

Analisa potensi panasbumi Kepahiang, Bengkulu menggunakan metode gaya berat dan magnetotellurik = Potential analysis of Kepahiang geothermal, Bengkulu using gravity and MT method

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Abstrak

Telah dilakukan analisa potensi panasbumi Kepahiang, Bengkulu menggunakan metode gaya berat dan MT hasil pengukuran dari PSDG. Analisa dilakukan terhadap 286 titik gaya berat dan 37 titik MT yang tersebar di bagian selatan Gunung Kaba hingga mata airpanas Babakan Bogor. Sistem panasbumi Kepahiang berkaitan dengan aktivitas vulkanik Gunung Kaba yang masih menyimpan panas dari magma sisa. Anomali residual gaya berat menunjukkan struktur yang mengontrol airpanas Sempiang diperkirakan sesar Sempiang yang berarah hampir utara-selatan. Sedangkan airpanas Babakan Bogor dikontrol oleh sesar Sumatera. Batuan penudung tersebar di sekitar airpanas Sempiang mulai dekat permukaan tanah dengan ketebalan antara 1500 meter hingga 2500 meter. Batuan penudung merupakan satuan Lava Kaba Muda dengan nilai tahanan jenis <math><10\text{ Ohm-m}</math> dan densitas 2.2 gr/cm^3 . Reservoir panasbumi diperkirakan berada di bawah batuan penudung tersebar di sekitar airpanas Sempiang dengan nilai tahanan jenis $10\text{-}60\text{ Ohm-m}$ dan densitas 2.4 gr/cm^3 . Puncak reservoir ini diperkirakan pada kedalaman sekitar 1500 meter, batuan ini merupakan produk Vulkanik Kaba Tua baik berupa lava ataupun piroklastik. Area prospek panasbumi Kepahiang berada di sekitar mata airpanas Sempiang dibatasi oleh kontras tahanan jenis dan sesar yang mempunyai luas area 19 km^2 dan potensi panasbuminya dengan asumsi temperatur resevoir $250\text{ }^{\circ}\text{C}$ (geokimia) adalah sebesar 133 Mwe. Perhitungan potensi panasbumi ini termasuk dalam klasifikasi cadangan terduga yaitu luas dan ketebalan reservoir serta parameter fisik batuan dan fluida diestimasi berdasarkan data ilmu kebumihian detil terpadu yang digambarkan dalam model tentatif.

.....An analysis of geothermal potential in Kepahiang-Bengkulu area, using gravity and MT measurements of PSDG has been done. The analysis was conducted on 286 gravity points and 37 MT points spread over the southern part of Mount Kaba to Babakan Bogor hot springs. Kepahiang geothermal system is related to the volcanic activity of Mount Kaba which is still preserving the residual heat from the magma. Based on the gravity residual anomaly, the structure that controls the emerging Sempiang hot springs is estimated to be Sempiang fault that in near north-south direction, while Babakan Bogor hot springs is estimated to be controlled by the Sumatra fault. The cap rocks scatter around Sempiang hot springs start from near ground surface with thickness of between 1500 meters to 2500 meters. Cap rock is a unit of Lava Kaba Muda with resistivity $<10\text{ Ohm-m}$ and 2.2 gr/cm^3 in density. Geothermal reservoir is estimated to be located under the cap rocks scatter around Sempiang hot springs as indicated by values of $10\text{-}60\text{ Ohm-m}$ in resistivity and 2.4 gr/cm^3 in density. The top of reservoir is estimated to be 1500 meters below the ground surface, these rocks are Kaba Tua volcanic products in form of either lava or pyroclastic. Kepahiang geothermal prospect area scatters 19 km^2 wide around Sempiang hot springs which is bound by contrast resistivity and fault. It has potential geothermal of 133 MWe with the assumption of reservoir temperature (geochemistry) is $250\text{ }^{\circ}\text{C}$. Calculation of geothermal potential is included in the classification of expected reserves, as well as the extent and thickness of reservoir rock and fluid physical parameters are estimated based on data integrated geosciences detail depicted in the model tentatively.