

O T T A W A

September 5th, 1941.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1086.

Magnetic Removal of Barren Magnetite
from the Mill Feed of Wood Cadillac Mines
Limited, Cadillac, Quebec.

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Shipment:

Five drums of mill feed ore, total weight 966 pounds, were received on May 6th, 1941, from J. E. Jerome, Manager, Wood Cadillac Mines Limited, Cadillac, Quebec.

Sampling and Analysis:

The shipment as received was sampled for assay using Jones riffles, with no additional crushing. The head sample so cut out gave the following assay:

Gold - 0.135 oz./ton.

Experimental Tests:

The large-scale tests were run on the Stearns Milwaukee drum separator and the Ball-Norton type separator. The small-scale tests were run on the Davis tube separator.

Details of Tests:

Test No. 1.

In this test approximately 100 pounds of the mill feed ore was passed first over the Milwaukee drum separator at 10.0 amperes, to give the 1st magnetic concentrate; then the tailings were passed over the Ball-Norton separator, to give the 2nd magnetic concentrate and the tailing.

Results:

<u>Product</u>	: Weight, : per : cent	: Assay, : Au, : oz./ton	: Distribution : of gold, : per cent
1st magnetic conc.♦	: 1.44	0.16	1.79
2nd magnetic conc.♦♦	: 0.95	0.16	1.21
Tailing	: 97.61	0.125	97.00
Head	: 100.00	0.126#	100.00

- ♦ Run at 10.0 amperes.
- ♦♦ Run at 2.0 amperes.
- # Calculated.

Test No. 2.

Owing to the small percentage weight of magnetics obtained in Test No. 1, a sample of the ore was crushed all minus 14 mesh and passed through the Davis tube separator

(Test No. 2, cont'd) -

to determine, if possible, the total amount of magnetics present.

Results:

<u>Product</u>	Weight, per cent	Assay, Au, oz./ton	Distribution of gold, per cent
Magnetic conc.	2.47	0.08	1.12
Tailing	97.53	0.18	98.98
Head	100.00	0.178 [*]	100.00

* Calculated.

Test No. 3.

A further test on a 180-pound sample of the ore, which was screened to give three products, plus 3/8 inch, minus 3/8 inch plus 6 mesh, and minus 6 mesh, was run on the Milwaukee drum separator to give the following results:

<u>Product</u>	Weight, per cent		Assay, Au, oz./ton	Distribution of gold, per cent	
	Total	Fraction	Total	Total	Fraction
<u>Plus 3/8 inch</u>					
Head	7.23	100.00	0.089 [*]	31.90 [*]	100.00
Magnetics ^{**}		0.99	0.06		0.66
Non-magnetics		99.01	0.09		99.44
<u>-3/8 inch +6 mesh</u>					
Head	55.47	100.00	0.061 [*]	21.86 [*]	100.00
Magnetics ^{**}		1.74	0.10		2.85
Non-magnetics		98.26	0.06		97.15
<u>-6 mesh</u>					
Head	37.30	100.00	0.129 [*]	46.24 [*]	100.00
Magnetics ^{**}		2.58	0.08		1.60
Non-magnetics		97.42	0.13		98.40

* Calculated.

** Run at 9.6 amperes.

Test No. 4.

Approximately 300 pounds of mill feed ore was passed twice over a large Ball-Norton type separator where a higher amperage could be maintained. The current at the first pass was 14.5 amperes and at the second was 13.7 amperes.

Results:

<u>Product</u>	: Weight, : : per : : cent :	: Assay, : : Au, : : per cent :	: Distribution : : of gold, : : per cent :
1st magnetic conc. *	: 0.73	0.02	0.15
2nd magnetic conc. **	: 0.21	0.02	0.04
Tailing	: 99.06	0.10	99.81
Head	: 100.00	0.099#	100.00

* Run at 14.5 amperes.

** Run at 13.7 amperes.

Calculated.

Summary and Conclusions:

It may be seen that in none of the various tests shown was there an appreciable amount of magnetic material present. As a result of this there was no beneficiation of the mill feed by the removal of the barren magnetite. In the tests where the magnetic material contained more gold than the non-magnetic tailing, it was observed that some pyrrhotite was present.

As a result of the foregoing tests we do not believe that it would be economically possible to beneficiate an ore such as that represented by the sample submitted, by magnetic removal of barren magnetite.

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