The anomalies examined lie south of Rosebery in Western Tasmania within E.L. 1/62 (Mt. Black). Two anomalies were submitted for examination.

i) a roughly circular feature centred near 374300mE, 5367200 mN (called the Ring River magnetic anomaly), and

ii) a strong linear feature on the western side of Colebrook Hill (e.g. approx 374500mE, 5371000mN).

The Electrolytic Zinc Co. requested a complete interpretation of anomaly (i); depth, dimensions, magnetisation and shape of the upper surface of the causative body(ies); and a dip analysis of anomaly (ii).

THE RING RIVER ANOMALY:

Total field observations are reproduced in Figures 1 to 12 from data supplied by the EZ Co. This data has been subjected to three types of analysis.

i) inspection for anomaly characteristics,
ii) digital processing for source parameters,
iii) compilation and testing of the implied properties by iterated three-dimensional modelling.

The solution provided is probably not unique but the modelling process applied in confirmation indicates limits for the properties and dimensions of the source body.

Contouring of the values presented in Figure 1 reveals a circular pattern with generally undisturbed gradients to the south and west (see also Figures 4 to 11). Comparable gradients may be observed to the east, south of 5366800mN (Figures 2 to 5). Elsewhere the primary anomaly, the object of this interpretation, is disrupted by strong, localised, near-surface sources (see below). The anomaly is slightly asymmetrical with steeper gradients to the north and east although these are enhanced by disturbances A (approx 374300mE, 5367400mN) and B (approx 374700mE, 5367300mN). Field base levels are recorded only to the east and a value of 62475-62500 nT is implied. The amplitude of the anomaly is about 480 nT and typical horizontal gradients are 0.5 nT/m (to west) and 1 nT/m (to east). Transformation of the data indicates that normal vertical gradients are of the order of 450 to 650 nT/km.

Source depths may be variously estimated at about 300m (slope methods), 225-400m (spectral analysis), 280-410m (gradient analysis), 300-400m (half widths).