ABSTRAK

Hisar Marpaung, 4203240012 (2025). Pemetaan Bawah Permukaan Tanah Menggunakan Metode Geomagnet dan Satelit Sentinel di Piramid Toba Kecamatan Bakti Raja Kabupaten Humbang Hasundutan.

Telah dilakukan penelitian pemetaan bawah permukaan tanah di Piramid Toba Kecamatan Bakti Raja Kabupaten Humbang Hasundutan dengan tujuan untuk mengetahui sebaran anomali medan magnetik, jenis batuan, dan kondisi litologi bawah permukaan. Metode penelitian menggunakan metode geomagnet, dengan alat *Proton Procession Magnetometer* (PPM) *type* GSM-19T dan citra satelit sentinel-1 dari website www.copernicus.eu. Pengambilan data geomagnet menggunakan (PPM) *type* GSM-19T dilakukan di 25 titik. Data diolah menggunakan surfer 13. Pengolahan data citra sentinel-1 *type* GRD dilakukan dengan menggunakan *software SNAP* dan *software Arcgis*. Hasil anomali nilai suseptibilitas diperoleh antara 147,4 nT sampai 258,7 nT dengan nilai suseptibilitas magnet 0,0103 sampai 0,0189 SI di dominasi oleh jenis batuan tufa toba. Dari hasil interpretasi diperoleh peta kemiringan lahan di daerah penelitian yang didominasi batuan tufa toba dengan kemiringan agak curam (15-25%).

Kata Kunci: Pemetaan Bawah Permukaan, Geomagnetik, Sentinel-1, Tufa Toba

ABSTRACT

Hisar Marpaung, 4203240012 (2025). Subsurface Mapping Using Geomagnetic Methods and Sentinel Satellites in the Toba Pyramid, Bakti Raja District, Humbang Hasundutan Regency.

Subsurface mapping research has been carried out at the Toba Pyramid, Bakti Raja District, Humbang Hasundutan Regency with the aim of determining the distribution of magnetic field anomalies, rock types and subsurface lithological conditions. The research method uses the geomagnetic method, with a Proton Procession Magnetometer (PPM) type GSM-19T and sentinel-1 satellite imagery from the website www.copernicus.eu. Geomagnetic data collection using (PPM) type GSM-19T was carried out at 25 points. Data was processed using surfer 13. Data processing of sentinel-1 type GRD images was carried out using SNAP software and Arcgis software. The anomaly susceptibility value obtained was between 147.4 nT to 258.7 nT with a magnetic susceptibility value of 0.0103 to 0.0189 SI dominated by the Toba tuff rock type. From the results of the interpretation, a map of the slope of the land in the research area is obtained which is dominated by Toba tufa rock with a rather steep slope (15-25%).

Keywords: Subsurface Mapping, Geomagnetic, Sentinel-1, Tufa Toba