

TR7-189-190 R. 420: Part 1

### PRELIMINARY INVESTIGATION OF TIN ORE, MT CLEVELAND MINE

#### Investigation

Samples of composites obtained from ground split diamond drill cores and assayed for tin were used to obtain preliminary data on recoveries obtainable by gravity concentration to reasonably high grade concentrates.

The vanning treatments consisted of:—

1. Acid treatment to remove sulphide and carbonate gangue minerals. This treatment does not attack the cassiterite.
2. Pan the cassiterite in the acid insoluble residues to a high grade concentrate.
3. Regrind the panned tailings, and repan to concentrate any cassiterite freed from the middling particles and repeat this treatment once.

#### Discussion

Commercial treatment for removal of sulphides could be either by flotation or calcination. In either case losses would occur which do not exist in vanning assay treatment, and this feature could result in higher recoveries than obtainable in practice. Although the initial grinding was finer than the best procedure for highest recoveries, the repeated grinding and vanning favours optimum concentration of the recoverable cassiterite. It is difficult to interpret commercial recovery from vanning assays, however, it is of interest and possible use that we have found with the high pyrrhotite ore from the Greisen Lode at Waratah mill recoveries ranged from 70 to 90 per cent of those obtained by vanning assays. The major reasons for the range in recoveries were variations in the nature of the ore.

**Summary**

1. The composite samples shown in the tabulation were obtained from Battery, Halls, Henry's and Waterhole lodes, and contained 0.4 to 3.1 per cent of tin.

2. Recoveries by vanning assays ranged from approximately 60 to 80 per cent.

Group No.	Lode	Hole No.	Sample No.	% Tin	Vanned Concentrate	
					% Tin	% Recovery
1	Halls	9	71-73	0.96	40.3	59.6
2	Halls	10	75-76	2.02	49.0	73.3
3	Halls	10	77-78	1.76	49.5	77.6
4	Halls	10	79-88	1.25	39.4	79.1
5	Halls	11	89-119	1.33	54.5	65.2
6	Halls	12	120-134	1.19	41.4	76.2
7	Halls	12	135-143	1.04	46.2	66.6
8	Waterhole	13	148-153	0.84	39.8	63.0
9	Waterhole	13	154-161	0.82	40.3	72.2
10	Waterhole	13	162-166	0.36	20.4	80.0
11	Henry's	15	167-171	3.11	45.2	76.9