

MAR 19560002: BURMIS FLATS

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19560002

DEPARTMENT OF MINES & TECHNICAL SURVEYS

MINES BRANCH

O T T A W A

Division of Mineral
 Dressing & Process
 Metallurgy.

552 Booth Street
 October 12, 1956

The three samples of iron ore from Burmis Flats, designated as Samples No. 1, 2, and 3, received at the Mines Branch on August 3rd, have been given a number of preliminary tests. The following is a progress report on the work that has been carried out to date.

(Final report is given in Investigation No. MD3187, April 8, 1957)

A Semi-quantitative spectrographic analysis on a portion of the head samples cut from each sample gave the following results:

Elements - per cent

The following elements do not necessarily constitute the prime ingredients of the ore. Spectrographic analyses tend to record "rock making" elements, besides those elements which may be of economic importance, such as iron or titanium.

Sample	FE	Si	Ca	Ti	Al	Zr	Mn	Co
No. 1	P.C.	9	3.5	3.0	2.0	0.2	0.3	.003
No. 2	P.C.	5	2.0	2.5	1.5	0.2	0.3	.003
No. 3	P.C.	9	3.0	2.5	1.5	0.2	0.3	.004

Sample	NI	Cu	V	Nb	Cr	Mg	Ba	Mo
No. 1	.01	.04	.15	.015	.009	1.5	.015	.005
No. 2	.01	.02	.15	.015	.009	1.0	.015	.005
No. 3	.015	.04	.15	.015	.009	1.5	.02	.005

P.C. - Principal constituent.

The samples as received were approximately minus 2-inch material. Testing the ore with a hand magnet indicated the possibility of discarding a portion of the ore by magnetic cobbing. For this purpose the samples were crushed to minus 3/4 inch and approximately 20 lb. of ore was riffled out of each sample. Five sized fractions from minus 3/4 inch to minus 10 mesh were separated from each and passed over a drum magnetic separator with the following results:

Sample No. 1 - The non-magnetic portion represented 11.4 percent by weight of the feed and contained 4.9 percent of the iron;

Sample No. 2 - The non-magnetic portion represented 3.4 percent by weight of the feed and contained 1.7 percent of the iron;

700625
 700640
 700653
 700666

(2)

Sample No. 3 - The non-magnetic portion represented 21.2 percent by weight of the feed and contained 9.2 percent of the iron.

In order to determine the fineness of grind necessary to produce a high grade concentrate by magnetic separation, portions of each sample were ground to -65 mesh, -100 mesh, -150 mesh and -200 mesh, respectively, and passed through a Davis Tube Wet Magnetic Separator.

The results of these tests indicate that the ore will require fine grinding in the order of 150 to 200 mesh in order to liberate the grains of magnetite. The high iron content of the tailing is probably accounted for by the presence of non-magnetic iron oxides and iron carbonates. However, an extensive microscopic investigation of the gangue minerals is being carried out in order to determine the mode of occurrence and distribution of the iron in this material.

The chemical analyses of the head samples are not complete. However, the microscopic examination of polished sections of the ore and the results of the spectrographic analysis indicate that the samples are very similar differing only in the amount of magnetite contained in each sample. For this reason some tests are now being carried out on composite samples made up of equal amounts from each sample.

The results of these tests along with the head sample analyses will be forwarded to you as soon as they are received.

Yours very truly

"R.W. BRUCE"

R.W. Bruce,

Mineral Dressing Engineer,
for K.W. Downes,
Chief of Division.

(3)

Results:

Product	Weight Percent	Assay, Fe. Percent	Distribution Fe. Percent
<u>Sample No. 1</u>			
-65M D.T. Conc.	62.5	56.3	85.4
-65M D.T. Tailing	37.5	16.1	14.6
Feed (Calc'd)	100.00	41.2	100.0
-100 M.D.T. Conc.	56.1	58.2	81.6
-100M D.T. Tailing	43.9	16.8	18.4
Feed (calc'd)	100.0	40.0	100.0
-150M D.T. Conc.	51.9	60.5	79.0
-150M D.T. Tailing	48.1	17.4	21.0
Feed (Calc'd)	100.0	39.8	100.0
-200M D.T. Conc.	49.6	62.3	77.8
-200M D.T. Tailing	50.4	17.5	22.2
Feed (Calc'd)	100.0	39.7	100.0
<u>Sample No. 2</u>			
-65M D.T. Conc.	72.2	58.0	88.6
-65M D.T. Tailing	27.8	19.3	11.4
Feed (Calc'd)	100.0	47.2	100.0
-100M D.T. Conc.	67.0	60.2	84.6
-100M D.T. Tailing	33.0	22.2	15.4
Feed (Calc'd)	100.0	47.7	100.0
-150M D.T. Conc.	64.8	62.4	84.6
-150M D.T. Tailing	35.2	20.9	15.4
Feed (Calc'd)	100.0	47.8	100.0
-200M D.T. Conc.	60.4	63.4	81.3
-200M D.T. Tailing	39.6	22.2	18.7
Feed (Calc'd)	100.0	47.1	100.0
<u>Sample No. 3</u>			
-65M D.T. Conc.	50.9	54.2	82.0
-65M D.T. Tailing	47.1	12.9	18.0
Feed (Calc'd)	100.0	33.7	100.0
-100M D.T. Conc.	47.4	56.8	79.8
-100M D.T. Tailing	52.6	13.0	20.2
Feed (Calc'd)	100.0	33.8	100.0
-150M D.T. Conc.	46.2	59.0	79.3
-150M D.T. Tailing	53.8	13.2	20.7
Feed (Calc'd)	100.0	34.4	100.0
-200M D.T. Conc.	44.0	60.8	75.2
-200M D.T. Tailing	56.0	14.1	22.8
Feed (Calc'd)	100.0	34.6	100.0