

ABSTRAK

Kompleks Gunungapi Merapi-Merbabu dan sekitarnya merupakan bagian dari deretan gunungapi kuartar yang didominasi oleh sistem sesar regional yang membentang dari Baratlaut hingga Tenggara. Salah satunya adalah sesar Merapi-Merbabu yang termasuk sesar aktif di Indonesia. Penelitian ini bertujuan untuk mengetahui keberadaan dan jenis sesar Merapi-Merbabu yang berada di kompleks Gunungapi Merapi-Merbabu dengan menggunakan metode analisis *First Horizontal Derivative* (FHD) dan *Second Vertical Derivative* (SVD) serta mengetahui litologi di bawah permukaan menggunakan pemodelan 2D. Penelitian dilakukan dengan menghitung nilai Anomali Bouguer Sederhana (ABS) dan Anomali Bouguer Lengkap (ABL), mereduksi bidang datar, memisahkan anomali regional dan residual menggunakan *Upward Continuation*, melakukan analisis *derivative*, serta melakukan pemodelan 2D. Hasil analisis *derivative* membuktikan adanya sesar turun pada wilayah Kompleks Gunungapi Merapi Merbabu. Sedangkan hasil pemodelan 2D menunjukkan wilayah Kompleks Gunungapi Merapi-Merbabu tersusun atas 7 formasi batuan, yaitu formasi batuan Gunungapi Merbabu (Qme), formasi batuan Gunungapi Andong dan Kendil (Qak), Formasi Kaligetas (Qpkg), Formasi Kerek (Tmk), formasi batuan gunungapi tak terpisahkan (Qvm), formasi endapan Gunungapi Merapi Muda (Qmi), dan formasi endapan ladu dari awan panas (na).

Kata Kunci: Gravitasi, *First Horizontal Derivative* (FHD), *Second Vertical Derivative* (SVD), sesar Merapi-Merbabu, pemodelan 2D.

ABSTRACT

The Merapi-Merbabu Volcanic Complex and its surroundings are part of a series of quaternary volcanoes dominated by a regional fault system that stretches from the Northwest to the Southeast. One of them is the Merapi-Merbabu fault which is an active fault in Indonesia. This study aims to determine the existence and type of the Merapi-Merbabu fault located in the Merapi-Merbabu Volcanic Complex using the First Horizontal Derivative (FHD) and Second Vertical Derivative (SVD) analysis methods and to determine the lithology below the surface using 2D modeling. The study was conducted by calculating the Simple Bouguer Anomaly (ABS) and Complete Bouguer Anomaly (ABL) values, reducing the flat plane, separating regional and residual anomalies using Upward Continuation, conducting derivative analysis, and conducting 2D modeling. The results of the derivative analysis prove the presence of a normal fault in the Merapi Merbabu Volcanic Complex area. Meanwhile, the results of 2D modeling show that the Merapi-Merbabu Volcanic Complex area is composed of 7 rock formations, namely the Merbabu Volcanic rock formation (Qme), the Andong and Kendil Volcanic rock formation (Qak), the Kaligetas Formation (Qpkg), the Kerek Formation (Tmk), the inseparable volcanic rock formation (Qvm), the Young Merapi Volcanic deposit formation (Qmi), and the ladu deposit formation from the hot cloud (na).

Keywords: Gravity, First Horizontal Derivative (FHD), Second Vertical Derivative (SVD), Merapi-Merbabu fault, 2D modelling.

