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THE MAGNETIC INDUCED POLARIZATION METHOD

It is essential to grasp the very basic differences between the magnetic mode of acquiring induced polarization data *(MIP)* and the more conventional electrical mode *(EIP)*. As even geophysicists of some experience have difficulty in appreciating the full significance of the data obtained in the magnetic mode, I have incorporated into this report some remarks and comments on the main anomaly forms obtained from MIP.

The very brief description which follows is also designed to give a visual picture of the relationship between EIP and MIP, and demonstrate how the various MIP parameters of normalised horizontal magnetic field (H_N), chargeability *(M)*, secondary magnetic field (H_S) and decay rate *(ΔM)*, represent the electrical properties of the material over which the tests are made.

Comparison of the Electrical and Magnetic Modes of Acquiring Induced Polarization Data:- By far the most meaningful manner in which to visualise the nature of MIP (and indeed EIP) data, is to consider the *energy storage concept* and to look at the initial current flow patterns and the resultant equipotential field caused by the energising current, and then the consequent secondary current flow pattern and its associated secondary potential field caused by the decay of energy stored in the induced polarization phenomenon.

Energisation Process:- Normally current is applied to the volume to be sampled by means of two electrodes placed semi-parallel to the expected strike of the target mineralisation. In the diagram shown in Figure 1, the fine solid lines represent the current flow pattern so generated. The dashed faint lines represent the equipotential surfaces (lines in the section).

1031 WELLINGTON STREET, WEST PERTH, W.A. 6005
TELEPHONE 21 6934. TELEGRAMS "SCINTREX" PERTH

6 TRAMORE PLACE, KILLARNEY HEIGHTS, N.S.W. 2087
TELEPHONE 451 5367. TELEGRAMS "SCINTREX" SYDNEY