REPORT ON A GEOLOGICAL SURVEY

OF

MATTAWA VANADIUM - TITANIUM - IRON DEPOSIT

FOR

QUESTMONT MINES LTD. PAPINEAU TWP. ONTARIO

BY

WILLIAM G. TIMMINS & ALEX H. CLARK

Claim numbers E.O. 346975 to 79 inclusive
REPORT ON GEOLOGICAL SURVEY

OF

MATTAWA VANADIUM-TITANIUM-IRON DEPOSIT

FOR

QUESTMONT MINES LTD. PAPINEAU TWP. ONT.

SUMMARY

The report covers the interpretation of a geological survey of 5 claims covering a deposit of vanadium bearing titaniferous magnetite.

A number of separate lenses of magnetic ore have been outlined in an anomalous area which extends for approximately 2,300 feet.

Calculations on the entire orebody estimate an approximate tonnage of 8.8 million tons to a depth of 880 feet.

Magnetic ore-bodies are absent over the remainder of the property. A feasibility study is recommended to determine the economics of placing this property into production as a supplier of heavy aggregates for the oil industry.

INTRODUCTION

The existence of lenses of titaniferous magnetite in the Precambrian gneisses of Papineau Township has been known for many years. During World War II the deposits were examined by T.L. Tanton, G. Shaw, E.D. Kindle and A.F. Buckham of the Geological Survey of Canada, and by M.E. Hurst, J. Satterly and W. D. Harding of the Ontario Department of Mines.

The property has been held by a number of individuals and mining companies which include Franc Joubin in 1956, Canus Petroleum, Prospector's Airways, Creelman to 1964, Noranda Exploration and Union Carbide Ltd.

Ore from the deposit was shipped to the Bureau of Mines in Ottawa for analysis and metallurgical tests. It was established that a concentrate could be obtained which contained a fairly high percentage of vanadium and titanium. It has also been established that the magnetic ore is amenable as a heavy or fine aggregate in the oil industry.

The present report covers the interpretation of a geological survey, carried out on a group of 5 claims on which are located the deposits mentioned above. The purpose of the survey was to determine the extent and delineate the known orebodies in preparation for a feasibility study.
LOCATION AND ACCESS

The property lies 7 miles southwest of Mattawa, a town on the Ottawa River. A branch of the Canadian Pacific Railway, and Provincial Highway No. 17 pass through the town.

The claims may be reached by a good secondary highway which passes within two miles of the property and then by a good forest access road which crosses immediately over the centre of the ore body. This road would require rerouting if the property is to go into production.

The HYDRO - ELECTRIC POWER COMMISSION maintains a large generating dam some 8 miles up-river from Mattawa and as a result, ample amounts of power is available.

GENERAL GEOLOGY

Since the area of this claim block is largely covered by overburden, the majority of bedrock exposures are primarily due to surface scrapings by bulldozers either for geological purposes or logging equipment.

The bedrock of the area consists of Grenville gneisses of two distinctive types; a massive feldspar hornblende gneiss occurring to the north of these deposits and a banded paragneiss occurring to the south. The former is possibly better described as a hornblende-biotite gneiss with interlayers of feldspathic gneiss and calc-silicate gneiss occasionally accompanied by kyanite-biotite-plagioclase gneiss. The latter may be described as muscovitic and quartzose gneiss with interlayers of ortho-quartzite, calc-silicate gneiss, biotite gneiss and minor interlayers of amphibolite, garnet amphibolite, biotite-garnet amphibolite and rarely interlayered marble.

The known magnetite bodies lie close to the contact of the two rock types, in the massive gneisses. The centre of the ore zones run up to 95% iron and the grades decrease to either side down to 5% over an average width of 36 feet. The middle 15 feet of all zones in the area averages 48% total iron. The Vanadium is present in the form of Coulsonite, FeV$_2$O$_3$, a dark colored oxide of vanadium and iron. The titanium is present in the form of Ilmenite, TiO$_2$ and averages 10.5% throughout the ore-bodies.

The structure of the gneisses appears to be highly complex, the trend of the foliation varying considerably in different parts of the property.

The attitude of these ore zones is almost vertical and the dimensions are as follows: 2,300 feet by 36 feet by 880 feet. The specific gravity on an average runs 4.4 to 1.
GENERAL INTERPRETATION

A zone of highly magnetic intensity has been located with perimeters defined and grade and quantity of certain minerals, economic or otherwise has been established. This was accomplished through the use of grid lines cut at 100 foot intervals over the main showing area and 400 foot intervals over the remainder of the property. No less than 40 trenches have been dug into the main showings and as a result the geology of the bedrock in this area is clearly obvious although complicated. A lack of information exists on the outer extremities of the claim block due to overburden, however, several magnetic surveys indicate that this primary ore body is the only one of its kind in Papineau Township. For all intents and purposes there are three distinct types of rock on this property including the high grade, almost pure iron.

ECONOMIC POSSIBILITIES

Production of a Magnetite bearing Vanadium concentrate.

(a) The magnetic concentrate would run about 2.5% V₂O₅ according to government tests. Department of Mines tests show that the ilmenite will retain in the tailings. It has not been concluded yet as to the percentage recovery of Vanadium or on possible recovery of the Ilmenite from tailings, however, we know that the titania in the magnetic concentrate is not above .2% TiO₂.

I think the only possibility of an economic operation would be in the disposal of a 65 - 70% magnetite concentrate with payment for most of the vanadium content. If an ilmenite circuit can extract the ilmenite from the non-magnetic tailings this would be marketed separately and I would expect the vanadium of this to be extremely low.

(b) The production of a heavy aggregate in coarse and fine form appears to be an ideal market for the iron ore on this property. As more oil is located offshore, an ever increasing demand is appearing for suitable heavy aggregates. Since the specific gravity of this material can be increased through the use of a magnetic separator, up to 88% of the available 1.5 million tons which are open pitable could be marketed. Transportation costs are the only foreseeable problem in this approach.
Type of Survey: Geological

Township or Area: Papineau

Claim holder(s): Alex H. Clark Jr., Licence D-13952
213 - 475 Howe St, Vancouver, B.C.

Address: 310 - 475 Howe St, Vancouver, B.C.

Covering Dates of Survey: May 1st to 11, 1974, Sept. 29 & 30/75
(linecutting to office)

Total Miles of Line cut: eight (8)

SPECIAL PROVISIONS CREDITS REQUESTED

Geophysical CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.
ENTER 20 days for each additional survey using same grid.

Geological: 20

Radiometric

DAYS per claim

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer
Electromagnetic
Radiometric

(enter days per claim)

DATE: Oct. 7, 1975

SIGNATURE: [Signature]

Author of Report or Agent

PROJECTS SECTION

Res. Geol. Qualifications: 2.257

Previous Surveys

Checked by: date

GEOLOGICAL BRANCH

Approved by: date

GEOLOGICAL BRANCH

Approved by: date

MINING CLAIMS TRAVERSED

List numerically

<table>
<thead>
<tr>
<th>Claim</th>
<th>Prefix (number)</th>
<th>Credit</th>
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<tbody>
<tr>
<td>E.O. 346975</td>
<td>3/4</td>
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<tr>
<td>E.O. 346976</td>
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<td>E.O. 346978</td>
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TOTAL CLAIMS: 5
**GEOPHYSICAL TECHNICAL DATA**

**GROUND SURVEYS**

<table>
<thead>
<tr>
<th>Number of Stations</th>
<th>Number of Readings</th>
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<table>
<thead>
<tr>
<th>Station interval</th>
<th>Line spacing</th>
<th>Profile scale or Contour intervals</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(specify for each type of survey)</td>
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</tbody>
</table>

**MAGNETIC**

- **Instrument**
- **Accuracy - Scale constant**
- **Diurnal correction method**
- **Base station location**

**ELECTROMAGNETIC**

- **Instrument**
- **Coil configuration**
- **Coil separation**
- **Accuracy**
- **Method:**
  - Fixed transmitter
  - Shoot back
  - In line
  - Parallel line
- **Frequency**
- **Parameters measured**

**GRAVITY**

- **Instrument**
- **Scale constant**
- **Corrections made**
- **Base station value and location**
- **Elevation accuracy**

**INDUCED POLARIZATION – RESISTIVITY**

- **Instrument**
- **Time domain**
- **Frequency domain**
- **Frequency**
- **Range**
- **Power**
- **Electrode array**
- **Electrode spacing**
- **Type of electrode**