

# Magnetometric problem for a 2-D body of polygonal cross-section buried in the unbounded magnetic halfspace

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**Abstract:** We present the exact boundary integral formulae for calculation of the magnetic anomaly due to a two dimensional body whose permeability is  $\mu_T$  and its cross-section is bounded by the closed general polygonal contour. This body is buried in a wide-spreaded halfspace (e.g. lava field) of magnetic permeability  $\mu_1$ . The upper halfspace is non-magnetic, its permeability is  $\mu_0$ . The boundary integral technique for this problem requires the application of two-term logarithmic potential. Numerical calculations on the basis of derived formulae revealed that the surface anomaly  $\Delta T$  reflects the “topography” mainly of the upper boundary of the perturbing body. The derived algorithm and numerical program enables the calculation of a lot of interesting models: magnetic intrusions, polygonal valleys, polygonal mine galleries, etc.

**Key words:** magnetometric models, the boundary integral technique, magnetometric profile measurements

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