

6. UNCONVENTIONAL BENEFICIATION TESTWORK FOR COMPOSITES PC1, PC2, SC1 AND SC2

The treatment procedure used in this investigation was unconventional in that it applied a 'front-end' tin flotation process in dressing the tin ores. In a conventional tin treatment practice, the flotation process is generally used initially for sulphide removal and then for recovering the fine tin after gravity concentration of the coarser tin minerals.

The variables examined in the tin flotation tests were grind size, flotation time, collector dosage, collector, and deslimed feed. All flotation tests conducted were confined to rougher stages only. Flotation cleaning stages were not studied because insufficient quantity of rougher concentrates was produced in each test to allow for subsequent cleaning at a reasonably high pulp density. However, in a few tests the tin rougher concentrates were classified and then up-graded by superpanning.

6.1 Test Procedures and Results

Four series of 3, 14, 6 and 4 bench-scale batch flotation tests were carried out on Composite Samples PC1, PC2, SC1 and SC2 respectively. The variables examined in each test completed are summarised as follows:

- Test PC1/F1 - Deslimed flotation feed using PTAA as collector
- Test PC1/F2 - Deslimed flotation feed using SPA as collector
- Test PC1/F3 - Deslimed flotation feed using S-3903 as collector
- Test PC2/F1 - Standard test using old stock (Stage I) PTAA as collector
- Test PC2/F2 - Standard test using new stock (Stage II) PTAA as collector
- Test PC2/F3 - Standard test with coarser grind
- Test PC2/F4 - Standard test with extended flotation time
- Test PC2/F5 - Coarser grind with extended flotation time
- Test PC2/F6 - Increase in collector dosage
- Test PC2/F7 - Coarser grind with increase collector dosage
- Test PC2/F8 - Up-grade tin flotation rougher concentrate (flotation feed 100% -75 μ m) by superpanning
- Test PC2/F9 - Standard test using CA540 as collector
- Test PC2/F10 - Up-grade tin flotation rougher concentrate (flotation feed 100% -150 μ m) by cyclosizing and superpanning
- Test PC2/F11 - Standard test using SPA as collector
- Test PC2/F12 - Deslimed flotation feed using PTAA as collector
- Test PC2/F13 - Deslimed flotation feed using SPA as collector
- Test PC2/F14 - Deslimed flotation feed using S-3903 as collector