ABSTRACT

MODELING AND ANALYSIS OF STRUCTURE SUB-SURFACE OF THE REGIONS GEOTHERMAL PROSPECT KEPAHIANG BASED ON GRAVITY METHOD

By

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Research has been conducted in Kepahiang area using gravity data with the aim of identify faults based on analysis of the *Second Vertical Derivative* (SVD) and interpreting structure sub-surface of the based on 3D inverse modelling from Bouguer anomaly and residual anomaly. The research area have an Bouguer anomaly between 38 mGal - 74 mGal, where the high Bouguer anomaly value has a value range of 63,2 mGal - 74 mGal located in the southwest direction of the research area. Whereas the low Bouguer anomaly value has a range of values 38 mGal - 47 mGal located in the north of the research area. To know the existence of fault structure in research area, conducted filtering *Second Vertical Derivative* (SVD) on the map Bouguer anomaly, regional and residual. The structure faulting is shown with contour of zero and between the contours of high and low. From the analysis of SVD complete anomaly Bouguer and SVD residual anomaly there are 8 (eight) faulting, while from SVD regional anomaly there are 4 (four) fault. 3D inversion modeling of the residual anomaly was done to prove the existence of the fault analyzed based on filtering *Second Vertical Derivative* (SVD). Based on the results of inversion 3D residual anomaly been gained one (1) reservoir in a northern direction research area and two (2) in the direction of west the research area by a contrast the density of -0,0719356 gr/ c^3 until -0,236053 gr/ c^3 with a depth of 0 meters up to 4.705 meters.

Keywords: 3D inverse modelling, geothermal, gravity, Kepahiang, SVD.

ABSTRAK

PEMODELAN DAN ANALISA STRUKTUR BAWAH PERMUKAAN DAERAH PROSPEK PANASBUMI KEPAHIANG BERDASARKAN METODE GAYABERAT

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Telah dilakukan penelitian di daerah Kepahiang menggunakan data gayaberat dengan tujuan mengidentifikasi patahan berdasarkan analisis *Second Vertical Derivative* (SVD) dan menafsirkan struktur bawah permukaan berdasarkan model inversi 3D dari anomali Bouguer dan anomali residual. Daerah penelitian memiliki anomali Bouguer antara 38 mGal – 74 mGal, dimana nilai anomali Bouguer tinggi memiliki rentang nilai 63,2 mGal – 74 mGal yang berada di arah barat daya daerah penelitian. Sedangkan nilai anomali Bouguer rendah memiliki rentang nilai 38 mGal – 47 mGal yang berada di arah utara daerah penelitian. Untuk mengetahui keberadaan struktur patahan di daerah penelitian, dilakukan filtering *Second Vertical Derivative* (SVD) pada peta anomali Bouguer, Regional dan Residual. Pola struktur patahan ditunjukkan dengan kontur bernilai nol dan diapit kontur tinggi dan rendah. Dari hasil analisis SVD anomali Bouguer lengkap dan SVD anomali residual terdapat 8 (delapan) patahan, sedangkan dari SVD anomali regional terdapat 4 (empat) patahan. Pemodelan inversi 3D anomali residual dilakukan untuk membuktikan keberadaan patahan yang dianalisis berdasarkan filtering *Second Vertical Derivative* (SVD). Berdasarkan hasil inversi 3D anomali residual didapatkan satu (1) reservoar di arah utara daerah penelitian dan dua (2) di arah barat daerah penelitian dengan kontras densitas dari -0,0719356 gr/cm^3 sampai -0,236053 gr/cm^3 dengan kedalaman dari 0 meter sampai 4.705 meter.

Kata Kunci: gayaberat, Kepahiang, model inversi 3D, panasbumi, SVD.