

tests conducted on PC1 and Ore Sample No. 1. Flotation cleaning of the sulphide rougher concentrate as shown in Tests PC2/F8 and F10 did not appear effective in reducing the tin losses in this product. In addition, brief mineralogical examinations were conducted on some of the sulphide rougher concentrates produced and it showed that the stannite to cassiterite ratio was about 60-70% to 40-30% respectively. Thus, about 7 to 8% of the average of 11% tin reporting in the sulphide concentrates of PC2 was in the form of stannite. This stannite was about 65% liberated, the locked species being evenly locked with sulphides and non-opaque gangue. Cassiterite accounted for the remaining 4 to 3% of tin in this product and had the same locking characteristics as the stannite.

In Test PC2/F12, two stages of sulphide rougher flotation using SSBX as collector at natural pH removed about 56% of the sulphide materials in Composite PC2. The remaining sulphides did not appear to interfere with tin flotation and nearly all were reported in the tin rougher tail product. Additions of copper sulphate as an activator in the sulphide pre-float stages would probably remove some more sulphide minerals prior to the tin flotation stages. However, this may also increase the tin losses into the sulphide product.

In the desliming Tests PC2/F12 to F14, tin losses in the -7 μ m slime were less than 3% which was similar to that obtained for testing PC1. The same series of tests showed that there was a marked increase in grade of the tin rougher concentrates from about 3% to 8-8.5% Sn using collectors PTAA and SPA respectively as a direct result of using deslimed flotation feed. The plot of cumulative grade and recovery versus flotation time for Tests PC2/F12 to F14 as shown in Fig. 4 revealed that collector SPA gave tin flotation performance as good as that of the PTAA counterpart but considerably better than that of S-3903 under the conditions used in these tests.

6.2.3 Composite SCl

Tin loss to the sulphide rougher concentrate was high and an average of 19.3% was obtained in a series of six flotation tests. This was reduced to 13.5% with flotation cleaning as shown in Test SCl/F2. Further rejection of tin would probably require a decrease in the overall sulphide removal at the same time prior to tin flotation. Removal of sulphides in the sulphide rougher flotation was up to 80.2% as calculated in Test SCl/F3, the rest of the sulphide reporting was mainly in the tin rougher tail product.