GRAVITY STUDY TO DETERMINE CONTROLLING STRUCTURE OF GEOTHERMAL MANIFESTATION AT EWA FIELD MANGGARAI TIMUR, NUSA TENGGARA TIMUR PROVINCE

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ABSTRACT

The exixtence of geothermal in Indonesia had been proved at Nusa Tenggara Timur Province. The reasons of geothermal research by gravity method at new field EWA, Manggarai Timur, Nusa Tenggara Timur was the plenty more possibility of geothermal potential there. Thus, the target of interpretation was the structure as the way of hot fluids accumulated on geothermal system .

Gravity data is the primary data using a Syntrex CG-5 gravimeter and has 200 data points. Data collection was made randomly by the distance between points ± 1 km, according to the field conditions. There was some software used to process the data, i.e *Geosoft Oasis Montaj v.7*, *Gravblox* and *Bloxer*. Separation was done by using an anomaly separation method based on the wavelength (wavelength filtering), that was a Butterworth filter. Modelling data was did by the way of two form, i.e 2-D modelling and 3-D modelling.

The response of residual anomaly at structure indicated zone is included negative anomaly grup, i.e -190,4 mGal to -14,8 mGal, and small positive anomaly grup, i.e 18,9 mGal. According to 2-D modelling, the structures figured by formed of fault, crushed zone with low density, i.e 2,1 gr/cc, 1,9 gr/cc and 1,83 gr/cc, as well as alteration rock with density, which between 2,19 gr/cc, 2,59 gr/cc and 2,18 gr/cc. 3-D modeling illustrated the exixtance of structure in low density distribution, which between 2,20 gr/cc – 2,47 gr/cc. Hotsprings MA-01 and MA-02 indicated has controlled by more than two structure, i.e with the northwest-southeast alignment and southwest-northeast alignment, whereas hotsprings MA-03, MA-04, and MA-05 indicated controlled by northwest-southeast lineament structure.

Keywords : gravity, Butterworth, 2-D model, 3-D model, structure, crushed zone, hotspring, alteration rock.