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ALL OFFICIAL CORRESPONDENCE
SHOULD BE ADDRESSED TO THE DIRECTOR.
DIVISION OF ORE DRESSING AND
METALLURGY
G. C. MACKENZIE, B.SC., CHIEF OF DIVISION
W. B. TIMM, B.SC., 1ST ENGINEER
C. S. PARSONS, B.SC., 2ND ENGINEER
H. C. MABEE, B.SC., CHEMIST
R. J. TRAILL, ASST. CHEMIST
B. M. DERRY, MILLMAN

DEPARTMENT OF MINES
CANADA

MINES BRANCH
EUGENE HAANEL, PH. D.
Director.

OTTAWA, Ont., Nov. 5th, 191 2.

REPORT OF ORE DRESSING AND METALLURGICAL LABORATORIES.

Test No. 102

Graphite Ore from LaChute, Que.

A shipment of Graphite Ore of approximately 300 pounds was received on Oct. 9th, from Thos.H. Rae, Esq., LaChute, Que.

On examination it was found that the flake was fairly fine. The gangue material was composed of quartz and Crystalline Limestone. A small amount of iron pyrites is present.

The ore was crushed to 30 mesh and sampled giving an analysis of Carbon --15.00%.

A series of tests were made on the Callow-Pneumatic Testing Machine to determine its adaptability to concentration by this method.

For this purpose a portion was crushed in a small ball mill to pass 40 mesh, while another portion was crushed to 30 mesh. It was found that it would be necessary to crush to a fineness of 30 mesh to free the flake from the gangue.

The results of the test work is contained in the following table:-

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Run #1 :- Ore was first crushed to 40 mesh; pine oil and coal oil used; Ground for 5 minutes in pebble mill; Floated; Concentrates reground for 15 minutes in pebble mill and floated.

Run #2 :- Ore was first crushed to 40 mesh; pine oil and coal oil used; Ground for 5 minutes in pebble mill; Floated; Concentrates reground for 20 minutes in pebble mill and floated- Resulting in a higher grade concentrate on all sizes than Run #1 but with a little lower recovery of Carbon Values in high grade flake.

Run #3 :- Ore was first crushed to 40 mesh; pine oil and coal oil used; Ground for 5 minutes in pebble mill; floated- concentrates reground for 10 minutes in pebble mill and floated.- Resulting in a little lower grade concentrate than #1 Run on the Coarser sizes but a little higher recovery of Carbon Values in high grade flake.

Run #4 :- Ore was first crushed to 30 mesh; a small amount of #25 F.P.L. light creosote oil used; ground for two minutes in pebble jar to get oil mixed; floated; Concentrates refloated without further grinding: Results in a low grade concentrate with a high recovery of Carbon Values on the coarser sizes. This test was run to see what the results would be without regrinding.

Run #5 :- Ore was first crushed to 30 mesh; a small amount of #25 F.P.L. light creosote oil used; ground for five minutes in a pebble jar; Floated; concentrates reground for twenty minutes in pebble jar and floated; Resulting in a very high grade concentrate on all sizes with a high recovery of the Carbon Values.

Run #6 :- Ore was first crushed to 30 mesh; a small amount of #25 F.P.L. light creosote oil used; ground for five minutes in a pebble jar; floated; Concentrates reground for ten minutes in pebble jar and floated; Resulting in a lower grade concentrate than Run #5 but with a much highe recovery of the Carbon Values in the Coarser Sizes.

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This series of tests were run to make as high grade a concentrate as possible and to hold as much as possible on the coarser sizes.

Summary :-

The ore is readily adaptable to the oil Flotation process.

The results of the above test show that 95% of the Carbon Values is recovered in the concentrates; that with proper manipulation 20% to 25% of the Carbon Values is contained in the flake on 0.175 m.m. screen of a grade above 90%, and 20% to 25% of the Carbon Carbon Values is contained in the flake through 0.175 m.m. screen and on 0.124 m.m. screen of a grade around 90% and 45% to 50% of the carbon values is contained in flake through 0.125 m.m. screen of a grade above 80%.

The consumption of oil is very small ranging between one pound and two pounds per ton of ore.

The flake in this ore is a very thin and high grade one, which floats readily with the addition of very little oil.

(Sgd.).....

			CONCENTRATES.																	
			+80				0.175 m.m.-80 + 115				-115	0.124 m.m.					MIDDLINGS.				TAILINGS.				
Run No.	Wt. of Ore taken Grams	Analysis % C	Content Grams C.	Wt. Grams	Analysis % C.	Content Grams C.	% of C. Values	Wt? Grams.	Analysis % C.	Content Grs. C.	% of C. Values	Wt. Grms.	Analysis % C.	Content Grms. C.	% of C. Values	Total of C.	Recover Values	Wt. of Grms.	Analysis of % C.	Content Grms.C.	% of C. Values	Wt. of Grms.	Analysis % C.	Content Grms. C.	%age of C. Values	Total %age of C. Values in Middlings & Tailings.
1.	3000	15.0	450	96	92.00	88.32	19.5	189	64.52	121.94	26.9	518	44,60	231.03	51.0	97.4		557	1.58	8.80	1.9	1640	0.20	3.28	0.7	2.6
2.	2000	15.0	300	63	93.80	59.09	18.4	81	88.85	71.97	22.4	336	53,60	180.10	55.9	96.7		451	1.70	7.67	2.4	1069	0.28	2.99	0.9	3.3
3.	2000	15.0	300	72	90.80	65.38	21.8	109	60.23	65.65	21.9	338	48.00	162.24	54.1	97.8		331	1.20	3.97	1.3	1150	0.24	2.76	0.9	2.2
4.	1000	15.0	150	97	62.00	60.14	40.1	97	46.30	44.91	30.0	118	33.30	39,29	26.2	96.3		195	2.40	4.68	3.1	493	0.18	0.89	0.6	3.7
5.	1000	15.0	150	36	94.40	33.98	22.1	38	93.70	35.61	23.2	94	82.30	77.36	50.4	95.7		173	2.95	5.10	3.3	659	0.23	1.52	1.0	4.3
6.	1000	15.0.	150	58	89.50	51.91	34,7	38	84.40	32.07	21.4	115	50.45	58.02	38.7	94.8		296	2.30	6.81	4.6	493	0.18	0.89	0.6	5.2