O T T A W A September 8th, 1942.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1294.

Flotation Tests on a Sample of Scheelite-bearing Chalcopyrite Ore from the Beaverhouse Lake Gold Mines Limited, Gauthier Township, East Kirkland Lake Area, Northern Ontario.

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Shipment:

The shipment consisted of one large piece of tungsten-bearing chalcopyrite ore, weighing approximately 15 pounds.

A previous shipment from the same location, consisting of five small samples (numbered 1091 to 1095, inclusive), has already been concentrated by flotation and the results of this test were given in Report of Investigation No. 1264, dated July 17th, 1942.

Both shipments were submitted by the Toburn Gold Mines Limited, Kirkland Lake, Ontario.

Location of the Property:

The property of the Beaverhouse Lake Gold Mines Limited is located in Gauthier township, in the East Kirkland Lake area of northern Ontario.

Purpose of the Investigation:

To determine the grade and recovery of a scheelite concentrate that could be recovered from the high-grade copper ore.

Character of the Ore:

The ore was heavily mineralized with sulphides, chalcopyrite being most abundant. There was also some pyrite. The presence of scheelite was detected under ultra-violet light.

Sampling and Analysis:

The shipment was crushed and sampled by standard methods and was found to contain:

Copper (Cu)	-	12.9 per cent
Tungsten trioxide (WO_3)	-	1.65 "

Investigative Procedure:

The shipment was concentrated by selective flotation.

Results of Test Work:

75 per cent of the copper was recovered in a concentrate assaying 30.85 per cent copper.

89.8 per cent of the WO_3 was recovered in a concentrate assaying 17.7 per cent WO_3.

DETAILS OF TEST:

Flotation.

The ore was ground in a ball mill, dilution of 4 parts solids to 3 parts water.

(Continued on next page)

(Details of Test, cont'd) -

Reagents:

To ball mill -

		Lb./ton
Lime	-	2.0
Potassium ethyl xanthate	-	0.05
Cresylic acid	-	0.10

To flotation, to recover copper sulphide -

No addition of reagents. pH, 8.4.

To recover other sulphides -

Copper sulphate	-	1.0
Soda ash	-	1.0
Butyl xanthate	-	0.2
Cresylic acid	-	0.05

Reagents added to the remaining pulp -

		Lb./ton
Water glass	-	1.0
Emulsol X-1	-	0.1
Orso	-	0.05

No cresylic acid was required.

10 minutes' agitation was allowed after adding the water glass. Then the Emulsol X-1 and Orso were added and the resulting concentrate was recovered in 2 minutes.

To recover a scavenger concentrate -

		Lb./ton	
Emulsol X-1	-	0.1	
Orso	-	0.15	(added in stages)

No cresylic acid was required.

Results:

Products	Weight, per cent	Assays, per cent Cu	Assays, per cent WO_3	Distribution, per cent Au	Distribution, per cent WO_3	Ratio of concentration
Feed	100.00	12.88	1.64	100.00	100.00	
Copper conc.	31.67	30.85	0.22	75.86	4.24	3.2:1.
Sulphide conc.	14.80	18.93	0.54	21.75	4.86	6.8:1.
WO_3 conc.	8.33	0.19	17.74	0.12	89.84	12.0:1.
Scavenger WO_3 conc.	10.54	2.64	0.10	2.16	0.64	9.5:1.
Flotation tailing	34.66	0.04	0.02	0.11	0.42	
Combined sulphide conc.	46.47	27.05	0.32	97.61	9.10	2.2:1

(Details of Test, cont'd) -

The test indicates that an acceptable grade of WO_3 concentrate for chemical treatment can be recovered from the high-grade copper ore similar to the sample submitted for the investigation.

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