



**KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI**  
**UNIVERSITAS SYIAH KUALA**  
**UPT. PERPUSTAKAAN**

Jalan T. Nyak Arief, Kampus UNSYIAH, Darussalam – Banda Aceh, Tlp. (0651) 8012380, Kode Pos 23111  
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## ELECTRONIC THESIS AND DISSERTATION UNSYIAH

### TITLE

IDENTIFIKASI KARAKTERISTIK STRUKTUR BAWAH PERMUKAAN JALAN DI KAWASAN ALUE NAGA, BANDA ACEH DENGAN METODE INDUCED POLARIZATION (IP)

### ABSTRACT

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Telah dilakukan penelitian pada sekitar badan jalan yang mengalami kerusakan di jalan utama Desa Alue Naga, Syiah Kuala, Banda Aceh. Tujuan penelitian ini untuk mengetahui karakteristik fisis bawah permukaan berdasarkan variasi nilai chargeability batuan. Dari hasil interpretasi data model 2D, chargeability tersebut dapat memberikan informasi mengenai penyebab kerusakan badan jalan di kawasan ini. Akuisisi data dilakukan dengan metode geolistrik Induced Polarization (IP), konfigurasi Wenner-Schlumberger pada 2 (dua) lintasan sepanjang 100 m, dan spasi elektroda 5 m. Pengukuran dilakukan dengan instrumen Terrameter ABEM SAS 4000, dan pengolahan data dilakukan dengan software Res2Dinv. Hasil penelitian didapatkan 3 (tiga) lapisan utama, yaitu dibagian atas berupa lapisan pasir (sand) yang telah terjadi rembesan air dengan nilai chargeabilitas 198 msec hingga kedalaman sekitar 15-25 m. Dari hasil tersebut menunjukkan bahwa pada daerah penelitian, terdapat lapisan permeabel, terutama di bagian tengah yang bersifat kohesif dan menyebabkan ketidakstabilan dan lemahnya daya dukung beban, pada kedalaman sekitar 0-5 m. Lapisan ini relatif mudah menyerap air yang menekan dari sisi kiri dan kanan jalan dan menyebabkan kerusakan. Hal ini menunjukkan bahwa sifat fisis chargeability sangat signifikan untuk mengetahui struktur bawah permukaan dangkal dan kaitannya dengan penyebab kerusakan badan jalan.

Kata kunci: Induced Polarization (IP), geolistrik, chargeability, permeabel.

#### ABSTRACT

A study had been conducted around the body of the damaged roads in the main street of Desa Alue Naga, Syiah Kuala, Banda Aceh. The purpose of this study was to determine the physical characteristics beneath the surface based on the value variations of rocks chargeability. From the results of the interpretation model 2D data, chargeability can provide information about the cause of road damage in this area. Data acquisition was performed by using Induced Polarization (IP) geoelectric method, Wenner-Schlumberger configuration at 2 (two) 100-meter trajectories, and electrode spacing of 5 m. Measurements was performed with the Terrameter ABEM SAS 4000 instrument, and the data processing was carried out with the Res2Dinv software. The results of the research showed 3 (three) main layers, namely: the top was in the form of a layer of sand which had been exposed to water seepage with a chargeability value of 198 msec to a depth of about 15-25 m. The result showed that in the study area, there was a layer of permeable, especially in the central part which was cohesive, and led to the instability and weakness of the load-carrying capacity, at a depth of about 0-5 m. This layer was relatively easy to absorb water pressed from the left and right sides of the road



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and cause damage. This suggested that the physical properties of chargeability are very significant in order to know the structure of the shallow surface and its relation to the cause of road damage.

Keywords: Induced Polarization (IP), geoelectric, chargeability, permeable.