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Delineasi zona reservoir menggunakan metode magnetotellurik dengan integrasi data geologi dan geokimia daerah F = Reservoir zone delineation using magnetotelluric method with geology and geochemical data integration at geothermal area F

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Abstrak

Eksplorasi pada daerah prospek geothermal bertujuan untuk mencari zona reservoir, kriteria zona reservoir yang baik yaitu memiliki temperatur, tekanan dan permeabilitas yang tinggi. Penentuan zona reservoir perlu dilakukan kegiatan survei terpadu 3G meliputi survei geologi, geokimia dan geofisika. Pada lapangan geothermal daerah "F" menggunakan metode remote sensing untuk memetakan struktur dan alterasi di permukaaan. Analisis geokimia digunakan untuk mengetahui karakteristik sistem geothermal dan analisis geofisika digunakan untuk memetakan kondisi sistem geothermal di bawah permukaan. Berdasarkan analisis remote sensing dengan menggunakan teknik band combination secara pengamatan manual diketahui bahwa arah utama dari kelurusan daerah penelitian "F" adalah Barat Laut ndash; Tenggara. Kelurusan ini berkorelasi dengan kemunculan manifestasi permukaan.
Analisis data geokimia menunjukkan bahwa pemetaan zona upflow di tunjukkan oleh kemunculan manifestasi Kaipohan dan hot spring tipe sulfat SO4 , sedangkan zona outflow di tinjukkan dengan kemunculan manifestasi hot spring dengan tipe fluida bikarbonat HCO3 . Data geofisika menggunakan 46 data titik ukur magnetotellurik yang selanjutnya di analisis melalui pola kurva splitting, arah elongasi polar diagram serta melakuian inversi 3D. Berdasarkan analisis tersebut maka diketahui struktur lapisan bawah permukaan dari clay cap dengan nilai resistivitas rendah, reservoir dan heat source. Hasil akhir dari penelitian ini juga akan memberikan implikasi terhadap upaya peningkatan Drilling Success Ratio DSR dalam pemboran dan mengurangi risiko pada tahapan eksplorasi.
<hr /><i>Exploration in the geothermal prospect area aims to find the reservoir zone, a good reservoir zone criterion are has high temperature, pressure, and permeability. Determination of reservoir zones needs to be carried out by a 3G integrated survey activity covering geological, geochemical and geophysical surveys. In the geothermal field 39 F 39 , survey is conducted using a remote sensing method to map the structure and alteration on the surface. Geochemical analysis is used to determine the characteristics of geothermal systems and geophysical analysis used to map the condition of geothermal systems beneath the surface. Based on remote sensing analysis by using band combination technique by manual observation, it is known that the main direction of research area ldquo F rdquo straightness is Northwest Southeast. This straightness correlates with the appearance of surface manifestations.
Analysis of geochemical data showed that upflow zone mapping was demonstrated by the emergence of kaipohan and hot spring type sulfate manifestations SO4 , while the outflow zone was presented by the appearance of hot spring manifestation with bicarbonate fluid type HCO3 . Geophysical data uses 46 data of magnetotellurik measuring point which then analyzed by splitting curve pattern, direction of polar diagram elongation, and 3D inversion. Based on these analyzes, it is known that the subsurface structure of clay cap has low resistivity value, reservoir, and heat source. The final results of this study will also provide implications for improving Drilling Success Ratio DSR in drilling and reducing risks at the exploration

stage.</i>