

ABSTRACT

IDENTIFICATION OF UNDER SURFACE OF THE OIL FIELD “HUF” SOUTH SUMATERA TO DELINEATION THE BASIN STRUCTURE OF HYDROCARBON BASED ON GRAVITY DATA

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Researched in Banyuasin oil field “HUF” South Sumatra have been done by the gravity data with objective of knowing fault structure based on analysis of hydrocarbon SVD and knows hollow structure based on the 3D model of the Bouguer Anomaly and Residual Anomaly. Study areas had Bouguer Anomaly between 13 mgal up to 33 mgal to the interval 1 mgal, where the value of Bouguer Anomaly high have a range value 26 mgal up to 33 mgal which is in the direction of west. While the low value of Bouguer Anomaly have a range value 13 mgal to 20 mgal that is in the east. To know the existence of structure fault, filtering Second Vertical Derivative (SVD) on a Bouguer Anomaly, Regional and Residual map. Pattern of structure fault indicated the contours of a zero value and between the high and low contours. From the results of the analysis SVD Complete Bouguer Anomaly and SVD Residual Anomaly there were 4 (four) fault, while from SVD Regional Anomaly there are 3 (three) fault. 3D modeling the Residual Anomaly were conducted to prove the existence of the fault SVD analyzed based on the results of the analysis and to know the hydrocarbon basin. Based on the results of the inversion of 3D the Residual Anomaly, basin was found in the depth of 1500 m – 3000 m with a value of the density ranges from 2.24 gram/cc until 2.32 gram/cc which identified as sandstone basin.

Key words: 3D inverse modelling, basin, gravity , hydrocarbon, SVD .

ABSTRAK

IDENTIFIKASI BAWAH PERMUKAAN LAPANGAN MINYAK “HUF” SUMATERA SELATAN UNTUK MENDELINIASI STRUKTUR CEKUNGAN HIDROKARBON BERDASARKAN DATA GAYABERAT

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Telah dilakukan penelitian di Lapangan Minyak “HUF” daerah Banyuasin, Sumatera Selatan menggunakan data gayaberat dengan tujuan mengetahui struktur patahan berdasarkan analisis SVD dan mengetahui struktur cekungan hidrokarbon berdasarkan model inversi 3D dari anomali Bouguer dan anomali residual. Daerah penelitian memiliki anomali Bouguer antara 13 mGal hingga 33 mGal dengan interval 1 mGal, dimana nilai anomali Bouguer tinggi memiliki rentang nilai 26 mGal hingga 33 mGal yang berada di arah barat. Sedangkan nilai anomali Bouguer rendah memiliki rentang nilai 13 mGal hingga 20 mGal yang berada di arah timur. Untuk mengetahui keberadaan struktur patahan, 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 4 (empat) patahan, sedangkan dari SVD Anomali Regional terdapat 3 (empat) patahan. Pemodelan inversi 3D Anomali Residual dilakukan untuk membuktikan keberadaan patahan yang dianalisis berdasarkan hasil analisis SVD dan untuk mengetahui struktur cekungan hidrokarbon. Berdasarkan hasil inversi 3D anomali residual didapatkan cekungan berada pada kedalaman 1500 m – 3300 m dengan nilai densitas berkisar antara 2.24 gram/cc sampai 2.32 gram/cc yang diidentifikasi merupakan cekungan batu pasir.

Kata Kunci: cekungan, gayaberat, hidrokarbon, model inversi 3D, SVD.