

TR9-147-149 R. 449

21. RENISON ASSOCIATED TIN MINES.

MILL VANNER FEED: CONCENTRATION ON BUCKMAN TILTING DECK

A sample of mill vanner feed was received from the company for concentration tests.

Tests have been conducted to produce a wide range of results for study of mill applications.

Sizing Analysis of Deck Feed

Fraction.	Weight.	Per Cent		
		Tin.	Tin Distribution.	Cumulative.
+ 200 mesh	2.0	0.34	0.23	....
I.S. 1	0.9	6.32	1.96	2.19
2	19.6	3.50	23.62	25.81
3	14.7	4.81	24.32	50.13
4	11.3	4.32	16.80	66.93
5	9.6	3.54	11.67	78.60
6	9.4	2.44	7.88	86.48
7	32.5	1.21	13.52	100.00
Composite	100.0	2.91	100.00	

Tilting Deck Tests

Feed 2.64 per cent.

Test No.	Concentrate Per Cent		Slime Per Cent		Deck Tailing Per Cent		Slope Inches/Ft	Feed G.P.M.	Solids Per Cent	Dispersed	Deslimed	Concs. Minutes	Recovery Per Cent
	Wght	Tin	Wght	Tin	Wght	Tin							
3/4	17.9	8.44	32.0	0.87	50.1	1.16	1.9"	0.9	20-22	Yes	Yes	2½	63.8
8	10.75	17.8	....	....	89.25	1.21	1.9"	0.9	30	No	No	5	63.9
9	10.18	18.6	....	....	89.82	1.12	1.9"	0.9	30	Yes	No	5	65.3
3/1	8.1	21.9	32.0	0.87	59.9	1.0	1.9"	0.9	20-22	Yes	Yes	6	66.8
3/3	12.8	14.3	32.0	0.87	55.2	1.1	1.9"	0.9	20-22	Yes	Yes	4	67.4
5	15.0	12.4	....	....	85.0	1.05	1.9"	0.9	20-22	No	No	5	67.6
6	32.0	5.32	....	....	68.0	1.17	1.9"	0.9	20-22	No	No	2	68.2
1	11.3	16.0	....	....	88.7	0.91	1.9"	0.9	20-22	Yes	No	5	69.1
2	11.1	16.8	30.2	0.88	58.7	0.87	1.9"	0.9	20-22	Yes	Yes	5	70.6
11	14.9	13.1	....	....	85.1	0.85	1½"	0.83	....	....	....	5	73.0
3/2	15.7	12.7	32.0	0.87	52.3	0.6	1.9"	0.9	20-22	Yes	Yes	5	77.1
7	20.3	10.9	....	....	79.7	0.79	1.9"	0.5	30	No	No	5	77.8
10	29.5	6.83	....	....	70.5	0.8	1"	0.83	20	Yes	No	5	78.1

These results demonstrate a range of recoveries and grades of concentrates with operating variables. Dispersion and desliming show some advantages, but perhaps the biggest result of desliming is increase in capacity on the decks by pre-removal of slime.

In test 3/1, showing a concentrate amounting to 8.1 per cent by weight and containing 21.9 per cent of tin for a 6 minutes concentrating period, the tailings from the deck were sampled at 2, 3, 4, 5 and 6 minutes, and these progressive tailings are of special interest as shown below:—

Minutes	Tin		
	Weight	Per Cent	Per Cent Dist.
2	13.7	0.74	3.8
3	13.1	0.68	3.4
4	11.5	0.90	3.9
5	10.4	1.18	4.6
6	11.2	1.66	7.0
Comp. Tailing	59.9	1.0	....

Vanning assays on these tailings were 0.18, 0.13, 0.33, 0.57 and 1.0. Total and vanning tin, ratio of concentration, and recovery in this test give useful data for determination of most required variables. Incidentally the slime on this test showed 0.09 per cent tin by vanning.

Test 12

Deck Slope 1 in./ft.
 Concentration period 5 minutes (4 concentration cycles). Primary deck tailings retreated and labelled "concs. 2".

Results

	Per Cent		
	Weight.	Tin.	Tin Distribution.
Concs. 1	44.4	5.45	83.1
Concs. 2	16.2	1.23	6.8
Comp. Concs.	60.6	4.32	89.9
Deck Tailings	39.4	0.74	10.1
Composite Feed	100.0	2.91	100.0