4. MINERAL POTENTIAL

Volcanogenic and hydrothermal sulphide deposits are the major targets for exploration within the Comstaff licence areas. In Tasmania, two major mineralising epochs have been recognised. The earlier epoch is volcanogenic and is associated with the extrusion of the Mount Read Volcanics. The later epoch is hydrothermal and is associated with the intrusion of the Devonian granites (see TAS/2/1693).

Fossils from the Mount Read Volcanics within the Sock Creek and Queenstown areas indicate a lower middle to middle upper Cambrian age. G.R. Green stated, in a paper presented at the 1976 International Geological Conference in Sydney, that archetarcs indicate a pre-Cambrian age for the Rosebery Shale. Dating of galena from the Rosebery Mine gives an age of 161 x 10^6 years, i.e. Jurassic, (R.G. Ostic, R.D. Russel, R.L. Stanton, Additional measurements of the isotopic composition of lead from stratiform deposits. Can. Jour. of Earth Sciences, Vol. 4, 1967).

An examination of the lithologies of the various rock groups indicates that acid volcanic rocks first appear within the Dundas Group (see Section 3 Geology). This lithological difference, plus supportive evidence from fossils, indicates to the writer that the Mount Read Volcanics are lower middle to middle upper Cambrian in age. The lead isotope data indicate remobilisation of the galena by temperature increases in the earth's crust during the formation of the Jurassic dolerites in Tasmania.

4.1. Stratiform Massive Polymetallic Sulphide Deposits

The following parameters are required for the formation of a stratiform massive polymetallic sulphide deposit:

a) A source for the cations
b) A sedimentary basin
c) A low Eh
d) A neutral to slightly alkaline pH

Many stratiform massive polymetallic sulphide deposits are associated with an acid volcanic pile, e.g. the Rosebery deposit, the Kuroko deposits and the Archaean deposits in Canada. Some deposits, however, do not have any direct relationship with