

ABSTRACT

THERMAL PROPERTIES OF ROCK RESEARCH IN WAY RATAI GEOTHERMAL FIELD AREA BASED ON THERMAL CONDUCTIVITY MEASUREMENT METHOD

By

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Research on Way Ratai geothermal field has been done by measuring the thermal conductivity method. The thermal conductivity data is used to generate a map of the dispersion of heat conductively conductive rocks in the geothermal system. The result of measurement by thermal conductivity method in Way Ratai geothermal field is data of k (conductivity), Rt (thermal resistivity), and T (temperature). The value of the measured conductivity data in the geothermal field has range between 0.056-0.664 W/mK, the measured thermal resistivity value has range between 1.344-17.527mK/W, and the measured temperature value is between 22.68-52.59°C. The difference value of rock's thermal conductivity is influenced by several factors, which is the existing geological structures in the field such as normal faults and lineaments, the presence of alteration, also the manifestation zone of hot water or hot vapor that caused from fumaroles.

Keywords: Conductivity, Thermal Resistivity, Temperature, Geothermal.

ABSTRAK

STUDI SIFAT TERMAL BATUAN DAERAH LAPANGAN PANAS BUMI WAY RATAI BERDASARKAN PENGUKURAN METODE KONDUKTIVITAS TERMAL

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Telah dilakukan penelitian pada daerah lapangan panas bumi Way Ratai dengan pengukuran metode konduktivitas termal. Data konduktivitas termal digunakan untuk memetakan persebaran batuan menghantarkan panas secara konduksi dalam sistem panas bumi. Hasil data pengukuran dengan metode konduktivitas termal pada daerah lapangan panas bumi Way Ratai berupa data k (konduktivitas), Rt (resistivitas termal), dan T (suhu). Nilai data konduktivitas yang terukur di lapangan panas bumi tersebut berkisar 0.056–0.664 W/mK, nilai data resistivitas termal yang terukur berkisar 1.344–17.527 mK/W, dan nilai suhu yang terukur berkisar 22.68–52.59°C. Tinggi rendahnya nilai konduktivitas termal batuan dipengaruhi oleh beberapa faktor, yaitu struktur geologi yang ada di lapangan seperti sesar normal dan kelurusan-kelurusan (*lineaments*), keberadaan alterasi, serta manifestasi air panas atau tempat keluarnya uap panas dari fumarol.

Kata kunci: Konduktivitas, Panas Bumi, Resistivitas Termal, Suhu.