Dom. 81

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SHOULD BE ADDRESSED TO THE DIRECTOR.

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OTTAWA, May 13th, 1918.

Report of Ore Dressing & Metallurgical Laboratories

Test No. 81

Molybdenite Ore from Williams & Ruffner, Rossland, B.C.

A shipment of 34 bags of Molybdenite ore was received on April 9th from Williams & Ruffner, Rossland, B.C.

The ore was high grade, of the flake variety, in quartz, with a small amount of iron and arsenical pyrites.

Gross Weight of Sample Received		-	3520 lbs.
Net " " " "		-	3503 "
	Moisture	-	2.28 %
Net Dry Weight		-	3423 lbs.
Analysis -	MoS_2	-	10.54 %
	MoO_3	-	0.52 %
	Pt	-	nil
	Au	-	trace
	Ag	-	trace
Content -	MoS_2	-	360.7842 Lbs.
	MoO_3	-	17.7996 "

A small scale test was first run on the Laboratory Callow Flotation Machine. The moisture sample of the ore was crushed to pass 50 mesh. 1000 grams were taken and mixed in a pebble jar for 10 minutes with oil mixture - pine oil - ½ lb. to ton of ore; hardwood creosote - ¼ lb. to ton of ore and coal

coal oil 5 lbs. to ton of ore. A little water was added. It was then added to the machine from which the following products were obtained:-

Concentrates	-	158 grams
Analysis	-	65.97 % MoS_2
Content	-	104.2326 grams MoS_2
Recovery	-	87.6 %
Middlings	-	136 grams
Analysis	-	4.30 % MoS_2
Content	-	5.848 grams MoS_2
%age of MoS_2 Values	-	4.9 %
Tailings	-	706 grams
Analysis	-	1.27 % MoS_2
Content	-	8.9662 grams MoS_2
Loss	-	7.5 %

Figuring on a Recovery of 70 % of the MoS_2 values in the Middlings, the total recovery would be 91 % of the Molybdenum values in the ore. As this ore contains 0.52 % MoO_3 which would report in the tailings or lost in solution and not recoverable by flotation, the recovery of actual Molybdenite values in the ore would be about 95 %.

Large Scale Test::

For the large scale test, the ore passed through the regular Molybdenite circuit, namely, from the crusher to the Ball Mill where the oil mixture was added and then to a Callow screen fitted with a 60-mesh ton-cap screen, the oversize returning to the mill, the undersize going direct to the Flotation Cells.

The following results were obtained:-

Concentrates

Concentrates	- Weight	--	487 pounds
	Analysis	--	70.85 % MoS_2
	Content	--	345.0395 Lbs. MoS_2
	Recovery	--	95.7 %
Tailings	- Weight	--	8936 pounds
	Analysis	--	0.53 % MoS_2
	Content	--	15.5608 lbs. MoS_2
	Loss	--	4.3 %

Conclusions:- The ore was found to be an ideal one for concentration by Oil Flotation. A high recovery was made, namely 95.7 %. The grade of the concentrates was rather low, but this was due to having to continue the operation so long in order to clean up the flotation cells. In actual practice this would not occur and a higher grade concentrate would result.