

ABSTRAK

Junisa Perbina Br Barus, NIM 4173540009 (2021) Identifikasi Struktur Bawah Permukaan Tanah Menggunakan Metode Geolistrik Dan Citra Sentinel-1 Di Pantai Sitiris-Tiris Kabupaten Tapanuli Tengah

Penelitian ini bertujuan untuk mengetahui perbedaan metode Geolistrik dengan citra sentinel-1 dalam mengidentifikasi struktur bawah permukaan tanah di daerah Pantai Sitiris-Tiris Kabupaten Tapanuli Tengah. Berdasarkan analisa nilai resistivitasnya penelitian ini menggunakan metode Geolistrik Konfigurasi Schlumberger dengan 16 elektroda berjumlah dua lintasan dengan panjang masing-masing lintasan 75 meter menggunakan alat *Ares-G4 v 4.7 (Automatic Resistivity System)*. Data yang diperoleh menggunakan alat Geolistrik berupa nilai resistivitas semu, kemudian diubah menjadi nilai resistivitas, data yang diperoleh dibuat menjadi gambar model penampang dua dimensi dengan menggunakan software *Res2Dinv* untuk menampilkan penampang kontur nilai resistivitas per lapisan batuan. Hasil penelitian Geolistrik menunjukkan bahwa daerah pesisir pantai Sitiris-Tiris memiliki nilai resistivitas $2,00 \Omega\text{m} - 2,14 \Omega\text{m}$ pada lintasan pertama dan $1,69 \Omega\text{m} - 2,77 \Omega\text{m}$ pada lintasan kedua. Berdasarkan dari nilai resistivitas yang diperoleh daerah tersebut mengandung Alluvium Muda yang terdiri dari tanah lempung, lanau dan pasir pada kedalaman 1,25 – 9,26 meter. Interpretasi litologi berdasarkan citra Sentinel-1 didapatkan satu macam satuan litologi di daerah penelitian yaitu Alluvium Muda dan terdapat tuffa toba disekitarnya pada kedalaman 0-10 meter. Alluvium muda merupakan endapan permukaan muda yang terdiri atas lempung, lanau kerikil dan pasir.

Kata Kunci : *Geolistrik, Shlumberger, Citra Sentinel-1, Litologi*

ABSTRACT

Junisa Perbina Br Barus, NIM 4173540009 (2021) Identify Subsurface Structures Using Geoelectricity And Sentinel-1 Images On Sitiris-Tiris Beach Central Tapanuli Regency

This study aims to determine the difference between the Geoelectric method and sentinel-1 imagery in identifying subsurface structures in the Sitiris-Tiris Beach area, Central Tapanuli Regency. Based on the analysis of the resistivity value, this research uses the Geoelectric method of the Schlumberger Configuration with 16 electrodes totaling two tracks with a length of 75 meters each using the Ares-G4 v 4.7 (Automatic Resistivity System) tool. The data obtained using a Geoelectric tool is in the form of an apparent resistivity value, then converted into a resistivity value, the data obtained is made into an image of a two-dimensional cross-sectional model using Res2Dinv software to display the contour cross-section of the resistivity value of rock layers. Geoelectric research results show that the coastal area of Sitiris-Tiris has a resistivity value of 2.00 m – 2.14 m on the first track and 1.69 m – 2.77 m on the second track. Based on the resistivity value obtained, the area contains Young Alluvium consisting of clay, silt and sand at a depth of 1.25 – 9.26 meters. Lithological interpretation based on Sentinel-1 imagery found one type of lithological unit in the study area, namely Alluvium Muda and there is Toba tuffa around it at a depth of 0-10 meters. Young alluvium is a young surface deposit consisting of clay, gravel silt and sand. Based on the resistivity value obtained, the area contains Young Alluvium consisting of clay, silt and sand at a depth of 1.25 – 9.26 meters. Lithological interpretation based on Sentinel-1 imagery found one type of lithological unit in the study area, namely Alluvium Muda and there is Toba tuffa around it at a depth of 0-10 meters. Young alluvium is a young surface deposit consisting of clay, gravel silt and sand. Based on the resistivity value obtained, the area contains Young Alluvium consisting of clay, silt and sand at a depth of 1.25 – 9.26 meters. Lithological interpretation based on Sentinel-1 imagery found one type of lithological unit in the study area, namely Alluvium Muda and there is Toba tuffa around it at a depth of 0-10 meters. Young alluvium is a young surface deposit consisting of clay, gravel silt and sand.

Keywords: Geoelectricity, Shlumberger, Sentinel-1 Imagery, Litology.