

Delineasi prospek panas bumi lapangan 'o' menggunakan metode inversi data MT-3-dimensi, data geologi dan geokimia = Delineation of geothermal prospect field 'o' using inversion data MT-3 dimensional method geology and geochemical data

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Abstrak

Untuk menentukan konseptual model dan rekomendasi titik pengeboran pada daerah panas bumi "O", dilakukan penelitian dengan memadukan inversi MT 3-Dimensi, data geologi dan geokimia. Satuan batuan daerah penelitian didominasi batuan lava berumur quarter. Struktur yang muncul berarah NW-SSE berkorelasi dengan kemunculan manifestasi. Diagram Ternary Cl-SO₄-HCO₃ mengindikasikan manifestasi AP-1 bersifat volcanic waters. Pendugaan temperature reservoir menggunakan geothermometer Na/K bernilai 202 ndash; 219 oC. Berdasarkan manifestasi dan geokimia didapatkan sistem geothermal adalah hydrothermal systems associated with high standing volcanic centers. Area upflow ditunjukkan pada manifestasi AP-1 dan F, sedang manifestasi AP-2, AP-3 dan AP-4 merupakan tipe manifestasi outflow. Analisis geofisika menggunakan 40 titik ukur magnetotellurik dan 213 titik ukur gravitasi. Hasil cross power data MT terdapat 3 titik very good, 36 titik good, dan 1 titik fair. Hasil inversi 3D MT, zona claycap memiliki resistiviti 100 ?m. Berdasarkan perhitungan parasnis data gravitasi, nilai densitas rata-rata 2.46 gr/cc. Konseptual model geothermal didapatkan zona reservoir membentuk updome dengan ketinggian -700 m, zona claycap menutupi reservoir pada kedalaman 500 s.d -1500 di NW dan -2000 m di arah SW. Heat source pada kedalaman -3000 s.d >-4000 m. Prospek panas bumi didasarkan pada base of conductor diperoleh luas 7.5 km². Rekomendasi 2 titik pengeboran tepat di updome reservoir, sumur O-1 dibor tegak lurus dan sumur O-2 ke arah NW.

To determine the conceptual models and drilling recommendations in the geothermal area O , research by combining 3 D MT inversion, geochemical and geological data. Area of research are dominated by lithologies of lava rocks quarter. Appears of manifestations correlation with structure NW SSE. Ternary diagram Cl SO₄ HCO₃ indicates manifestation AP 1 is volcanic waters. Prediction of reservoir temperature using Geothermometer Na K has 202 219 oC. Based on the obtained geochemical manifestations the geothermal systems are hydrothermal systems associated with high standing of volcanic centers. Upflow area shown on the manifestation of AP 1 and F, were manifestations of AP 2, AP 3 and AP 4 is a type of outflow. Geophysical analysis using magnetotelluric measuring 40 points and 213 points of gravity. The results of cross power of data MT 3D had 3 points are very good, 36 point good, and one fair point. 3D MT inversion results, claycap zone has resistivity 100 m. Based on the calculation parasnis gravity data, the average density values 2.46 gr cc. The conceptual model of the geothermal reservoir zone formed updome obtained with a height of 700 m, claycap zone covering the reservoir at a depth of 500 until 1500 in NW and 2000 m in direction SW. Heat source at the depth of 3000 s.d 4000 m. Geothermal prospects based on base of conductor are obtained 7.5 km². Two point of drilling recommendation on top of updome reservoir, wells O 1 drill vertical and O 2 towards to NW.