

O T T A W A

January 22nd, 1944.

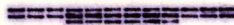
R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1568.

Iron Ore from Lucky Strike Prospecting
Syndicate, Sudbury District, Ontario.



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Syndicate, Sudbury District, Ontario.

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Shipment:

A sample of three sacks of iron ore, total weight 258 pounds, was received on November 26th, 1943, from the property of the Lucky Strike Prospecting Syndicate, six miles west of Cartier, Ontario. The shipment was submitted by M. Levine for the Lucky Strike Prospecting Syndicate, Room 507, 330 Bay Street, Toronto, Ontario; N. T. P. O'Sullivan, Syndicate Manager.

Location of the Property:

The property of the Lucky Strike Prospecting Syndicate is located in the Sudbury district, of Ontario, six miles west of Cartier, on the main line of the Canadian Pacific Railway.

Purpose of the Investigation:

Tests to determine the content of iron and vanadium in the ore were requested.

Results of Experimental Test:

The results of the test work show that vanadium is present in this sample. The iron content of the sample is approximately 55 per cent, most of which is magnetite. A magnetic concentrate assayed 60 per cent iron, 0.05 per cent nickel, 0.002 per cent phosphorus, 0.005 per cent sulphur and 10.32 per cent insoluble. The recovery of iron at this grade was 76.6 per cent.

Character of the Ore:

The ore appears to be largely composed of magnetite, with some coarse to fine grains of pyrite rather sparingly disseminated. The gangue was a minor constituent of the sample and appeared to be a light grey to green country rock, schistose in appearance. The amount was small in the sample. The appearance of rust stains indicated weathering of the surface material, of which there was a considerable amount.

Sampling and Analysis:

The sample was crushed and sampled by standard methods. A representative portion was found to contain:

Vanadium	-	None detected.
Iron	-	54.63 per cent.
Copper	-	None detected.
Nickel	-	0.03 per cent.
Sulphur	-	1.75 "
Phosphorus	-	0.005 "
Insoluble	-	20.12 "

Investigative Procedure:

Magnetic concentration tests were made to determine the grade of concentrate which could be recovered and to determine what vanadium content the concentrate would have. A

(Investigative Procedure, cont'd) -

sample of the ore was ground to pass a 20-mesh screen. The ore was concentrated on a Ball-Norton dry belt magnetic separator at a maximum current density. This produced a rough concentrate and a tailing(which was rejected).

The rough concentrate was re-passed using the minimum current, which resulted in a cleaner concentrate and a middling.

Some of the cleaner concentrate was reconcentrated by using a Davis tube magnetic separator. This would give an indication of the recovery and grade that could be expected by using the wet belt machine such as the Roche magnetic separator.

Results:

Magnetic Separation on Ball-Norton.							
Product	Weight, per cent	Assays, per cent			Distribution, per cent		Ratio of concentration
		V2O5	Fe	Insol.	Fe	Insol.	
Feed	100.0	N.D.	54.76	16.62	100.0	100.0	
Concentrate	76.0	N.D.	58.57	12.48	81.3	57.1	1.32:1.
Middling	17.1	N.D.	52.11	20.38	16.3	21.0	5.84:1.
Tailing	6.9	N.D.	19.11	53.22	2.4	21.9	

Davis Tube Separation.							
Feed	76.0	N.D.	58.57	12.48	81.3	-	
Concentrate	69.9	N.D.	60.01	10.32	76.6	-	1.1:1.
Tailing	6.1	N.D.	42.0	37.4	4.7	-	

N.D. = None detected.

Concentrate:

	Per cent
Nickel	0.05
Phosphorus	0.002
Sulphur	0.005

CONCLUSIONS:

The results show that no vanadium is present in the sample.

81 per cent of the iron was recovered at a grind through 20 mesh, grade, 58.6 per cent iron, 12.5 per cent insoluble.

76.6 per cent of the iron was recovered when the concentrate was concentrated by the wet method; grade, 60 per cent iron and 10.3 per cent insoluble.

The best method of obtaining results from an iron ore similar to the ore submitted for the investigation would appear to be treatment by magnetic separation.

As there is no vanadium present, the ore can only be considered as an iron ore. The ore contains 1.75 per cent sulphur, which would have to be eliminated by grinding the ore fine enough to free the sulphur-bearing minerals. The product obtained by this method is unsuitable as a blast furnace feed unless it is previously sintered.

The sintered concentrate would require the physical properties of strength, porosity and hardness to resist handling and have the required chemical properties of the blast furnace feed.

There is no market for magnetic iron ore in Canada at the present time, and the concentrate would have to be exported.

The results of this investigation can apply only to ore similar in grade and character to that submitted in the shipment.

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