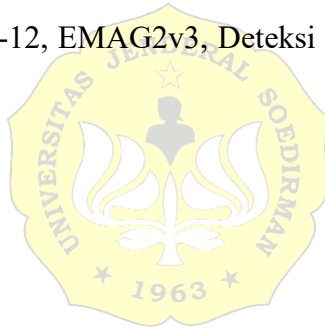


ABSTRAK

Penelitian ini bertujuan untuk menganalisis struktur bawah permukaan Pulau Papua guna mengidentifikasi potensi mineralisasi menggunakan data gravitasi WGM-12 dan magnetik EMAG2v3. Pengolahan data dilakukan menggunakan perangkat lunak *Geosoft Oasis Montaj* untuk menghasilkan peta anomali residual gravitasi dan magnetik. Metode lanjutan RAPS dan RAAS dilakukan untuk mendapatkan informasi mengenai diskontinuitas Moho, Conrad, struktur dangkal, serta kedalaman titik Curie (CPD), gradien geotermal (GG), dan aliran panas (HF). Hasil analisis menunjukkan diskontinuitas Moho berada pada kedalaman 12–27 km, diskontinuitas Conrad 6,81–17,83 km (rata-rata 10,88 km), dan struktur dangkal 4,4–8,4 km. Kedalaman CPD berkisar antara 10,32–25,58 km, dengan nilai gradien geotermal 22,6–60,5 °C/km dan aliran panas 64,71–142,34 mW/m². Penampang profil 2D dan analisis kelurusan menggunakan filter TDR, TDX, dan HDTDR mengungkap keberadaan cekungan sedimen, intrusi magmatik, serta dua arah dominan struktur bawah permukaan (NW–SE dan NE–SW) yang berasosiasi dengan sesar aktif dan zona mineralisasi. Hasil ini menunjukkan jika wilayah Papua memiliki prospek untuk eksplorasi mineral, khususnya mineral-mineral logam seperti emas, tembaga, dan nikel.

Kata Kunci: Papua, WGM-12, EMAG2v3, Deteksi Tepi, Kelurusan, dan Potensi Mineral.



ABSTRACT

This research aims to analyze the subsurface structure of Papua Island to assess its mineral potential using gravity data from WGM-12 and magnetic data from EMAG2v3. The data were processed using Geosoft Oasis Montaj software to generate residual gravity and magnetic anomaly maps. Further analysis using the RAPS and RAAS methods was carried out to determine the depth of the Moho and Conrad discontinuities, shallow subsurface structures, as well as Curie Point Depth (CPD), geothermal gradient (GG), and heat flow (HF). The results show that the Moho discontinuity is found at depths between 12 and 27 km, the Conrad discontinuity ranges from 6.81 to 17.83 km (with an average of 10.88 km), and shallow structures are found at 4.4 to 8.4 km. CPD depth varies from 10.32 to 25.58 km, with geothermal gradient values between 22.6 and 60.5 °C/km and heat flow between 64.71 and 142.34 mW/m². The 2D profile sections and lineament analysis using TDR, TDX, and HDTDR filters reveal sedimentary basins, magmatic intrusions, and two dominant structural trends (NW–SE and NE–SW) associated with active faults and potential mineral zones. These findings suggest that Papua Island has promising prospects for mineral exploration, especially for metals like gold, copper, and nikel.

Keywords: Papua, WGM-12, EMAG2v3, Edge Detection, Lineament, Mineral Potential.

