Pemodelan sistem panas bumi berdasarkan analisa data magnetotellurik dan gaya berat untuk penentuan target pemboran di lapangan panas bumi Arjuno Welirang = Modeling of geothermal system based on magnetotelluric and gravity data analysis for determining drilling target geothermal field Arjuno Welirang

Deni Saputra, author

Deskripsi Lengkap: https://lib.ui.ac.id/detail?id=20403476&lokasi=lokal

----

Abstrak

[Daerah prospek panas bumi Gunung Arjuno dan Gunung Welirang berada pada jalur vulkanik yang dikenal dengan jalur ring of fire, yaitu rentetan gunung api, baik yang aktif, maupun gunung api yang tidak aktif. Gunung tersebut berasosiasi

dengan pembentukan sistem panas bumi yang ditandai dengan kemunculan manifestasi yang terdiri dari mata air panas Padusan, Coban dan Cangar serta adanya fumarol yang terdapat di komplek Gunung Welirang. Dari hasil perhitungan geothermometer daerah prospek panas bumi Gunung Arjuno dan Gunung Welirang memiliki temperatur 250o C dan masuk dalam kategori high temperature (>225 oC). Untuk mengetahui batas, kedalaman, dan geometri dari reservoir yang ada, dilakukan pengukuran dengan metode Magnetotellurik (MT), Time Domain Electromagnetic (TDEM) dan gaya berat. Dari hasil pengukuran

tersebut, dilakukan pemodelan pada 138 data MT, 103 data TDEM dan 253 data gaya berat. Selanjutnya hasil pemodelan dianalisa dengan menggunakan penampang 1 dimensi, 2 dimensi dan visualisasi 3 dimensi. Karakteristik reservoir berada pada kisaran 10-30 Ohm-m dengan nilai densitas rata-rata 2.2 gr/cc dan menghasilkan prospek panas Gunung Arjuno dan Gunung Welirang sekitar 40 km2 dengan potensi yang dapat dikembangkan untuk pembangkit tenaga listrik sebesar 140 MWe, rekomendasi penentuan titik bor eksplorasi berada di 2 km baratlaut dari komplek Gunung Welirang.

......The geothermal prospect areas Mount Arjuno and Mount Welirang is on track which is known as volcanic ring of fire, which is a series of volcanoes, both active and inactive volcanoes. The mountain is associated with the formation of geothermal systems that are characterized by the appearance of manifestations consisting of Padusan, Coban and Cangar hot springs and their fumaroles located in Mount Welirang complex. From the calculation geothermometer, the geothermal prospect areas Mount Arjuno and Welirang has a temperature of 250°C and in the category of high temperature (190 oC-236 oC). To determine the

boundary, the depth, and the geometry of the existing reservoir, measured by the method of magnetotelluric (MT), Time Domain Electromagnetic (TDEM) and gravity. From the results of these measurements, modeling performed on the 138

MT data, 103 TDEM data and 253 gravity data. Furthermore, the modeling results were analyzed using 1 dimensional cross-section, 2 dimensional and 3 dimensional visualization. The position of the reservoir is in the range of 10-30 Ohm-m with an average density value 2.2 g/CC3 to generate hot prospects Mt.Arjuno and Mount Welirang approximately 40 km2. with potential developed for power plants of 140 MWe, recommendations exploration drill point

determination located at 3km north-west of the mountain complex Mount Welirang.;The geothermal

prospect areas Mount Arjuno and Mount Welirang is on track which is known as volcanic ring of fire, which is a series of volcanoes, both active and inactive volcanoes. The mountain is associated with the formation of geothermal systems that are characterized by the appearance of manifestations consisting of Padusan, Coban and Cangar hot springs and their fumaroles located in Mount Welirang complex. From the calculation geothermometer, the geothermal prospect areas Mount Arjuno and Welirang has a temperature of 250°C and in the category of high temperature (190 oC-236 oC). To determine the boundary, the depth, and the geometry of the existing reservoir, measured by the method of magnetotelluric (MT), Time Domain Electromagnetic (TDEM) and gravity. From the results of these measurements, modeling performed on the 138 MT data, 103 TDEM data and 253 gravity data. Furthermore, the modeling results were analyzed using 1 dimensional cross-section, 2 dimensional and 3 dimensional visualization. The position of the reservoir is in the range of 10-30 Ohm-m with an average density value 2.2 g / CC3 to generate hot prospects Mt.Arjuno and Mount Welirang approximately 40 km2. with potential developed for power plants of 140 MWe, recommendations exploration drill point determination located at 3km north-west of the mountain complex Mount Welirang.;

geothermal prospect areas Mount Arjuno and Welirang has a temperature of 250°C and in the category of high temperature (190 oC-236 oC). To determine the boundary, the depth, and the geometry of the existing reservoir, measured by the method of magnetotelluric (MT), Time Domain Electromagnetic (TDEM) and gravity. From the results of these measurements, modeling performed on the 138 MT data, 103 TDEM data and 253 gravity data. Furthermore, the modeling results were analyzed using 1 dimensional cross-section, 2 dimensional and 3 dimensional visualization. The position of the reservoir is in the range of 10-30 Ohm-m with an average density value 2.2 g / CC3 to generate hot prospects Mt.Arjuno and Mount Welirang approximately 40 km2. with potential developed for power plants of 140 MWe, recommendations exploration drill point determination located at 3km north-west of the mountain complex Mount Welirang.;The geothermal prospect areas Mount Arjuno and Mount Welirang is on track which is known as volcanic ring of fire, which is a series of volcanoes, both active and inactive volcanoes. The mountain is associated with the formation of geothermal systems that are characterized by the appearance of manifestations consisting of Padusan, Coban and Cangar hot springs and their fumaroles located in Mount Welirang complex. From the calculation geothermometer, the geothermal prospect areas Mount Arjuno and Welirang has a temperature of 250°C and in the category of high temperature (190 oC-236 oC). To determine the boundary, the depth, and the geometry of the existing reservoir, measured by the method of magnetotelluric (MT), Time Domain Electromagnetic (TDEM) and gravity. From the results of these measurements, modeling performed on the 138 MT data, 103 TDEM data and 253 gravity data. Furthermore, the modeling results were analyzed using 1 dimensional cross-section, 2 dimensional and 3 dimensional visualization. The position of the reservoir is in the range of 10-30 Ohm-m with an average density value 2.2 g / CC3 to generate hot prospects Mt.Arjuno and Mount Welirang approximately 40 km2. with potential developed for power plants of 140 MWe, recommendations exploration drill point determination located at 3km north-west of the mountain complex Mount Welirang., The geothermal prospect areas Mount Arjuno and Mount Welirang is on track which is known as volcanic ring of fire, which is a series of volcanoes, both active and inactive volcanoes. The mountain is associated with the formation of geothermal systems that are characterized by the appearance of manifestations consisting of Padusan, Coban and Cangar hot springs and their fumaroles located in Mount Welirang complex. From the calculation geothermometer, the geothermal prospect areas Mount Arjuno and Welirang has a temperature of 250°C and in the category of high temperature (190 oC-236 oC). To determine the boundary, the depth, and the geometry of the existing reservoir, measured by the method of magnetotelluric (MT), Time Domain Electromagnetic (TDEM) and gravity. From the results of these measurements, modeling performed on the 138 MT data, 103 TDEM data and 253 gravity data. Furthermore, the modeling results

were analyzed using 1 dimensional cross-section, 2 dimensional and 3 dimensional visualization. The position of the reservoir is in the range of 10-30 Ohm-m with an average density value 2.2 g / CC3 to generate hot prospects Mt.Arjuno and Mount Welirang approximately 40 km2. with potential developed for power plants of 140 MWe, recommendations exploration drill point determination located at 3km north-west of the mountain complex Mount Welirang.]