INTISARI

Analisis Data Magnetotellurik (MT) berdasarkan *Forward Modeling* Studi Kasus Lapangan "NE", Sumatra Utara

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Pada penelitian ini, pemodelan struktur resistivitas didasarkan pada data pengukuran magnetotellurik (MT) dan analisisnya memanfaatkan metode *forward modeling*. Tujuan utamanya adalah untuk meningkatkan pemahaman mengenai parameter kontrol dari model, faktor anomali, dan mengidentifikasi sebaran nilai resistivitas pada area penelitian. Data sintetik berupa EDI *file* yang berasal dari kalkulasi *forward model 3D* akan dibandingkan dengan *field data* MT untuk menganalisis pemodelan persebaran resistivitas dan identifikasi anomali area penelitian. Hasilnya menunjukkan bahwa pemodelan yang dilakukan dengan *grid* 3D di penelitian ini sudah mampu memberikan gambaran sebaran resistivitasnya. Dari variasi nilai resistivitas, diindikasi pula geometri anomali *low-resistivity body* di bawah permukaan dengan nilai resistivitas 1 Ωm. Dengan demikian, dapat disimpulkan bahwa desain *grid* dan sebaran nilai resistivitas menjadi penting untuk mendapatkan hasil kurva respons *apparent resistivity* yang optimal. Selain itu, beberapa faktor variasi bentuk anomali dapat memengaruhi bentuk kurva yaitu geometri dan kemiringan.

Kata kunci: magnetotellurik; *forward modeling; apparent resistivity;* parameter kontrol; anomali resistivitas

ABSTRACT

Analysis of Magnetotelluric (MT) Data based on Forward Modeling Case Study of "NE" Field, North Sumatra

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In this study, the modeling of resistivity structures is based on magnetotelluric (MT) measurement data, and the analysis employs forward modeling methods. The primary objective is to enhance the understanding of the controlling parameters of the model, anomaly factors, and to identify the distribution of resistivity values in the research area. Synthetic data in the form of EDI files derived from 3D forward model calculations will be compared with field MT data to analyze the resistivity distribution modeling and identify anomalies in the research area. The results indicate that the modeling conducted with a 3D grid in this study can provide a representation of resistivity distribution. From the variations in resistivity values, the geometry of a low-resistivity body beneath the surface with a resistivity value of 1 Ωm has also been indicated. Thus, it can be concluded that grid design and the distribution of resistivity values are essential for obtaining optimal apparent resistivity response curves. Furthermore, several factors related to variations in anomaly shapes can influence the curve's shape, including geometry and inclination.

Keywords: magnetotelluric; forward modeling; apparent resistivity; control parameters; resistivity anomaly