

TR9-170-172 R. 477

**24. ABERFOYLE TIN, N.L.: UNDERGROUND FAULT ORE
CONCENTRATION TESTS**

Sample

Six samples of underground fault ore weighing from 40 to 50 lbs each were received from the above company. Gravity concentration tests for tin recovery were required on the samples. Each sample contained a fairly high proportion of decomposed clay-like material.

Each sample was assayed for tin content with the following results:—

Sample Reference Number	Per Cent Tin
0435-A86	0.22
0436-A87	0.45
0437-A88	0.19
0438-A89	0.09
0439-A90	0.56
0440-A91	1.15

Investigation

No further work was performed on samples A86, A88 and A89 because of their low tin content. Vanning assays were performed on the other three samples, and a concentration test involving crushing, sizing and jig and table concentration was carried out on sample A91.

This sample was jaw and roll crushed to minus 7 mesh, and wet screened on 14, 25 and 52 mesh B.S.S. The plus 52 mesh fractions were concentrated by jiggling. The minus 52 mesh fraction was classified in a rising current of 20 mm per second, and the products concentrated separately by tabling.

Prior to wet screening on 14 mesh the sample was given about 10 minutes moderate agitation in a pulp of 50 per cent solids containing 1 lb per ton of sodium silicate. This was found to be adequate to break up and disperse any aggregates of the fine clay-like material.

Summary

1. Three samples A86, A88 and A89 were too low in tin content to warrant further investigational work.

2. Vanning assays of samples A87, 0.45 per cent tin, and A90, 0.56 per cent tin, showed tin recoveries of 71.1 and 58.9 per cent. The van tin values of these samples were 0.32 and 0.33 per cent respectively.

3. Gravity concentration by jiggling and tabling of sample A91 showed an overall tin recovery of 75.1 per cent. The total concentrates amounted to 3.99 per cent by weight, and assayed 21.8 per cent tin. A van assay showed recovery of 79.1 per cent.

4. The classifier overflow (nominal minus 200 mesh cassiterite) contained 42 per cent by weight of the total sample, and 38.9 per cent of the total tin. Individual tin recovery in this fraction was 57.3 per cent.

5. Ten minutes moderate agitation with 1 lb per ton of sodium silicate as dispersant in a pulp of 50 per cent solids was adequate to eliminate any aggregates of fine clay.

Test Results

Vanning Assays

	A87	A90	A91
Per Cent Total Tin	0.45	0.56	1.15
Per Cent Van Tin	0.32	0.33	0.91
Per Cent Recovery	71.1	58.9	79.1
Per Cent Tin in Van			
Conc.	50.2	38.4	43.8

CONCENTRATION TEST. SAMPLE A91.

Jig Conditions

	-7 +14	-14 +25	-25 +52
Stroke	3/16"	1/4"	1/8"
Speed—Stroke/min.	440	440	440
Hutch Water—cc/min.	2500	1800	1800
Ragging	Steel short and pyrrhotite		
Hutch Screen	6 mesh		

Sand Table Feed —52 mesh. Settled in rising current velocity 20 mm/sec.

Slime Table Feed. Overflow in rising current velocity 20 mm/sec.

ORE DRESSING INVESTIGATIONS.

Product	Weight	Per Cent	
		Tin	Tin Distribution
-7 +14 Jig Concentrate	0.37	18.3	5.9
-14 +25 Jig Concentrate	0.44	28.0	10.6
-25 +52 Jig Concentrate	0.59	24.8	12.7
-52 Sand Table Concentrate	1.22	22.4	23.6
Slime Table Concentrate ..	1.37	18.9	22.3
Total Gravity Concentrate	3.99	21.8	75.1

Product	Weight	Per Cent	
		Tin	Tin Distribution
-7 +14 Jig Tailings	12.81	0.21	2.3
-14 +25 Jig Tailings	21.10	0.17	3.1
-25 +52 Jig Tailings	14.90	0.18	2.3
-52 Sand Table Tailing	6.41	0.10	0.6
Slime Table Tailing	40.79	0.47	16.6
Total Tailing	96.01	0.30	24.9
Composite Feed	100.0	1.16	100.0