of the Nighthawk River, 5 miles south of Carman Bay on Nighthawk Lake and twenty-five miles by boat from the bridge over the Frederick House River on the Timmins to Matheson highway.

It is readily accessible by plane from the air base at South Porcupine only fifteen miles to the northwest. This means of access was used during this season's work.

The property can also be reached by a winter road south from South Porcupine and east across Eldorado and Langmuir Townships to the property of the Northern Barite Development Co. on the west bank of the Nighthawk River.

A system of lines with an east-west baseline and north-south crosslines at 400 foot intervals was started on June 1 under the supervision of B. Escoffery who began detailed mapping a short time later with the assistance of D. Sprague. On July 16, Sprague moved to another area and Escoffery was joined by D. Nowlan and the writer who remained until July 30, 1951.

The outcrops were tied in to the chainage points on the picket lines by means of pace and compass traverses run east or west across the picket lines at one hundred foot intervals. It is very unlikely that any exposures would have been missed.

Summary & Recommendations:

The central portion of the area consists of one large outcrop area occupying almost one fifth of the total area. This is made up mainly of large exposures of basic flows with alternate narrow bands of brown weathering serpentinized rocks and grey weathering antigorite-bearing rocks striking in a northeasterly direction. At its southern end, there are large exposures of unaltered pillow lava striking slightly north of east and dipping steeply to the south.

The ground to the west, north and southwest of this rock area is mainly covered with clay which supports a heavy growth of tag alders and small poplar with some muskeg with the usual spruce and alders. To the northeast there is a large sand plain with scattered small jackpine.

Not far from the southeast corner of the large outcrop area, there are large exposures of an east-west trending amphibolite which is thought to be a marginal phase of a hornblende syenite. As it gives dip needle readings of from thirty to fifty-five degrees, it can be readily assumed to be the cause of the airborne magnetic anomaly directly over it.

Minor amounts of asbestos cross fibre up to $\frac{1}{4}$" in length were noted in the central section.

Minor sulphide mineralization was also found in the serpentinized area about five hundred feet north of the contact with the unaltered pillow lava. One sample assayed for gold and silver ran nil and numerous pieces checked for nickel with the dimethylglyoxime test failed to show any although a spectrographic analysis of the best looking

material showed a nickel and chromium content ranging between 0.05% and 0.5%.

Since the mineralization is quite limited and best of it has only a very low nickel content further work is not recommended.

Topography:

The relief in the area is very low with the difference in elevation between the highest and lowest points probably less than fifty feet.

The central portion of the area is one large northerly trending outcrop area with large exposures of serpentinized lavas and unaltered pillow lavas.

This is bounded on the west by a clay plain overgrown with second growth poplar and alders with a small amount of spruce muskeg. It is drained by intermittent creeks flowing mainly westward through their deeply cut gullies in the clay into the Nighthawk River which flows northwesterly through the southwestern corner.

On the east and north there are extensive areas of swampy ground overgrown with alders and on the northeast a sandplain with jackpine.

Description of formations:

Diabase:

Diabase is found only in northwesterly striking dike up to fifty feet wide cutting through the serpentinized flows in claims P-36525 and P-36520. It is apparently offset by a northeasterly striking fault which shows on the surface as a steep scarp up to ten feet high. The northern section has moved one hundred and forty- feet to the southwest.

The rock is a fine grained, dark grey gabbro with a diabase texture in part. In places it resembles a diorite.

Its age is probably Keweenawan.

Feldspar Porphyry:

Feldspar porphyry was noted only in two small dikes in the central part of the claims cutting through the serpentinized flows in a direction a few degrees north of east.

It is composed of feldspar crystals up to 1/8" in length in a fine-grained reddish groundmass.

Syenite & Amphibolite:

These are treated together as the amphibolite appeared to be merely a marginal phase of the syenite intrusive where both were well exposed on the large hill at the Barite Mine just west of the claim group with the amphibolite along the northern flank of the syenite.

The amphibolite forms a large outcrop area on claim P-36532 in the southern part of the group. It appears to have an east-west strike but both contacts are in low ground and its shape is poorly defined.

It is a dark green to black, medium to coarse grained rock composed mainly of hornblende.

Locally it gives dip needle readings as high as 56 degrees against the zero to ten degrees of the pillow lavas. This confirms the airborne magnetometer high in that area and locates the peak as directly over the amphibolite exposures.

The syenite, a reddish hornblende type, is exposed in a small area to the southwest of the amphibolite just south of the westward projection of the amphibolite on its assumed strike. This coincides with the syenite-amphibolite relationship on the hill at the Barite Mine and leads to the conclusion that the area south of the amphibolite exposures must be underlain by syenite.

Peridotite:

There is one small poorly defined mass of peridotite in the northwestern corner of claim P-36524 fairly close to the center of the claim block.

It is a fine-grained dark green highly serpentinized rock. Itweathers brown except locally, where it is bleached and white weathering. A small quantity of cross-fibre asbestos up to $\frac{1}{4}$" in length has developed.

Andesite:

In the southwestern claims there are many large bare exposures of a fresh appearing pillowed andesite. The pillow development is only fair and reliable top determinations could not be made. The pillows strike approximately N 60° E and dip steeply to the south.

To the north of the pillow lavas, there are numerous large closely spaced exposures of highly serpentinized flows, with no development of pillow structures, which may be more basic in composition than andesite.

They are made up of alternate bands of grey weathering rock with a prominent development of antigorite crystals and a massive brown weathering rock which appears to be more highly serpentinized. Both are fine-grained and dark green on a fresh surface. The bands range from three to six feet in width although there are occasionally much wider ones of the antigorite bearing type.

A few of the massive bands have sharp contacts suggesting that they might be sills of serpentinized peridotite.

Structural Features

The greater part of the claim group is underlain by a series of lava flows striking approximately north sixty east and dipping steeply to the south. Only a small portion of these at the south end contain pillows and as these are not too well developed reliable top determinations cannot be made. Consequently whether the flows are erect or overturned is not known.

The angle between the strike of the pillows and the strike of the contact between the pillowed and serpentinized types of flows suggests that there is a strike fault in the southeast corner of claim P-36522 running along the contact.

The movement along it is such that it has resulted in an apparent horizontal displacement of over a quarter mile in which the southeast side has moved relatively to the northeast.

A fault with a closely parallel strike and the same direction (but not amount) of movement has offset a diabase dike in the southeast corner of claim P-36525.

As the latter (and probably also the former)is post-diabase in age it is not

likely to have been an influence in ore deposition and is not a favourable indication.

Economic Possibilities.

Small quantities of good asbestos fibre from pencil point width to one-quarter inch size have developed in the peridotite and some of the highly serpentinized flow material. However, there is nothing to indicate that there may be a fair-sized body of this material on the group.

A small concentration of sulphide was checked for gold and silver by assay and for nickel chemically with negative results.

However, a spectrographic analysis showed a content of nickel and chromium somewhere in the range from .05 to .5 percent in a grab of the best looking material.

It is not thought that the ground is worth further work.

/IT:

'C. Mc.'

C. McAulay.

ABANDONED POWER LINE

LAKE

MIXED BUSH

JACKPINE

POPLAR & ALDER

P-36527

P-36526

P-36531

LOGGING ROADS

SPRUCE

TEABUSH

P-36519

P-36528

P-36530

MIXED BUSH

ALDERS

OLD CAMPSITE

SPRUCE

TEABUSH

BASE LINE

P-36538

P-36536

P-36518

P-36524

P-36521

P-36529

P-36698

ALDERS

POPLAR & ALDER

SPRUCE

ALDER

SPRUCE

JACKPINE

P-36537

P-36535

P-36517

P-36522

P-36523

P-36539

P-36540

ALDERS

NIGHTHAWK RIVER

ABANDONED POWER LINE

P-36532

P-36533

P-36534

SHAW

CARMAN

THOMAS

ELDORADO

LANGMUIR

BLACKSTOCK

DOUGLAS

FALLON

FASKEN

INDEX MAP
1 INCH = 2 MILES

LEGEND

7 Diabase
6 Feldspar Porphyry
5 Syenite
4 Serpentinization
3 Amphibolite
2 Peridotite
1 Andesite

DOMINION GULF COMPANY

DETAILED GEOLOGY

LANGMUIR TWP. CLAIMS

GROUP I

LANGMUIR TWP. - PROVINCE OF ONTARIO

SCALE : 1"=400' AUG. 5, 1951

42A07SW0003 63.273 LANGMUIR

200

TIE LINE

BASE LINE

TIE LINE

P-36538 P-36536 P-36518 P-36521 P-36524 P-36527 P-36526 P-36531

P-36519 P-36520 P-36525 P-36528 P-36530

P-36537 P-36535 P-36517 P-36522 P-36523 P-36539 P-36540

P-36533 P-36534 P-36698

SERPENTINIZED LAVA

ANDESITE

ANDESITE

AMPHIBOLITE

AMPHIBOLITE

SYENITE

Nighthawk River

BARITE MINE CAMP.

DOMINION GULF COMPANY

GROUND MAGNETOMETER SURVEY

LANGMUIR TWP. CLAIMS

GROUP I

LANGMUIR TWP.-PROVINCE OF ONTARIO

SCALE: 1"=400' AUG. 30, 1951.

CONTOUR INTERVAL = 1000 $

CONTOURED BY J. WILSON