

veins (Nos. 2, 4, 5 and 6 lodes) carry wolframite, cassiterite and bismuthinite in a gangue of quartz with minor fluorite, mica, topaz, beryl, calcite and laumontite. Traces of scheelite, pyrite, sphalerite, chalcopyrite, magnetite, molybdenite and galena also occurred.

The veins occur partly in Moina sandstone in the south and east of the mine, and partly in overlying calc-silicate rocks and skarn to the west. The veins pass from sandstone to calc-silicates to skarn without any significant change in width or composition. The calc-silicates and skarn represent metasomatically altered calcareous or dolomitic siltstones and limestone conformably overlying the sandstone. Unaltered limestone outcrops to the west of the mine area, and is intersected in diamond drill holes put down by Comalco and the Mt. Lyell Mining and Railway Co. Ltd. (McKibben, 1971).

Tertiary deep leads occur beneath basalt which covers much of the mine area. The basalt is an agglomeratic, and in part vesicular, alkali olivine type.

b) Structure

The structure of the rocks in the mine area is difficult to ascertain in detail because of lack of outcrop. Overall the contact between sandstone and calc-silicate rocks/skarns dips north-west at about 30° but there is a great deal of fracturing both parallel to the EW lode system and parallel to the Bismuth Creek Fault (Fig.5). The Bismuth Creek Fault persists regionally for several miles, and seems to have existed prior to mineralization, but to have had a small amount of strike slip movement (east block south) after the mineralization. During this movement the skarn body to the east of Bismuth Creek was separated from the main body (Fig.3.) This movement of east block south may be apparent only, because slight vertical displacement of the shallowly dipping beds could have produced the present outcrop distribution. Movement along the compressional Bismuth Creek Fault produced tension fractures trending E-W. These open E-W fractures were subsequently filled by the lodes. These fault-fracture systems doubtless were the necessary plumbing system to allow access of mineralizing fluids from the granite below.

A reverse fault dipping at about 25° NE ('Hugo's Fault') has brought Moina sandstone above the skarn body to the east of Bismuth Creek, (Fig.6).