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OTTAWA, April 20th, 1918.

Report of Ore Dressing & Metallurgical Laboratories

Test No. 76

- New Ross Molybdenite Ore -

A carload of Molybdenite ore was received on Mar. 27th from H. C. Burchell, Esq., Windsor, N.S. This carload contained 122 barrels in two lots, marked X and XX, taken from two different points on the property and in both cases the ore was supposed to be the run of mine.

Lot X	-	40 Barrels
Gross Wt.	-	15048 pounds
Net Wt.	-	13854 pounds
Moisture	-	0.96 %
Dry Wt.	-	13731 pounds
Analysis - MoS_2	-	0.54 %
MoO_3	-	trace
Cu	-	0.08 %
Content - MoS_2	-	74.0934 pounds
Lot XX	-	82 Barrels
Gross Wt.	-	29762 pounds
Net Wt.	-	27260 pounds
Moisture	-	1.09 %
Dry Wt.	-	26963 pounds

Analysis

Analysis - MoS_2 - 0.46 %

MoO_3 - trace

Cu - 0.08 %

Content - MoS_2 - 134.0298 pounds

The ore consists of Molybdenite of the flake variety in Quartz with a small amount of the granite wall rock. A very small amount of Iron and Copper Sulphides, and Mica is present.

Preliminary Test

Several of the Barrels were opened and some pieces of the ore were taken from each to make up a sample for a small test on the Laboratory Callow Testing Machine.

This sample was first crushed to 20 mesh and a sample taken for analysis. The remaining portion was cut into two lots; one was crushed to 30 mesh and the other to 40 mesh.

The analysis of this sample showed it to contain MoS_2 - 0.36 %.

Test # 1 - 30 mesh material

Ore - 1000 grams

Oil - pine oil ½ lb. to ton of ore

coal oil ½ lb. to ton of ore

Mixed in small pebble jar for 10 minutes before adding to the machine.

Only the Tailing from this test was analysed. This gave MoS_2 - 0.04 %.

Test # 2 - 40 mesh material

Ore - 1000 grams

Oil - pine oil ½ lb. to ton of ore

coal oil ½ lb. to ton of ore.

Mixed in small pebble jar for 10 minutes before

adding to the machine.

Concentrates obtained	-	3.1 grams
MoS_2	:	63.45 %
Content	-	1.967 grams
Recovery	-	71 %
Middlings obtained	-	32 grams
MoS_2	-	1.91 %
Content	-	0.611 grams
% age of MoS_2 Values	-	22 %
Tailings obtained	-	964.9 grams
MoS_2	:	0.02 %
Content	-	0.193 grams
Loss	-	7 %

Figuring on a recovery of 70 % of the MoS_2 values in the Middlings, this would give a total recovery of the Molybdenite values in the crude ore of 86 %.

Large Scale Test

The method of crushing and concentration adopted on the carload lot was as follows:-

The ore was first crushed in the Jaw Crusher with the jaws set at 1" opening, and the crushed ore fed by a push feeder which delivered it to an elevator which discharged into a Vezin Sampler where 1/10 of the ore stream was cut out, the main flow travelling down a chute to the Hardinge Ball Mill. Here the oil was fed so as to become thoroughly emulsified in the Mill. From the ball mill, the pulp flowed down a launder to a 3" Centrifugal Pump which delivered it on to a Callow Screen. The screen used was a 35 mesh ton-cap screen. The oversize from the screen was returned to the mill, the undersize went direct to the Callow Rougher Cell. This method was

changed during the run due to trouble encountered by the presence of foreign oils which would get into the circuit at times and kill the froth on the cells. This oil presumably came from the ore. The undersize from the screen flowed into a Callow Cone Tank where a slight washing action was given the pulp. From the Cone Tank the thickened pulp was drawn to an elevator and the elevator discharged into a launder where the density of the pulp was regulated by the addition of water, and this launder delivered it to the Callow Rougher Cell. In this case the coal oil was added to the Ball Mill, the pine oil to the boot of the elevator. The Tailings from the Rougher Cell were pumped to the waste dump after being sampled. The Rougher Concentrates were reconcentrated in the Cleaner Cell.

Both lots were sampled separately but the concentrates were allowed to collect together.

The Tailing Analysis of Lot X was 0.17 % MoS_2 giving a Recovery on this lot of 68.7 %.

The Tailing Analysis of Lot XX was 0.15 % MoS_2 giving a Recovery on this lot of 67.5 %.

185 pounds of Concentrates were obtained from the whole shipment with an analysis of 72.75 % MoS_2.

Conclusions:- The ore is an ideal one, very easily crushed and easily concentrated. The results obtained from the small preliminary test are more in accord with what could be obtained in actual practice than the large test, due to our trouble with foreign oil in the circuit. On an ore of this class of a grade 0.5 % MoS_2 a Recovery of the Molybdenite Values of 85 % - 90 % should be looked for, while with the Cells working properly, a concentrate of 85 % MoS_2 grade should be obtained.