

Report
of
Ore Testing and Metallurgical Laboratories

Report No. *269...*

Experimental Tests on Towagmac Gold Ore

by A. K. Anderson

SHIPMENT Three bags of ore, gross weight 126 lbs. were received May 2/27 from the Towagmac Exploration Co., Rouyn, Que., sent by Mr. K. W. Fritzsche from the Towagmac Francoeur property, Boischatel township, P. Q.

CHARACTERISTICS OF ORE. The ore received consisted of fine grained pink feldspar porphyry containing finely divided sulphides of iron and arsenic carrying gold and a small amount of silver.

PURPOSE OF TEST. The tests were conducted with the object of obtaining a concentration of the gold and silver in a product suitable for smelting.

SAMPLING AND ANALYSIS. The shipment was crushed to -16 mesh and passed through a Jones riffle sampler, cutting out a sample for assay. This head sample showed the following: Gold 0.37, Silver 0.10 ozs. per ton.

TESTS. In each of the following tests, portions ~~portions~~ of the -16 mesh material weighing 1000 grams were ground for 40 minutes in a ball mill with equal weight of water. This grinding gave the following screen analysis.

-65 + 100 mesh 0.9 %
-100 + 150 5.3
-150 93.8

A microscopic examination of the product showed the sulphide particles to be free of gangue material at this fineness of crushing.

-- TEST No. 1 --

Concentration by flotation.

Reagents: 0.5 lbs. coal tar creosote, 0.5 lbs. tar oil, 0.1 lbs. pine oil per ton ore.

PRODUCT	% WEIGHT	Gold		SILVER	
		ASSAY ozs./ton	% DISTRIBUTION	ASSAY ozs./ton	% DISTRIBUTION
HEADS	100.0	0.37 0.33	100.0	0.10 0.04	100.0
FLOTATION CONCENTRATE	11.98	2.41	86.7	0.50	88.2
FLOTATION TAILING	88.02	0.05	13.3	0.01	11.8

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-- TEST No. 2 --

AMALGAMATION A portion of the ore was ground in a ball mill and then agitated in a 1:1 pulp with 10% by weight of mercury.

PRODUCT	% WEIGHT	GOLD		SILVER	
		ASSAY ozs./ton	% DISTRIBUTION	ozs./ton	% DISTRIBUTION
HEADS	100.0	0.37	100.0	0.10	100.0
AMALGAMATED GOLD (calculated)			70.5		50.0
TAILING	100.0	0.11	29.5	0.05	50.0

--- TEST No. 3 ---

Flotation followed by amalgamation of the flotation tailing.

REAGENTS. 0.5 lbs. coal tar creosote, 0.5 lbs. tar oil, 0.10 lbs. pine oil per ton ore, 10% by weight of mercury.

PRODUCT	% WEIGHT	GOLD		SILVER	
		ASSAY ozs./ton	% DISTRIBUTION	ozs./ton	% DISTRIBUTION
HEADS	100.0	0.369 0.37	100.0	0.073 0.10	100.0
FLOTATION CONCENTRATE	8.16	3.03	66.7	0.74	77.0
GOLD RECOVERED FROM A AMALGAM	-	-	23.8	-	-

---TEST No. 4 --

Flotation in alkaline circuit followed by table concentration of flotation tailing.

REAGENTS: 0.5 lbs. coal tar creosote, 0.5 lbs. tar oil, 20.1 lbs. pine oil and 2 lbs. soda ash per ton ore.

PRODUCT	% WEIGHT	GOLD		SILVER	
		ASSAY ozs./ton	% DISTRIBUTION	ASSAY ozs./ton	% DISTRIBUTION
HEAD	100.0	0.30 0.37	100.0	0.087 9.10	100.0
FLOTATION CONCENTRATE	9.5	2.54	81.6	0.47	51.1
TABLE CONCENTRATE	2.5	1.05	8.8	0.32	9.0
TABLE MIDDLING	3.0	0.11	1.1	0.03	1.0
TABLE TAILING	85.0	0.03	8.5	0.04	38.9

--- TEST No. 5 --

Flotation in neutral circuit followed by table concentration of flotation tailing.

REAGENTS: 0.5 lbs. coal tar creosote, 0.5 lbs. tar oil, 0.10 lbs. pine oil per ton ore.

PRODUCT	% WEIGHT	GOLD		SILVER	
		ASSAY ozs/ton	% DISTRIBUTION	ASSAY ozs/ton	% DISTRIBUTION
HEADS	100.0	0.344 0.37	100.0	0.037 0.10	100.0
FLOTATION CONCENTRATE	11.3	2.40	79.2	0.36	45.9
TABLE CONCENTRATE	2.8	0.92	7.5	0.19	5.7
TABLE MIDDLING	2.0	0.18	1.1	0.07	1.1
TABLE TAILING	83.9	0.05	12.2	0.05	47.3

In each test, for ease of comparison, the percentage recovery has been figured on the head value shown in red, calculated from the assays of the products.

From the above tests it appears that flotation of the iron sulphides followed by concentration of the tailing on Wilfley tables to recover values present as free gold and gold associated with arsenopyrite will yield a 90% or better recovery of the gold in a concentrate acceptable for smelting.