

- (d) The problem of mineral locking between cassiterite and other minerals present was revealed in the study of the conventional tin treatment of the four composite samples. Test results showed that an initial finer feed grind (probably around 150 μm) would be required for a more effective initial sulphide removal by flotation prior to gravity treatment. The overall tin extraction could be improved by middling retreatment and by recovering the very fine tin material using a 'tail-end' flotation circuit in conjunction with the gravity circuit. SC2 gave the best amenable results in the conventional beneficiation testwork followed by PC2 and PC1. SC1 appeared to be the most difficult sample to treat with this method. In attempting to produce high grade concentrates from the low grade gravity products, it was shown that a process involving further removal of sulphide by flotation with a finer grind feed, followed by superpanning, was effective. Final tin concentrates in excess of 45% Sn were obtained for all composite samples except for SC1 which gave a concentrate grade of 37.2% Sn.

It is recommended that the Stage III beneficiation study be conducted on the Mt Bischoff tin ores to establish the treatment method as follows:

Unconventional Treatment Procedure

- (a) Detailed evaluation of other tin collectors such as CA540 and S-3903.
- (b) Investigation of up-grading of the tin flotation rougher concentrate by flotation cleaning making use of a sufficiently large quantity of material to maintain cleaning pulp densities.
- (c) Investigation of up-grading tin flotation rougher concentrate by gravity methods making use of classification as well as conventional means.

Conventional Treatment Procedure

- (a) Examination of a more effective initial bulk flotation sulphide removal using a finer feed grind and with the use of an activator.