

14. Magnetic survey, Port Cygnet

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Two previous magnetic surveys covering the Port Cygnet region have indicated the presence of a substantial anomaly in the vicinity of Regatta Point. The first survey (Leaman and Naqvi, 1968) was restricted to accessible land areas whilst the second (Finney and Shelley, 1966) was a high level airborne coverage with a single traverse passing over the northern end of Port Cygnet. The surface survey revealed an anomaly of more than 2000 nT and very strong gradients over about 200 m of foreshore at Regatta Point. The gradients were such that the precession magnetometer used for the surface survey often produced very inconsistent results. Although no readings were made on Port Cygnet itself due to a number of logistic and technical problems the survey points around the shore certainly indicate a broadly spread, multi-trend anomaly with a peak to the west (see fig. 15, Leaman and Naqvi, 1968). Availability of suitable equipment and techniques has now permitted description of the anomalies in Port Cygnet itself.

A fluxgate magnetometer was used in the marine survey and operated at about 20 cm above sea level. Continuous recording of responses has permitted a fuller appreciation of anomaly character and the readings obtained exhibit a scatter of less than 50 nT, produced by boat motions affecting the sensor, even though a supporting gimbal was used. For the purposes of this survey an accuracy of ± 30 nT is more than adequate.

The results of the survey, which was undertaken only where depth of water permitted, are shown in Figure 37. The anomalous zone near Regatta Point is, in fact, made up of two large anomalies of limited areal extent superimposed on a broad anomaly swell of about 1000 nT which was fully discussed by Leaman and Naqvi (1968).

Anomaly 1

Relative anomalies in excess of 3000-3500 nT with very abrupt gradients are located close offshore at Regatta Point and extend south from the jetty at the Youth Hostel to the judges box at Regatta Point. As these results, one set of which are indicated in profile on the figure, were obtained 1-2 m above bay floor they are probably somewhat smoothed when contrasted with the shore results obtained in the earlier survey. The anomaly is however, not greatly affected by water depth and its termination is considered to relate to the position of the Port Cygnet fault. The anomaly is related to metamorphosed dolerite.

Anomaly 2

A relative anomaly of about 2000 nT is situated just offshore at Crooked Tree Point. The feature is very abrupt and it must be concluded that the anomalous source lies on the bay floor or close to it. No information is available relating to the source of this anomaly. On shore at Crooked Tree Point Lower Permian rocks are intensely metamorphosed and intruded by syenite dyke rocks and the anomaly rapidly diminishes eastward. A source similar to Anomaly 1 seems an unreasonable possibility due to scale and it is unlikely that syenitic or Permian rocks could combine to produce the effect although metamorphism in the region is extreme.

A further interesting feature is the broad spine of anomaly trending SSE across Port Cygnet and past Green Point. This trend bears little relation to any observable geological feature and may reflect the basement influence discussed in Leaman and Naqvi (1968).

MAGNETIC SURVEY PORT CYGNET

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Contour Interval 100 nT (up to 2000 nT)

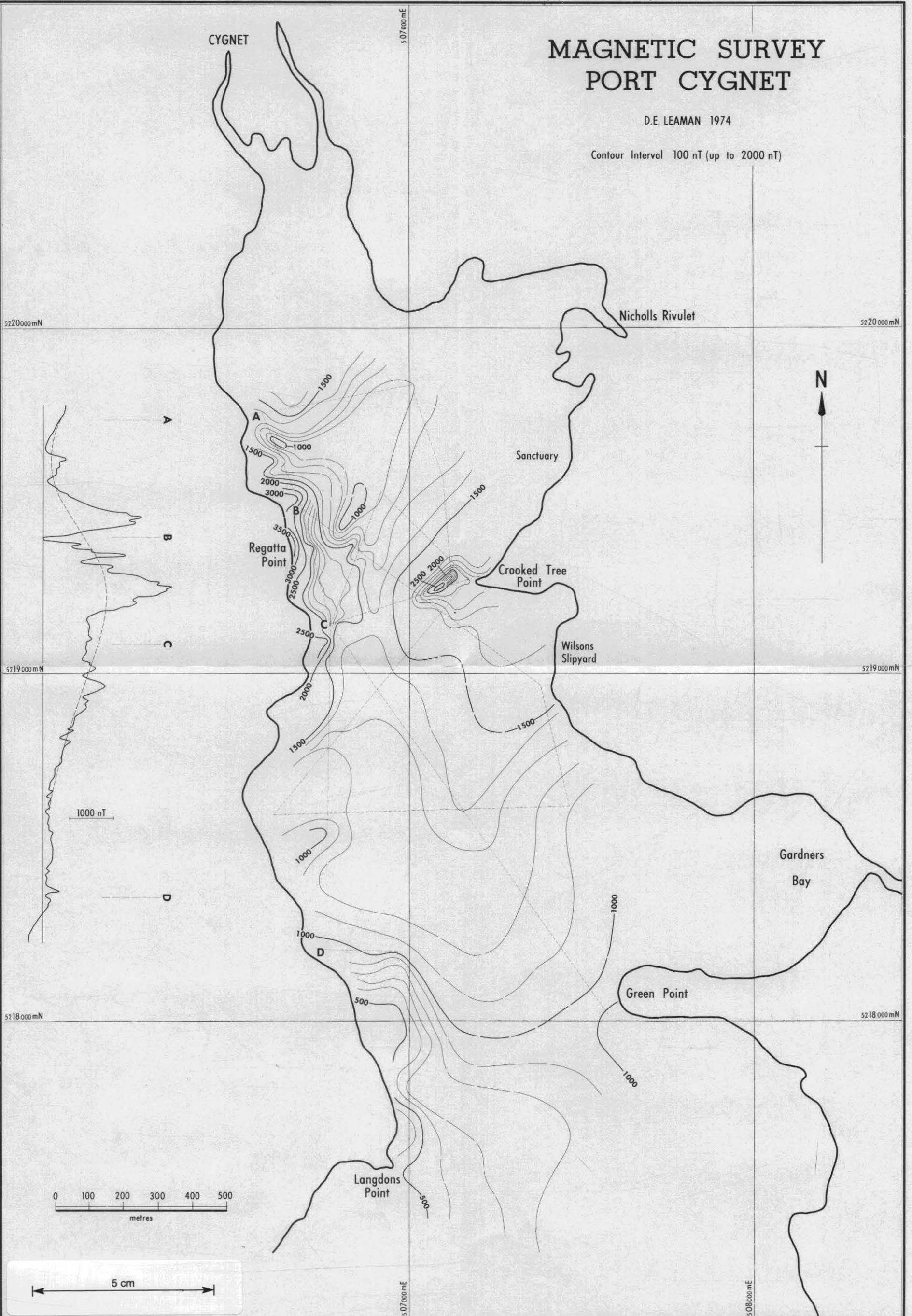


FIGURE 37

REFERENCES

FINNEY, W.A.; SHELLEY, E.P. 1966. Tasmania aeromagnetic survey. *Rec.Bur. Geol.Geophys.miner.Resour.* 1966/139.

LEAMAN, D.E.; NAQVI, I.H. 1968. The geology and geophysics of the Cygnet district. *Bull.geol.Surv.Tasm.* 49.

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