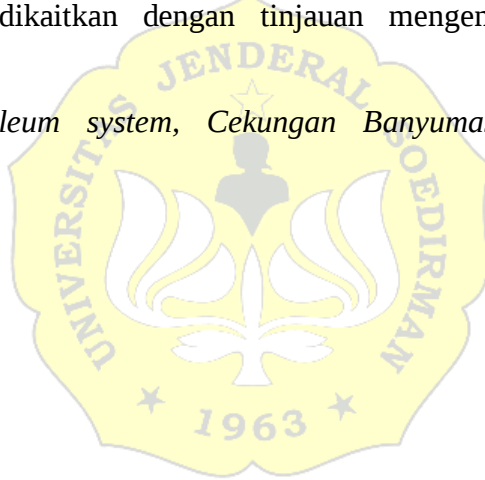


ABSTRAK

Penelitian ini bertujuan untuk menganalisis struktur geologi Cekungan Banyumas di Kecamatan Kalibagor Kabupaten Banyumas dan meninjau potensi keberadaan *petroleum system* Cekungan Banyumas menggunakan metode magnetik. Data metode magnetik yang digunakan diperoleh dari akuisisi lapangan menggunakan metode *looping* dan alat berupa *PPM GSM-10* dengan luas wilayah penelitian sebesar 4 x 2 km serta jumlah titik pengukuran sebanyak 200 titik. Hasil akuisisi yang diperoleh kemudian dikoreksi hingga mendapatkan data anomali magnetik. Data anomali magnetik kemudian dijadikan dasar dalam pembuatan model 2D struktur batuan yang ada dibawah permukaan menggunakan metode pemodelan kedepan (*forward modelling*) dengan bantuan *software* Oasis Montaj. Model 2D dibuat disepanjang 4 lintasan sayatan yang sudah ditentukan dengan nilai *error* model terkecil yang diperoleh sebesar 0,23%. Setelah dimodelkan, struktur batuan kemudian diinterpretasi berdasarkan nilai suseptibilitas batuan. Hasil pemodelan dan interpretasi berdasarkan nilai suseptibilitas adalah adanya struktur Aluvium dan beberapa anggota formasi Tapak seperti batugamping, batupasir, batulempung, dan breksi andesit dibawah permukaan daerah penelitian. Hasil tersebut kemudian dikaitkan dengan tinjauan mengenai *petroleum system* Cekungan Banyumas.

Kata Kunci: *Petroleum system, Cekungan Banyumas, Metode magnetik, Pemodelan kedepan.*



ABSTRACT

This research aims to investigate the subsurface geological structure of the Banyumas Basin in Kalibagor District, Banyumas Regency, using the magnetic method and to correlate it with the presence of a petroleum system in the Banyumas Basin. The study was conducted through direct measurements using the looping method with a PPM GSM-10 instrument, covering a research area of 4 x 2 km with 200 measurement points. The measurement results, in the form of magnetic anomalies, were then used as a basis for creating a 2D subsurface rock structure model. This was achieved using the forward modeling method with the aid of Oasis Montaj software. The 2D models were constructed along four predefined cross-sections, with the smallest model error obtained being 0,23%. After modeling, the rock structures were interpreted based on their susceptibility values. The modeling and interpretation results, based on susceptibility values, indicate the presence of Alluvium structures and several members of the Tapak formation, such as limestone, sandstone, claystone, and andesite breccia, beneath the surface of the research area. These findings are then correlated with the petroleum system of the Banyumas Basin.

Keywords: *Petroleum system, Banyumas basin, Geomagnetic method, Forward modelling.*

