

THE COLEBROOK HILL ANOMALY:

The anomaly is related to exposed Cambrian ultrabasics. It is a variable and extreme feature (amplitude up to 8500nT) with a north-south orientation and an extension of several kilometres. The character of the anomaly suggests at least two or three related sources with differing magnetic properties. All approach the surface and are rarely more than 25 metres wide (one is 75 m wide on line 900).

Compound gradient analysis of the raw data indicates a general source dip of 50-70° to the west. This was not verified by modelling a smoothed (continued) form of the data (lines 5370900, 5371000, 5371100 mN). It is possible that the eastern contact does indeed dip west at the angle inferred but the body as a whole, or its components, cannot be proven to dip west using assumptions of induced field alone. Several combinations of dip and multiple bodies were tested but none could provide the strong mid anomaly spiking or the negative tail to the west. It is probable that one or more of the source parts is strongly magnetised in a direction not concordant with the present earth's field. No dip determination is possible, therefore, without property measurements on a range of local ultrabasics - including estimates of remanence directions. Modelling has shown that the minimum bulk susceptibility/magnetisation of anomalous members of the ultrabasic suite is more than 0.01 to 0.02 cgs and the strongly magnetised units exceed 0.05 cgs.

It was noted, however, that a profile match could be obtained by assuming the western part of the suite to be magnetic in a direction opposing the present field (0.05 Gauss) while the eastern part was normally magnetised (equiv susc. 0.04 cgs); all units dipping west at 65°. None of these assumptions is unreasonable but the critical remanence direction factor should be verified. (Note: 0.05 G is equivalent to 0.08 cgs).

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