

## **ABSTRACT**

### **IDENTIFICATION OF RANAU LAKE GEOTHERMAL RESERVOIR PROSPECTS BASED ON GRAVITY DATA ANALYSIS AND COMPILATION WITH GEOLOGICAL, GEOCHEMICAL AND MAGNETOTELLURIC DATA**

**By**

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The study of the Ranau Lake geothermal area located in Ogan Komering Ulu Regency, South Sumatra and West Lampung Regency, Lampung aims to identify the structure and determine the location of the geothermal reservoir prospect based on analysis of gravity data, geological data, geochemical data and Magnetotelluric data. The data used is complete Bouguer Anomaly data. Data processing was carried out using Surfer software, Geosoft Oasis Montaj, Grablox and Microsoft Excel. The data processing process starts from spectrum analysis using a moving average filter to determine the depth of the anomaly using Microsoft Excel software. Separation of residual and regional Bouguer anomalies was performed using a moving average filter with 13 km windows. For residual anomalies, derivative analysis was performed to determine the faults and geological boundaries of the study area. 3D modeling is done using grablox software and oasis montaj software, which produces a density model distribution. The results of data processing obtained Bouguer anomaly of 10 mGal-56 mGal. The results of the Second Vertical Derivative show a zero value which is the limit of geological characteristics, namely the presence of faults and differences in physical properties of rock density. The fault structure identified is a normal fault with a northwest-southeast trend, which is located in the northeast, northwest, southeast, southwest, south and northeast. The normal fault has a north-south direction, located in the eastern part of the study area. There is a prospect zone which is thought to be a geothermal reservoir zone at a depth of 1-2 km with a density of 1.9-2.2 gr/cc located around the geothermal manifestation, around the peak of Mount Seminung, to the south and northeast of the peak of Mount Seminung.

**Keywords:** Gravity, geothermal, derivative analysis.