

FILE COPY

O T T A W A

July 5th, 1941.

R E P O R T


of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1045.

Concentration of Magnetite from the
Bessemer Mine, Hastings County, Ontario.

BUREAU OF MINES
DIVISION OF METALLIC MINERALS
—
ORE DRESSING AND
METALLURGICAL LABORATORIES


CANADA
DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

O T T A W A

July 5th, 1941.

R E P O R T
of the
ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1045.

Concentration of Magnetite from the
Bessemer Mine, Hastings County, Ontario.

Shipment:

=====
Approximately 5 tons of iron ore were received on
March 30th, 1941, from the Bessemer Mine, Hastings county,
Ontario. This lot was forwarded by the Frobisher Explora-
tion Company Limited, Toronto, Ontario.

Experimental Procedure:

The shipment was crushed -5 mesh and sampled.

Analysis showed the following:

			<u>Per cent</u>
Iron	(Fe)	=	52.40
Sulphur	(S)	=	0.23
Phosphorus	(P)	=	0.016
Silica	(SiO ₂)	=	12.38
Manganese	(Mn)	=	0.08

The lot was fed to a ball mill in closed circuit with a screen. The screen undersize was concentrated on a Roche magnetic separator. The middling from this operation was dewatered in a Dorr classifier and returned to the ball mill. Three different screens were used in the grinding circuit to note the grade of concentrate obtained from various finenesses of grind.

Results:

13 x 3 (MESH) SCREEN.

<u>Screen Analysis.</u>			
<u>Mesh</u>	<u>:</u>	<u>Weight, :</u>	<u>Assay, Fe,</u>
	<u>:</u>	<u>per :</u>	<u>per</u>
	<u>:</u>	<u>cent :</u>	<u>cent</u>
	<u>:</u>		
+ 14	<u>:</u>	1.3)	52.59
- 14 + 35	<u>:</u>	37.0)	
- 35 + 48	<u>:</u>	11.7	55.61
- 48 + 65	<u>:</u>	10.0	57.83
- 65 +100	<u>:</u>	8.9	62.46
-100	<u>:</u>	31.1	64.88
	<u>:</u>		
Total	<u>:</u>	100.0	

Feed	-	52.40 per cent Fe.
Concentrate	-	61.45 " "
Tailing	-	5.09 " "

Ratio of Concentration - 1.2:1.

(Experimental Procedure, cont'd) -

16 x 5 (MESH) SCREEN.

Screen Test on Concentrate.

Mesh	Weight, per cent
+ 20	5.0
- 20 + 28	15.4
- 28 + 35	12.7
- 35 + 48	11.3
- 48 + 65	9.9
- 65 +100	8.7
-100	37.0
Total	100.0

Results:

Feed - 52.40 per cent Fe.
 Concentrate - 63.45 " "
 Tailing - 5.93 " "
 Ratio of Concentration - 1.2:1.

24-MESH SCREEN.

Screen Analysis of Concentrate.

Mesh	Weight, per cent	Assay, Fe, per cent
+ 35	5.2	52.59
-35 + 48	9.6	55.61
-48 + 65	11.7	57.83
-65 +100	13.0	62.46
-100	60.5	64.88
Total	100.0	

Feed - 52.40 per cent Fe.
 Concentrate - 63.59 " "
 0.01 " Phosphorus
 0.15 " Sulphur
 5.18 " SiO₂.
 Tailing - 4.33 " Fe
 Ratio of Concentration - 1.2:1.

Conclusions:

This ore apparently requires to be ground approximately -14 mesh to obtain a concentrate over 60 per cent iron. A recovery of 83.3 per cent of the weight of feed as concentrate is indicated.

AKA:GB.

oooooooooooo
oooooo
oo