TR 10-111-114

R. 492

ABERFOYLE JIG TAILINGS

The sample of Aberfoyle jig tailings has been upgraded by jig and table concentration, and in the case of the jig concentrates further beneficiation by heavy media separation.

However, the resultant concentrates are not high grade as they average only 5.7 per cent tin, and contain 53 per cent of the tin originally present. No concentration of tungsten was obtained.

Primary concentrates, that is those obtained without further crushing of the sample contain 11 per cent of the tin at a grade of 6.2 per cent tin. The secondary concentrates obtained after crushing the minus 10 mesh material originally present contain 42 per cent of the tin and assay 5.6 per cent tin.

Examination of the final concentrates macroscopically has not revealed free cassiterite, but the identification of minerals is not easy especially in the finer sizes.

Summary of results from jig, table and heavy media tests to recover cassiterite from Aberfoyle jig tailings.

Concentration tests on the minus 10 mesh material in the sample gave a recovery of 11.5 per cent of the tin as a product assaying 6.2 per cent tin.

Similar tests on the plus 10 mesh material after it had been roll crushed to minus 10 mesh gave a recovery of 41.6 per cent, and an assay of 5.6 per cent tin.

Thus the recovered tin was 53.1 per cent, assaying 5.7 per cent tin.

The composite assay value of the tailing as received was 0.19 per cent tin, and after various concentrations the reject tailing assays 0.09 per cent tin.

Product	Per Cent		
	Weight	Tin	Tin Distribution
Conc., Primary			
−10/+30 HMS	0.26	6.15	8.34
−30/+60 HMS	0.06	4.57	1.47
−60 Table	0.03	10.7	1.72
Total Primary Conc.	0.35	6.16	11.53
Conc., Secondary			
−10/+30 HMS	0.78	7.29	27.19
−30/+60 HMS	0.09	11.5	5.53
−60 Table	0.52	3.19	8.87
Total Secondary Conc.	1.39	5.6	41.59
Total Concentrate	1.74	5.7	53.12

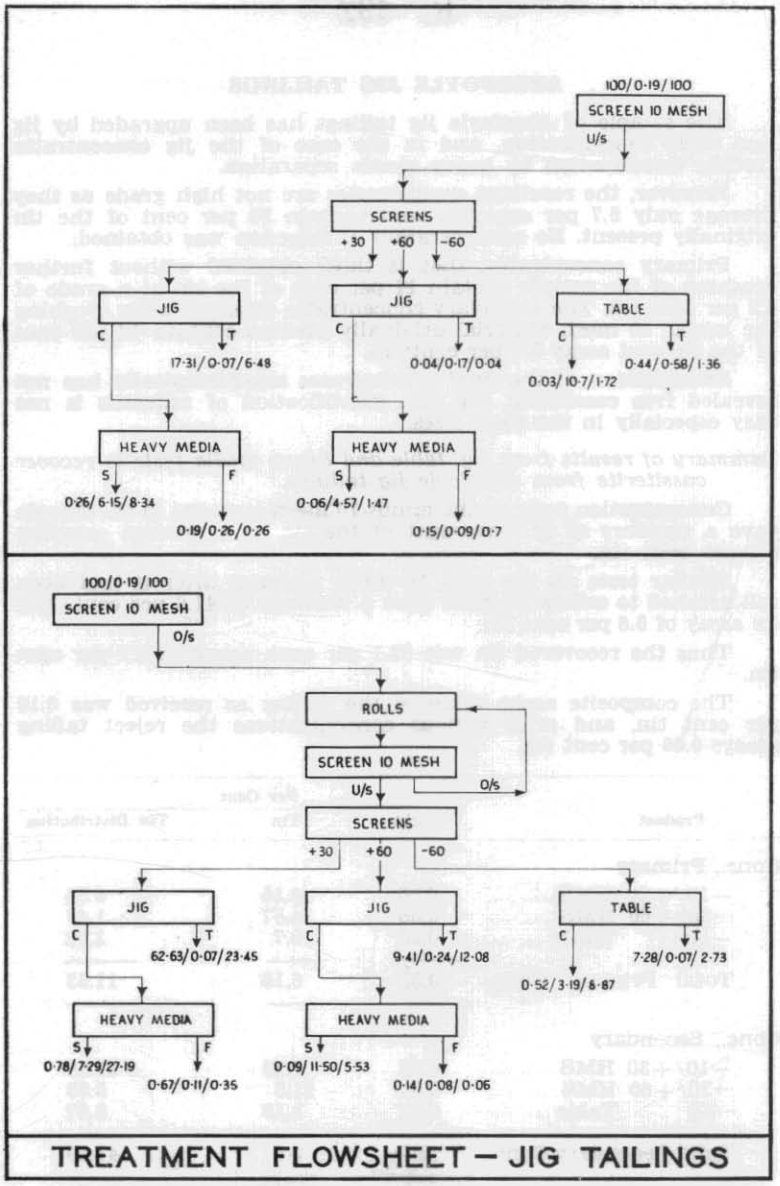
100/0·19/100
SCREEN 10 MESH
U/s
SCREENS
+30
+60
-60
JIG
JIG
TABLE
C
T
17·31/0·07/6·48
0·04/0·17/0·04
0·03/10·7/1·72
0·44/0·58/1·36
HEAVY MEDIA
HEAVY MEDIA
S
F
0·26/6·15/8·34
0·19/0·26/0·26
0·06/4·57/1·47
0·15/0·09/0·7
100/0·19/100
SCREEN 10 MESH
O/s
ROLLS
SCREEN 10 MESH
U/s
O/s
SCREENS
+30
+60
-60
JIG
JIG
TABLE
62·63/0·07/23·45
9·41/0·24/12·08
0·52/3·19/6·87
7·28/0·07/2·73
HEAVY MEDIA
HEAVY MEDIA
0·78/7·29/27·19
0·67/0·11/0·35
0·09/11·50/5·53
0·14/0·08/0·06
TREATMENT FLOWSHEET — JIG TAILINGS

FIGURE 25.

Tailing, Primary				
−10/30	Jig	17.31	0.07	6.48
	HMS	0.19	0.26	0.26
−30/60	Jig	0.04	0.17	0.04
	HMS	0.15	0.09	0.07
−60	Table	0.44	0.58	1.36
Total Primary Tailing		18.13	0.086	8.21
Tailing, Secondary				
−10/30	Jig	62.63	0.07	23.45
	HMS	0.67	0.11	0.35
−30/60	Jig	9.41	0.24	12.08
	HMS	0.14	0.08	0.06
−60	Table	7.28	0.07	2.73
Total Secondary Tailing		80.13	0.090	38.67
Total Tailing		98.26	0.089	46.88
Head		100.00	0.19	100.00

Summary of jig and table concentration tests

Tungsten distribution calculated from head and concentrate analysis only. Tailings were not assayed.

	Per Cent			*Per Cent Distribution*	
Product	*Weight*	*Tin*	*Tungstic Oxide*	*Tin*	*Tungstic Oxide*
Primary Concs.					
−10+30 mesh Jig	0.45	3.57	0.78	8.60	2.4
−30+60 mesh Jig	0.21	1.37	0.28	1.54	0.4
−60 mesh Table	0.03	10.7	1.13	1.72	0.2
Total Primary Concs.	0.69	3.21	0.64	11.86	3.0
Secondary Concs.					
−10+30 mesh Jig	1.45	3.55	0.79	27.54	7.6
−30+60 mesh Jig	0.23	4.54	0.91	5.59	1.4
−60 mesh Table	0.52	3.19	0.56	8.87	1.9
Total Secondary Concs.	2.20	3.57	0.74	42.00	10.9
Total Concs.	2.89	3.48	0.72	53.86	13.9
Primary Tails					
−10+30 mesh Jig	17.31	0.07		6.48	
−30+60 mesh Jig	0.04	0.17		0.04	
−60 mesh Table	0.44	0.58		1.36	
Total Primary Tails	17.79	0.08		7.88	

Secondary Tails						
−10+30 mesh Jig	62.63	0.07		23.45		
−30+60 mesh Jig	9.41	0.24		12.08		
−60 mesh Table	7.28	0.07		2.73		
Total Secondary Tails ..	79.32	0.09		38.26		
Total Tails	97.11	0.09	0.13	46.14	86.1	
Total	100.00	0.19	0.15	100.00	100.00	

Heavy media separation tests at S.G. 2.954 made on jig concentrates.

Product	*Per Cent*		*Per Cent*
	Weight	*Tin*	*Tin Distribution*
Total H.M. Primary Conc.			
−10+30 mesh	0.26	6.15	8.34
−30+60 mesh	0.06	4.57	1.47
	0.32	5.73	9.81
Total H.M. Secondary Conc.			
−10+30 mesh	0.78	7.29	27.19
−30+60 mesh	0.09	11.50	5.53
	0.87	7.03	32.72
Total H.M. Concs.	1.19	6.68	42.53
Total H.M. Primary Tail			
−10+30 mesh	0.19	0.26	0.26
−30+60 mesh	0.15	0.09	0.07
	0.34	0.18	0.33
Total H.M. Secondary Tail			
−10+30 mesh	0.67	0.11	0.35
−30+10 mesh	0.14	0.08	0.06
	0.81	0.10	0.41
Total H.M. Tailings	1.15	0.12	0.74