Analisis Struktur Dan Identifikasi Sistem Panas Bumi Daerah Nage, Kabupaten Ngada, Nusa Tenggara Timur (NTT) Berdasarkan Data Gayaberat

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ABSTRAK

Eksplorasi daerah Panas Bumi Nage di Kabupaten Ngada, Provinsi Nusa Tenggara Timur menggunakan metode gayaberat. Di daerah penelitian terdapat gunung api aktif Gunung Inerie termasuk gunungapi stratovulkano, batuan yang dihasilkan berupa lava dan batuan piroklastik, terdapatnya sesar serta manifestasi Panas Bumi. Bertujuan menganalisis struktur sesar berdasarkan *Second Vertical Derivative* (*SVD*) dan mengidentifikasi bawah permukaan *Forward Modeling* pada peta Anomali Residual *Moving Average*. Hasilnya menunjukkan nilai peta *Complete Bouguer Anomaly* (*CBA*) 94 - 136 mGal. Pemisahan anomali *Moving Average*, nilai Anomali Residual berkisar -18 hingga 16 mGal. Nilai anomali *Second Vertical Derivative* (*SVD*) antara -11 hingga 7 mGal. Untuk hasil *Second Vertical Derivative* (*SVD*) persebarannya dari barat laut menuju ke tenggara, serta timur laut ke arah barat daya dan arah utara hingga ke selatan. Hasil *Forward Modeling* pada 3 lintasan yaitu lintasan R – R', W – W' dan J – J' terdapat satuan batuan Lava Bena (QBi) nilai densitas 2,32 gr/cc, Vulkanik Wolo Batulaba (QBlv) nilai densitas 2,55 gr/cc, Lava Wolo Piu (QPi) nilai densitas 2,38 gr/cc dan Kerucut Piroklastik Wolo Bobo (QBp) nilai densitas 2,32 gr/cc sebagai *Caprock*. Dan teridentifikasi reservoir pada satuan batuan Vulkanik Wolo Kenowe (TpKv) 2,65 gr/cc yang kedalamannya sekitar 600 – 700 meter dari permukaan daerah manifestasi panas bumi Nage.

Kata Kunci: Panas Bumi, Gayaberat, Analisis Struktur, *Second Vertical Derivative* (*SVD*), *Forward Modeling*.

Structure Analysis and Identification Geothermal System Area of Nage, Ngada Regency, East Nusa Tenggara (NTT) Based on Gravity Data

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ABSTRACT

Exploration of Nage geothermal area in Ngada Regency, Province East Nusa Tenggara uses gravity methods. In the study area there Mount Inerie active volcano which includes strato volcanoes, rock produced lava and pyroclastic rocks, faults and geothermal manifestations. Analyzing fault structure with Second Vertical Derivative (SVD) and identifying subsurface of Forward Modeling on Anomaly map of Residual Moving Average. Results show map value Complete Bouguer Anomaly (CBA) 94 - 136 mGal. Furthermore, Separation Moving Average anomaly, Residual Anomaly value ranges from -18 to 16 mGal. The value Second Vertical Derivative (SVD) anomaly between -11 to 7 mGal. Results of Second Vertical Derivative (SVD distribution from northwest to southeast, from northeast to southwest and north to south. Forward Modeling 3 Line, Line R - R ', W - W' and J - J ', Lava Bena (QBi) rock units with a density value of 2.32 gr / cc, Wolo Batulaba Volcanic (QBlv) density value of 2.55 gr / cc, Lava Wolo Piu (QPi) density value 2.38 gr / cc and Pyroclastic Cone Wolo Bobo (QBp) density value of 2.32 gr / cc estimated as Caprock. And identified a reservoir in the unit of Wolo Kenowe Volcanic Rock (TpKv) of 2.65 gr / cc which is 600 - 700 meters deep from surface area of Nage's geothermal manifestation.

Keywords: Geothermal, gravity, Structure Analysis, Second Vertical Derivative (SVD), Forward Modeling.