

TR13-145-147

R. 563

CAMBRIA MINE WELDBOROUGH

DETERMINATION OF RECOVERABLE TIN

At the request of Mr. P. Kidd, tests were carried out on a sample from the Cambria Mine, Weldborough, to determine the amount of recoverable tin present.

Sample

The sample submitted consisted of approximately 16 lb of pieces of granite ranging from about two inch to four inches in size. Each piece of granite had some granular cassiterite at a boundary between the granite and a quartz vein, and it appeared that the granite pieces had been broken away from the quartz vein. The cassiterite was present in grains ranging from 1/16" to 3/16" in size. The pieces of granite were said to be forkings from a sluice box operation.

Note:

- (1) No responsibility will be accepted for the results shown in this report except insofar as they apply to the sample received.
- (2) All screens used were from the British Standard Screen Series.

Test Work

The ore was crushed in the laboratory jaw crusher. Crusher discharge was screened on a 7 mesh screen. Screen oversize was crushed in the laboratory rolls. Rolls discharge was screened on the 7 mesh screen, and the oversize was returned to the rolls. This process was repeated until all the ore passed through the 7 mesh screen.

An assay sample was taken at this stage and assayed for tin with the following result:—

Tin: 0.52 per cent.

The remainder of the sample was screened on 10, 22, 60, 100 and 200 mesh screens. The -7 mesh +10 mesh fraction and the -10 mesh +22 mesh fraction were separately concentrated in the Deco laboratory jig and the -22 mesh +60 mesh, -60 mesh +100 mesh, -100 mesh +200 mesh, and -200 mesh fractions were separately concentrated on the Deister table.

The results of concentration of the various size ranges are as follows:—

Product	Wt.	Per Cent		Tin Distribution Per Cent
			Sn	
-7 Mesh. +10 Mesh Fraction				
J.C.	2.3	1.6	7.9	
J.T.	23.9	0.14	7.1	
J.F/D.	26.2	0.27	15.0	

	Product	Wt.	Per Cent		Tin Distribution
				Sn	Per Cent
-10 Mesh.	+22 Mesh Fraction				
	J.C.	2.2	5.5	25.4	
	J.T.	31.0	0.13	8.5	
	J.F/D.	33.2	0.49	33.9	
-22 Mesh.	+60 Mesh Fraction				
	T.C.	0.2	37.8	15.9	
	T.T.	14.9	0.15	4.7	
	T.F/D.	15.1	0.65	20.6	
-60 Mesh.	+100 Mesh Fraction				
	T.C.	0.1	19.7	4.1	
	T.T.	6.0	0.11	1.4	
	T.F/D.	6.1	0.43	5.5	
-100 Mesh.	+200 Mesh Fraction				
	T.C.	0.1	22.2	4.7	
	T.T.	6.2	0.11	1.4	
	T.F/D.	6.3	0.46	6.1	
-200 Mesh	Fraction				
	T.C.	0.1	23.7	5.0	
	T.T.	13.0	0.51	13.9	
	T.F/D.	13.1	0.69	18.9	
Calculated Head		100.0	0.48	100.0	
Head Assay:			0.52		

Abbreviations Used in Table

J.C.	Jig Concentrate	T.C.	Table Concentrate
J.T.	Jig Tailing	T.T.	Table Tailing
J.F/D.	Jig Feed	T.F/D.	Table Feed

At the conclusion of the jigging tests, the contents of the jig bedding were examined, and were found to contain an appreciable number of free cassiterite grains. The weight and tin content of the bedding from each of the jigging tests has been added to the weight and tin content of each of the jig concentrates obtained to give the jig concentrate figures reported in the above table. This accounts for the low grade of jig concentrates reported in the table.

A summary table of the above results is shown below:

	Weight Per Cent	Assay Per Cent Sn	Sn Distribution Per Cent
Total Concentrate	5.0	6.0	63.0
Total Tailing	95.0	0.19	37.0
Head	100.0	0.48	100.0

Conclusions

Jigging and tabling of the ore crushed to pass a 7 mesh screen yielded an overall concentrate of 6.0 per cent Sn with 63.0 per cent recovery.

Visual examination of the coarser concentrates indicated that few composite particles bearing cassiterite were present and upgrading of the concentrate to a saleable grade should not drastically affect the final recovery.

In practice, this material will probably be concentrated by sluice box and therefore it is doubtful if material finer than 200 mesh will be recovered. In test work, 5.0 per cent of the total tin was recovered in the -200 mesh range.

It is probable that by crushing to minus 7 mesh, about half of the tin will be recovered in a saleable grade tin concentrate. This means the recoverable head value of the 'forkings' is $\frac{1}{4}$ per cent tin.