

## 5. ADDITIONAL BENEFICIATION TESTWORK FOR ORE SAMPLE No. 1

In continuation of the Stage I test series, the additional beneficiation testwork conducted on Ore Sample No. 1 was as follows:

- (a) Size/assay analysis of the -1.70 mm head ore sample ground to 100% minus 75  $\mu\text{m}$ .
- (b) Two identical bench-scale batch flotation tests to produce a set of sulphide and tin rougher flotation concentrates for size/assay analysis and for mineralogical study. The grind size used for flotation tests was also 100% minus 75  $\mu\text{m}$ .

### 5.1 Test Procedures and Results

A 500 g charge of minus 1.70 mm head Ore Sample No. 1 was stage ground to 100% minus 75  $\mu\text{m}$  at 60% solids and the ground product sized and cyclosized to obtain fractions for tin assay. The size/assay result is presented in Appendix C.

Two identical bench-scale flotation tests were carried out on head Ore Sample No. 1 using the same grind size of 100% -75  $\mu\text{m}$  to produce a set of sulphide and tin rougher flotation concentrates for size/assay analysis and mineralogical study. Details of the flotation tests with size/assay results and the findings of the mineralogical study on the test products are presented in Appendices C and D respectively.

### 5.2 Discussion

Size/assay analysis showed that for the 100% -75  $\mu\text{m}$  flotation feed material, 29.3% of the total tin was contained in the +38  $\mu\text{m}$  fraction which assayed 0.40% Sn. The rest of the tin (70.7%) was in the -38  $\mu\text{m}$  fraction which assayed 0.32% Sn. The nominal minus 10  $\mu\text{m}$  slime accounted for about 8.6% of the total tin in the grind size examined.

The overall tin recovery (in sulphide and tin rougher flotation concentrates) in Tests 5 + 6 was 84.0% which consisted of 22.3% and 61.7% recovered from the +38 and -38  $\mu\text{m}$  fractions respectively. The absolute tin recoveries in the two sized fractions were 76.2 and 87.2% respectively.

Flotation test results showed that a very high degree of selectivity and concentration took place in the two coarsest size fractions (-75 +38  $\mu\text{m}$  and cyclosizer Cone 1) during the tin rougher flotation stage. This flotation selectivity decreased very rapidly with finer grain size from cyclosizer Cones 2 to 5.