

The Rolleston setups were designed to test I.P. anomalies A1 and A2 from the 1969-70 pole-dipole survey conducted by C.G.G. (Omnes, 1970). Noisy signals prevented accurate readings for deeper spreads and so the arrays were read to $n = 4$ with dipole spacings of 100 ft. and 200 ft., both with 100 ft. station intervals. A section of line 56N was read to $n = 6$ because of high chargeability values at depth (see Figures 40 and 41).

(i) Line 184N, 120 mE-720 mE (Figure 37)

This setup covered the eastern pyrite zone which gave a peak gradient array chargeability response of 101 mV/V at 450 mE. The dipole-dipole pseudosection (Figure 37) indicates a narrow strong zone centred at 440 mE and extending to depth. The rapid drop-off in chargeability indicates a sharp contact between mineralised and unmineralised rocks. The highest chargeability response was 116 mV/V below 400 mE at $n = 2$. Resistivity values are generally lower over the anomaly zone but there is no strong pattern in the pseudosection. The lowest resistivity value was 687 ohm-metres below 480 mE at $n = 4$.

(ii) Line 144N, 60 mE-540 mE (Figure 38)

Two superimposed setups with 40 m dipole spacings were used to evaluate the eastern pyrite zone to a depth of about 140 m at a station interval of 20 m. The gradient array chargeability peak was 90 mV/V at 290 mE. The lowest resistivity value from the gradient array survey was 1257 ohm-metres at 330 mE.

A classic "trouser legs" anomaly was recorded in the chargeability pseudosection (Figure 38) with a peak response of 120 mV/V below 280 mE at $n = 1$. The pseudosection indicates that the zone is wider on 144N than on 184N, which agrees with the gradient array profiles. However, a chargeability low at high "n" values beneath the peak surface response on line 144N suggests that the mineralisation is weaker at depth.

The increased width of mineralisation on line 144N has resulted in a stronger and more distinct resistivity anomaly compared with the line 184N pseudosection. The lowest value was 118 ohm-metres below 300 mE at $n = 1$.

(iii) Line 120N, 3600'W-1600'W (Figure 39)

This survey was carried out to determine the response from known mineralisation: the western pyrite zone drilled by LS4 in 1971. The pseudo section (Figure 39) shows an extensive chargeability anomaly which is slightly asymmetrical, for unknown reasons. The anomaly is centred at 2850'W and a peak chargeability response of 95 mV/V was recorded below 3200'W at $n = 4$. The gradient array peak was 75.2 mV/V at 2750'W.

The resistivity anomaly is more symmetrical down to $n = 4$. A low of 133 ohm-metres was recorded below 2800'W at $n = 2$. The gradient array low was 1452 ohm-metres at 2650'W. A surface anomaly west of 3200'W is probably due to swamps.