

INTISARI

Pemodelan Inversi 2D Magnetotellurik di Olympic Domain Bagian Tengah Australia Selatan

Oleh

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Deposit Carrapateena, prospek Khamsin, dan prospek Emmie Bluff terletak pada Kraton Gawler bagian timur. Daerah ini termasuk dalam Olympic *Domain* yang merupakan daerah deposit IOCG (*iron oxide copper-gold*). Pada penelitian ini dilakukan proses analisa data inversi 2D magnetotellurik dengan dan tanpa rotasi menggunakan algoritma *Nonlinear Conjugate Gradient* (NLCG). Pemodelan digunakan untuk mengetahui sebaran resistivitas bawah permukaan area penelitian.

Penelitian ini menggunakan data sekunder dari Lembaga Survei Geologi Australia Selatan dengan total 34 titik, terbagi menjadi 2 lintasan yang membentang dari barat ke timur. Analisis data menggunakan tensor fase. Hasil analisis Lintasan 1 data dominan 1D dan 2D, sedangkan pada Lintasan 2 data dominan 1D dan 3D. Pemodelan inversi pada kedua lintasan menggunakan parameter inversi yang sama. Sudut rotasi yang dipilih adalah *tipper strike* dengan sudut $67,5^\circ$ (Lintasan 1) dan $82,5^\circ$ (Lintasan 2). Hasil pemodelan menunjukkan pada area penelitian terdapat anomali konduktif berasosiasi dengan basin dan sedimen penutup, material mantel serta *fluid pathway*, anomali resistif berupa tubuh Kraton Gawler.

Kata kunci: Olympic *Domain*, magnetotellurik, inversi 2D

ABSTRACT

2D Magnetotelluric Inversion of the Central Olympic Domain South Australia

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Carrapateena Deposit, Khamsin prospect, and Emmie Bluff prospect are located in the east of Gawler Craton. This area is included in the Olympic Domain, known as IOCG (iron oxide copper-gold) deposit area. In this research, data analysis and 2D magnetotelluric inversion with and without data rotation was carried out using Nonlinear Conjugate Gradient (NLCG) algorithm. Modelling was used to understand the subsurface resistivity distribution of the research area.

This research used secondary data from the South Australian Geological Survey Institute with a total of 34 data points, divided into 2 lines from west to east. The data analysis used phase tensor approach. The analysis shows that Line 1 is dominated by 1D and 2D type of data, while the Line 2 is dominated by 1D and 3D type of data. The inversion modelling at those lines used the same inversion parameters. The chosen rotation angle is tipper strike with angle of $67,5^\circ$ (Line 1) and $82,5^\circ$ (Line 2). The modelling result shows that the conductive anomaly is associated with basin and overburden sediment, mantle material and fluid pathway, the resistive anomaly is associated with Gawler Craton's body.

Keywords: Olympic Domain, magnetotelluric, 2D inversion