Comments on Petrography

(i) Nature of the pink, potassic volcanics.

The petrographic observations indicate that the K-feldspar is secondary. The pink "Red Hills rhyolite" is therefore probably an alteration zone rather than an original volcanic unit. It probably corresponds to a level at which widespread lateral movement (at least 1000m) of fluid occurred around a vertically ascending column (the main pipe). At this level, brecciation is characteristic, and this may indicate that boiling took place. Boiling, and consequent reduction in the acidity of the remaining liquid, could account for the presence of K-feldspar instead of sericite. The sericitic stylolites may represent the "dewatering" of the pink rocks later, on cessation of boiling.

The presence of hematite and of apparently early, highly birefringement, green phyllosilicate (clay ?) is probably due to the metamorphism of Cambrian weathering products. Magnetite persists nonetheless, and may define a lateral zonation. It is abundant far from the central pipe (e.g. S732 and S725).

(ii) Note the concentration of rare earth elements in S728, in the lower parts of the exposed system.

(iii) The vertical zonation of alteration corresponds with that observed at Hercules, in so far as the calcium content of the rocks is concerned. (Potassium feldspar alteration affects even the hangingwall to some extent at Hercules, and does not give rise to a visible pink zone, however).

(iv) The round quartz bodies, spherulite-like in S733 suggest that much colloidal silica was added to pyroclastic material in the silicified unit within the quartz-sericite zone.

2.1.4 Geochemistry

1. Soils

Sixteen soil samples were taken from line 33S, 600mE-820mE to evaluate a suspected applied potential anomaly, which later turned out to be due to a wiring error. The -80# fraction was assayed for Cu, Pb, Zn, Ag, Mn, Ba and Fe. Results are presented in Figure 2.

The only assay of note was 630ppm Pb from 600mE. This site overlies black shales which are exposed in roadworks to the north of the line.

2. Rock Chips

Thirteen rock chips from the Red Hills area were submitted for assay during 1981-82. Elements assayed were Cu, Pb, Zn, Ag, Co, S and Mn ± Fe and Ag-Au fire assay. Results are given in Figure 2.

Seven rock chip samples were taken from line 16S, between 300mE and 480mE, to determine the source of anomalous Pb assays from soil sampling in 1977. The sections from 390mE-420mE and 460mE-480mE were chip sampled over 10m intervals wherever outcrop was exposed and relatively fresh. Samples were also taken of a cherty sediment with disseminated sulphides (sample number 22002) at 308mE and a breccia, with Mn and Fe-oxides filling the interstices, (22006) at 420mE.