



REPORT ON MAGNETOMET
GHOST MOUNTAIN GROUP
TOWNSHIPS, LARDER LAKE MINING DIVISION, PROVINCE OF ONTARIO.

Introduction:

The following report describes the magnetometer survey recently completed on the Canadian Johns-Manville Company Limited claims located in Harker and Lamplugh Townships, Larder Lake Mining Division, Province of Ontario.

Cutting of picket lines on the group of claims was contracted to Jean Alix Company Limited of Val d'Or, Quebec. Picket lines were out at right angles to a base line located along the boundary line between Harker and Lamplugh Townships and were established at 200 foot intervals. Pickets were fixed at 50 foot intervals along these offset lines by chaining. This phase of the program was carried out by L. Allison and R. Kaltwasser, fieldmen for Canadian Johns-Manville Company Limited.

Magnetometer surveying was conducted by the writer and W. Petruk, geologists with Canadian Johns-Manville Company Limited. L. Allison and R. Kaltwasser acted as assistants during the course of the survey. Readings were recorded at 25 or 50 foot intervals along the offset lines using a Sharpe's A-2 type instrument - spacing was dependent upon the amount of detail required.

Geological mapping and prospecting of the ultrabasic-basic contact zone was carried out by W. Petruk with the assistance of R. Kaltwasser during the period May 18th - 22nd, 1960. The results of this work are shown on the accompanying Geo-Magnetic Contour Plan.

Supervision and interpretation of this work was the responsibility of the writer, senior geologist with Canadian Johns-Manville Company Limited.

Property:

The claims surveyed are located in the north-central and south-central parts of Harker and Lamplugh Townships, respectively, in the Larder Lake Mining Division and are numbered as follows: -

L-70975 - Lamplugh Township
L-70956-57-58-59-60-61-62- Harker Township.



32D12SW0118 63.1068 HARKER

010C

Table of Contents

Introduction	Page 1
Property	1, 2
Location and Accessibility	2
Topography	2
Previous Work	2, 3
Line Cutting	3, 4
General Geology	4
Geology of the Claims Group	4, 5
Structure	5, 6
Economic Geology	6
Magnetometer Survey	6, 7
Interpretation	7, 8, 9, 10
Conclusions and Recommendations	10

Detailed Assessment Report

- 0 - 0 -

Geomagnetic Contour Plan

Scale 1" = 200'

- 0 - 0 -

These eight claims comprise approximately 320 acres.

Note that the entire group includes thirteen claims, however, two (L-70987 - 88) are being allowed to lapse while assessment work is not due on the other three (L-72191-92-93) at this time.

Location and Accessibility:

The property is located in the north-central and south-central sections of Harker and Lamplugh Townships, respectively, in the Larder Lake Mining Division, approximately thirty-two miles east of the Town of Matheson and immediately north of Highway No. 101 (Matheson-Duparquet). This highway has now been paved to within eight miles of the claims group and provides ready access. Note that claim L-70975 is situated in Lamplugh Township, the remaining seven claims lying in Harker Township to the south.

Topography:

Relief is extreme on this claims group. Elevations range from a low of 870 feet at the Ghost River beside Highway 101 to a high of 1,576 feet at the Ghost Mountain fire tower. This mountain, part of the Ghost Range, rises approximately 600 feet above the general level and its maximum height is parallel to and just north of the boundary between Harker and Lamplugh Townships.

Rock outcrops and steep scarps of Ghost Mountain occur on the northern section of the claims which is lightly to moderately timbered with birch, alders, poplar, scattered spruce and pine. The section between the base of the mountain and Highway 101 is drained by several small streams, located in deeply eroded gulleys. These streams flow westwards to the Ghost River which drains to the north to Abitibi Lake. This section is timbered with mature pine, spruce, balsam and poplar. Alders grow in profusion along the narrow streams.

Previous Work:

Reconnaissance geological mapping was carried out in this area in 1918 by C. W. Knight and the results of his work are shown in Ontario Department of Mines Volume XXVII, Part II, 1919 - Abitibi - Night Hawk Gold Area.

Detailed geological mapping of Harker Township was completed in 1949 by J. Satterly and the results are shown in Ontario Department of Mines Volume LX, Part VII, 1951 - Geology of Harker Township and on the accompanying 1000 scale map - No. 1951-4.

Limited reconnaissance dip needle surveying was carried out by fieldmen from this Company during 1949 - mainly along roads, trails and some north-south claim lines.

On June 2nd and 3rd, 1959, the eight claims discussed in this report were staked by L. Allison and R. Kaltwasser on behalf of this Company and same were recorded on June 26th. All interest in the claims was transferred to Canadian Johns-Manville Company Limited on June 10th, 1960.

Line Cuttings:

On February 17th, 1960, a base line trending west was turned off from the steel survey pin at the No. 4 Post of claim L-55172 on the Harker-Lamplugh Township boundary. Note that the three mile post for the Townships is also located at this site. The base line was cut to the west for a length of 6800 feet. Right-angled offset lines were established at 200 foot intervals along this base line and were cut both north and south as required to cover the claims group. Pickets with numbered locations were fixed every fifty feet along these offset lines by chainage. Note that extreme care was used in chaining down the slope of the Mountain to increase the accuracy of the final plan. Also in this regard, picket lines were tied in by chainage along the survey line to the north of Hofmann claims L-43932 and 33 and also along the tie line shown immediately to the north of Highway 101.

Line cutting was contracted to Jean Alix Company Limited of Val d'Or, Quebec, while the chaining was carried out by L. Allison and R. Kaltwasser, fieldmen for Canadian Johns-Manville Company Limited.

A total of 16.78 miles of picket lines and base line was cut during the

course of this program which was completed during the period February 17th to March 24th, 1960.

General Geology:

The geology of the area, Harker Township, was mapped by J. Satterly and assistants during the late 1940's and the results are shown on Map No. 1951-4, which accompanies the geological report on Harker Township, issued by the Ontario Department of Mines. In order to show the general geology of region in this report, the following "Table of Formations" has been included and was taken directly from the Sixtieth Annual Report of the Ontario Department of Mines, being Vol. LX, Part VII, 1951, entitled "Geology of Harker Township" and compiled by J. Satterly.

Table of Formations

GENOZOIC

Recent:	Peat
Pleistocene:	Sand, gravel, boulders; boulder clay, varved clay. Great unconformity

PRECAMBRIAN

Keweenaw (?) :	Olivine diabase Intrusive contact
Metaohewan (?) :	Quartz diabase, diabase. Intrusive contact
Algoman (?) :	Syenite, feldspar porphyry, lamprophyre. Intrusive contact.
Haileyburian (?) :	Diabase, gabbro, peridotite and dunite (serpentinized), pyroxenite Intrusive contact.
Volcanics:	(Rhyolite: fragmental lava, porphyritic rhyolite (Andesite, basalt; pillow lava, diabasic lava, (spherulitic lava, fragmental lava, tuff and chert; (talc-chlorite schist, carbonate-chlorite schist. Faulted (?) contact
Sediments:	Greywacke, arkose, iron formation.

Geology of the Claims Group:

The area surrounding Ghost Mountain is underlain by an assemblage of basic to acidic lavas with interbedded sediments. This assemblage is intruded by the Ghost Range basic to ultrabasic rocks which form an east-west row of hills in Harker, Lamplugh and Frecheville Townships. Ghost Mountain, occurring in Lamplugh and Harker Townships, rises about 600 feet above the

level of Highway 101, which is about one mile to the south.

The south face of Ghost Mountain, which is in Harker Township, was mapped and prospected for asbestos by members of Canadian Johns-Manville Company Limited in May 1960 by using picket lines spaced at 200 foot intervals for control.

The top portion of Ghost Mountain is underlain by a gabbro which Satterly (1951) identified as enstatite diabase. It is a massive, medium grained, pale green rock, containing about 50% small to large pale green crystals of enstatite. Microscopically this rock is a typical diabase (Satterly 1951).

The enstatite diabase is underlain by a greenish black, brown weathering, highly serpentinized, weakly carbonated peridotite, which outcrops along the south face of Ghost Mountain and dips 45° N. E. The pyroxene content and degree of carbonatization of the serpentinized peridotite increases towards the enstatite diabase - peridotite contact, and occasionally the serpentinized peridotite is a serpentinized pyroxene-rich peridotite near the contact.

The writer found that a narrow, fine grained diabase occurs between the enstatite diabase and the serpentinized peridotite, and is separated from the enstatite diabase by a 30 foot wide layer of serpentinized peridotite at 41400W, a 30 foot layer of pyroxenite at 38400W, and a 5 foot layer of pyroxenite at 54450W.

The pyroxenite, forming a discontinuous layer between the enstatite diabase and the diabasic sill, was observed at 38400W, 54450W and 55450W. It is a reddish-brown weathering, medium grained, black, moderately serpentinized rock that is composed nearly essentially of pyroxene crystals.

Structure:

The pyroxene crystals in both the enstatite diabase and the serp-

entized peridotite are weakly foliated parallel to the contact at N66°W and dip 45° N. E.

The serpentized peridotite is moderately slickensided and slightly fractured at the peridotite-enstatite diabase contact suggesting a slight movement. However, west of 54+00W the fracturing is more intense and the faulting along the contact is more pronounced.

Economic Geology:

Lenticular fibre veins parallel to the structure of the rock were found along the base of Ghost Mountain between 38+00W and 50+00W. Within this zone thread veins are present at 50 to 100 feet below the peridotite-diabase contact, and their size and frequency increase toward the south where the serpentized peridotite is covered by overburden and boulders. At many points along the base of this outcrop, a 10 foot section may contain 1 at an 1/8th and 4 at a 1/16th.

Thirty feet south of the Township line at 55+50W a two-foot wide diabase sill lying between the serpentized peridotite and pyroxenite contains disseminated pyrrhotite and traces of chalcopyrite.

Magnetometer Survey:

A magnetometer survey was conducted over the Ghost Mountain Group of claims by W. Petruk and the writer with the assistance of L. Allison and R. Kaltwasser. This work was carried out during the period March 21st to April 18th, 1960.

Magnetic readings were recorded using two Sharpe's A-2 type instruments (C. J. M. Nos. 166 and 219, each having a sensitivity or scale constant of 20.00 gammas per scale division). Calibration of these instruments and the auxiliary magnets was completed shortly before commencement of this survey.

The value of Base Control Station No. 1, located at 31+50 South

on picket line 36400 West, was corrected to Munro Mine Base Station No. 2 (Munro-Beatty Sill) and was given a fixed value of 965 gammas. Consequently, with this correction, a gamma value of 1220 corresponds to an absolute value of 57,599 ⁺15 gammas as established at the Government Magnetic Base Station located at Matheson, Ontario.

During the course of the survey, the base control station was observed at regular intervals (four observations per day) as a check on the working condition of the instrument and to record the daily diurnal variation. Stations were spaced at 25 or 50 foot intervals along the picket lines depending upon the magnetic intensity of the underlying formations.

A total of 2207 stations was recorded on the Ghost Mountain Group of claims during the course of the magnetometer survey.

The results of the magnetometer survey are depicted on the accompanying plan on a scale of 1 inch equals 200 feet. Contour lines of equal magnetic intensity have been drawn at 500 gamma intervals from 1000 to 6000. The intervals has been changed to 1000 gammas for readings exceeding 6000 gammas in value.

Interpretation:

The interpretation has been based upon a study of the geomagnetic plan, previous work in the area, (diamond drilling, geophysical and geological surveys on adjoining claims), regional geology and the aerial data.

Magnetic results indicate the occurrence of a large sill-like band of ultrabasic rocks striking across the claims group. The intrusive trends in an east-west direction on the Hofmann claims (L-43930 - 32-33) but the strike is altered to N30°W beyond the cross fault to the west of the Hofmann boundary. Due to strong cross faulting the ultrabasic strikes in a westerly direction on claims L-70960 and 70975. The dip throughout is extremely consistent and varies between 40° and 50° to the north; however, a relatively

steep dip is indicated between lines 56400W to 64400W immediately south of the Harker - Lamplugh Townships boundary. Widths vary from 50 to 900 feet.

Readings over the intrusive range from 2500 to slightly over 11,000 gammas. This variation in the magnetic intensity over the ultrabasic is due to a series of factors. Alteration, mainly talc-carbonate, greatly reduces the magnetic susceptibility and complicates the distinction between altered serpentized peridotite and the surrounding rocks (i.e. gabbro, diorite, basic volcanics etc.). Depth of overburden has an appreciable affect - depths of 60 to 100 feet may effectively mask a weakly to moderately magnetic ultrabasic zone. In this regard detailed topography is of major importance in interpreting magnetic results. Structure also plays a large part. Dip changes in different fault blocks are difficult to perceive without a certain amount of surface mapping or diamond drilling.

In this instance, detailed mapping of the ultrabasic - basic contact shows strong shearing and a high magnetite content which at least partially accounts for the series of magnetic "highs" occurring along same. The south (ultrabasic - volcanic) contact is masked by overburden, possibly 50 to 100 feet in depth, and this factor, combined with the 45° north dip of the zone accounts for the lower readings along this edge of the sill.

The magnetic intensities recorded over the diabase vary from 7000 gammas at the ultrabasic contact to 1600 gammas several hundred feet north of same. As shown by the magnetic contours this decrease is extremely regular due to the consistent dip (-45° North) of the ultrabasic sill. The exception to this, as previously noted, is between lines 56400W and 64400W where the sill dips vertically.

Intermediate to basic lavas are in contact with the south edge of the ultrabasic on the Hofmann claims and on all of claim L-70962 and a large portion of L-70961. Magnetic intensities over these lavas range from 1000 to

2500 gammas. In the western portion of the claims group, acidic lavas (mainly rhyolite) are in contact with the ultrabasic sill. These lavas extend eastwards to the south of the andesite on claims L-70961 - 62. Same are shown in drill holes put down to the east of the accompanying geomagnetic plan. Magnetic intensities over the rhyolite range from 75 to 1000 gammas. Geological mapping and diamond drill results from adjacent properties to the east and west have been used to aid in the interpretation of the south contact rock formations.

The ultrabasic zone delineated on the accompanying plan is part of the south limb of the Ghost Range Syncline of basic and ultrabasic rocks. (Same is described by Satterly in his reports on Harker and Holloway Townships) This complex is highly faulted and folded throughout. Several strong cross structures have been outlined on the accompanying plan on the basis of topographic, magnetic and geologic information. In the eastern portion of the claims groups, the three cross faults strike slightly east of north and are sharply defined both magnetically and topographically. To the west, the cross structures strike slightly west of north and their location has been based upon magnetic, topographic and geologic data. These cross structures probably stem from the Destor-Porcupine Fault Zone which strikes in a general easterly direction and is located to the south of Highway 101.

Longitudinal faulting, which is generally extremely difficult to delineate on the basis of magnetic and topographic information, has been indicated along the basic-ultrabasic contact between picket lines 36400W and 56400 West by geological mapping. Other parallel structures may occur within the ultrabasic sill to the south of this contact fault zone.

Please note that the magnetic data on claims L-43930 - 32 - 33 was obtained from the Ontario Department of Mines assessment work records at Timmins and the readings were corrected to fit the C. J. M. base. This information has been added to the Geomagnetic Contour Plan of the Ghost Mountain

claims to aid in the interpretation and to clarify the potential of claims L-70956 - 57. Diamond drill hole locations and logs shown on the accompanying plan were also obtained from the Ontario Department of Mines at Timmins.

Conclusions and Recommendations:

Magnetic surveying of the Ghost Mountain Group of claims has delineated a sizeable sill of highly folded and faulted ultrabasic rocks.

Due to the occurrence of several extremely interesting zones of magnetic "highs" within the ultrabasic sill and to known conditions to both the east and west of this claims group, a program of diamond drilling is definitely warranted as the next phase of this exploration program.

June 14th, 1960.

W. PETRUK per
W. Petruk
F. J. Eveleigh
F. J. Eveleigh.