

to thickness. This is either suggestive of a highly localised depocentre for the precipitating mineralisation or some process of mineralisation other than a typical sub-aqueous exhalative system. The second is the lack of any significant sediment input within the ore. This may indicate an extremely rapid mineralising process, which is not repeated at any other stage in the sedimentary sequence, again an unusual process not typical of a sub-aqueous exhalative. These two characteristics seem incompatible since a deep, narrow depocentre is likely to be associated with influx of sediment from the margins. These problems are far beyond the scope of this study, but do remain as curiosities.

3. MODEL OF STRUCTURAL EVENTS

The following outline describes how the major structural features and related deformation events may be related to the overall formation of the volcanic sequence and the mineralisation. Much of the inferred tectonic setting etc. is speculation based on the predicted axes of stress indicated by the geometry of structures. A diagrammatic illustration of this model is presented in Figure 7.

A. Basin Formation

The only structural features that may be directly related to the early history of the basin is the F1 folding event and possibly the Henty Fault and associated structures in the basement. If the F1 folding is indicative of tectonics active during basin formation then the axis of shortening appears to have been approximately N-S. Since there is very little evidence of strain due to shortening in this direction it is likely that strain was accommodated by either E-W extension or wrenching. A combination of both is likely, the degree of each type of strain possibly relating to the orientation of major controlling structures. For example, wrenching on a major structure such as the Henty Fault, or its precursor, may result in local areas of extension due to changes in fault orientation. These types of "pull-apart basins" are common features of major wrench zones, and the deep structure of such zones is a common control on volcanic activity. Basins formed under such conditions are often asymmetrical, or half-grabens with major bounding faults.

It may have been in this kind of setting that the Que-Hellyer Volcanic sequence was deposited into a relatively small basin within a larger area of active sedimentary and volcanic deposition. Exhalative and extrusive