

APPENDIX D

MINERALOGICAL EXAMINATION OF SULPHIDE AND TIN ROUGHER CONCENTRATES OF
FLOTATION TESTS 5 + 6 ON HEAD SAMPLE NO. 1 (STAGE 1)

D1. INTRODUCTION

Size fractions of a sulphide rougher concentrate and a tin rougher concentrate of flotation tests 5 + 6 on Head Sample No. 1 (Stage 1) were submitted for mineralogical examination to determine their mineralogical composition and the liberation characteristics of tin minerals.

Both the weight distributions and tin assays of all products, as well as the tin rougher tail were supplied. These data are reproduced in Table D1, together with the calculated tin distribution.

D2. PROCEDURE

Polished sections (PS22356-67) were made of each size fraction except for the -C5 size fraction and examined in reflected light to determine their mineralogy. The bulk mineralogy of each size fraction and the locking of cassiterite in cassiterite-rich size fractions {-75 +38, -38 +32.5(C1) and -32.5 +24.2(C2) size fractions of the tin rougher concentrate} were determined by point counting. The tin mineralogy and locking characteristics of tin minerals in the size fractions with lower tin contents were determined by gross counting.

Selected size fractions were examined with a binocular stereomicroscope and in temporary oil mounts by transmitted light microscopy.

D3. MINERALOGY

The bulk mineralogy of the rougher concentrates is given in Table D2. In the sulphide rougher concentrate both cassiterite and stannite are present and their relative proportions are given as stannite/cassiterite ratio (weight per cent). This ratio decreases at finer grain sizes. No stannite was observed in the tin rougher concentrate.

The sulphide rougher concentrate consists mainly of pyrite with a much smaller proportion of non-opaque gangue and accessory iron oxides (mainly goethite) and arsenopyrite. The proportions of non-opaque gangue and iron oxides increase with finer grain size at the expense of the pyrite content. Other sulphides present at trace levels are (in approximately decreasing abundance) covellite, chalcopyrite, sphalerite, galena and molybdenite.