

NO 11

Duplicate

REGD. SAMPLES NOS. 1278 & 1279.

Recovery of Gold from Mathinna Slimes.

Two samples received from Mr. J. Watson on the 22nd. September 1937 and stated to have been obtained from the Golden Gate slime dump at Mathinna, have been submitted to tests to investigate methods of treatment.

Registered numbers of the samples are 1278 and 1279, and as 1278 was stated to be the more important sample, this report deals mainly with same.

No responsibility is taken for the results given in this report except in so far as they apply to the samples tested.

The quantities of samples received have been insufficient to complete the investigation, and a further supply would be required.

CYANILATION.

Test No.6.

Pulp Ratio	1 solids to 2 solution
CaO added	2.5 lbs./ton.
Barren Solution	0.103% KCN
Agitation	24 hours.

Consumption		Assay Values		Indicated Gold Extraction	
lbs./ton		Gold Dwts./ton		Dwts./ton	Percent
KCN	CaO	Heads	Residue		
3.9	Total added	2.0	0.4	1.6	80

Test No.7.

Conditions similar to test No.6., but with increase in CaO.

CaO added: 4.5 lbs./ton.

Consumption		Assay Values		Indicated Gold Extraction	
lbs./ton		Gold Dwts./ton		dwts./ton	Percent
KCN	CaO	Heads	Residue		
3.85	total (4.5)	2.0	0.4	1.6	80

Test No.9.

Similar to No.7. Further increase in CaO

CaO added: 11.2 lbs./ton

Test No.9. (continued)

Consumption lbs./ton		Assay values Gold, dwts/ton		Indicated Gold Extraction	
KCN	CaO	Heads	Residue	Dwts./ton	Percent
2.95	total (11.2)	2.0	0.3	1.7	85

Test No.11.

CaO added: 11.2 lbs/ton

Consumption lbs./ton		Assay values Gold, dwts/ton		Indicated Gold Extraction	
KCN	CaO	Heads	Residue	Dwts./ton	Percent
1.7	17.9	2.0	0.3	1.7	85

pH value after test: 10.0 approximately.

FLOTATION.

Reagents

Soda Ash: 1.0 lb./ton. pH value after test 7.0.
Potassium Ethyl Xanthate: 0.1 lb/ton
Cresylic Acid.

Product	% Weight	dwts./ton Assay Value	Gold
			% Distribution
Concentrate	3.66	32.1	58.7
Tailing	96.34	0.85	41.3

Time Conditioning: 5 minutes
" Flotation: 5 "
Solid:Solution ratio; 1:5

EDQUIST PROCESS.

Reagents:

CaO: 18 lbs./ton
NaCN: 4.48 lbs./ton. (consumption equivalent
to 1.7 lbs./ton KCN)
Agitation: 24 hours.
Charcoal: 10 lbs./ton, conditioning time 15 minutes
Reagent 301: 0.45 " " " "
Pine Oil.

	% Weight	Assay Value dwts./ton	Gold.
			% Distribution
Concentrate	2.2	73.6	81
Tails (calculated)	97.8	0.38	19

Treatment of Sample after Hydraulic
Separation of Sands and Slimes

Treatment of Sample after Hydraulic
Separation of Sands and Slimes.

Screening Analyses and assay values

Screening Analysis, B. S. Screens.

	10	22	44	60	85	120	150	200	- 200
Sands	-	0.36	17.02	16.33	15.42	8.97	7.53	12.31	22.06
Slimes	-					0.07	0.25	1.94	97.74

	Weight %	Assay Values, dwts./ton Gold	Silver
Sands	23.3	1.8	0.6
Slimes	76.7	1.9	1.0

CYANIDATION.

Sands

Pulp Ratio 1 solids : 2 solution
CaO added 2.3 lbs./ton
Barren Solution 0.103% KCN
Agitation 24 hours

Consumption lbs./ton KCN CaO	Assay Values Gold, dwts/ton		Indicated Gold Extraction	
	Heads	Residue	Dwts./ton	Percent
1.43 total 2.3	1.3	0.4	1.4	77.7

The slimes sample was not cyanided separately in view of the extractions obtained with the sample as received.

SLIMES

Flotation

Flotation time 5 minutes in each test.
pH value after flotation: 8.

Reagents.

Test No.3. Soda ash 1.0 lb./ton; Pot. Ethyl Xanthate
0.1 lb./ton; Cresylic Acid.

Test No.4. Soda ash, 1.0 lb./ton; Amyl & Butyl
Xanthates, 0.1 and 0.2 lbs./ton respectively.
Pine Oil

Test No.5. Soda ash, 1.0 lb./ton; Reagent 301, 0.5 lb./ton;
Aerofloat 31, 0.02 lb./ton; Pine Oil.

Test No.	Product	% weight	Assay value dwts./ton	Gold.
				% Distribution
3.	Conc.	2.6	41.2	56.3
	Tails	97.4	0.85	
4.	Conc.	1.7	57.5	51.4
	Tails	98.3	0.94	
5.	Conc.	3.13	34.8	57.4
	Tails	96.87	0.83	

SAMPLE NO. 1279.

Cyanidation

Two test only have been mademainly for comparison with Sample No.1278.

Conditions similar to test No.7. with the exception of CaO addition. CaO added: 4.5 lbs./ton and 8.9 lbs./ton in tests 8 and 10 respectively.

Test No.	Consumption lbs./ton		Assay Values Gold, dwts/ton		Indicated Gold Extraction	
	KCN	CaO	Heads	Residue	Dwts./ton	Percent
8.	0.63	4.4	2.0	0.45	1.55	77.5
10.	0.78	8.2	2.0	0.4	1.6	80

Long ton (2,240 lbs.) used throughout.

SUMMARY.

Both samples were of such a compact and puggy nature that re-pulping is necessary for treatment.

Cyanidation.

Extractions of 1.7 dwts. were obtained with consumptions of 1.7 KCN and 17.9 CaO. Further work with increased alkalinity is desirable.

Filtration of the pulp with vacuum filter indicates that a filter of the Oliver type would operate satisfactorily, and as this laboratory is not equipped with a filter of this type, it would be desirable to have a cyanide and filtration test carried out where facilities are available.

Flotation.

The best results were low in comparison with cyanidation, having 58% and 85% distributions respectively, and residues carrying 0.83 and 0.4 dwts./ton gold. No advantage was shown by hydraulic separation.

In the event of filtration proving troublesome, the Edquist process would be applicable. The result of testing the slimes with this process produced a concentrate assaying 73.6 dwts./ton, with a gold distribution of 81%

GOVERNMENT CHEMIST & ASSAYER.

24th. December, 1937.