SOME ASPECTS OF THE STRUCTURAL CONTROL OF THE COPPER LODES AT THE WHEAL HUGHES AND POONA MINES, MOONTA, SOUTH AUSTRALIA

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ABSTRACT

A study has been made of the structural fabrics, including foliations and fractures, of the copper deposits in the Wheal Hughes and Poona mines located at Moonta, South Australia.

A working model with two major phases of evolution is hence suggested. Emplacement of copper rich magmatic hydrothermal solutions into the fractures of the Moonta Porphyry is suggested to be the first major phase. Conjugate shearing coupled with faulting is suggested to be the second major phase. The resultant shear movements of the second phase appear to have affected the early formed mineralization (050 azimuth, moderately dipping to the NW at Poona Mine), localizing the ore mainly into en echelon boudins and necking zones as well as along tectonic breccias (050 azimuth, moderate to steep dipping to the SE).

A series of faults perpendicular to the shear planes of the second phase smear out the ore up to hundreds of metres and appears to have occurred just after the shearing, before complete cooling.