

ABSTRAK

EKSPLORASI MINERAL LOGAM DENGAN METODE GEOLISTRIK *INDUKSI POLARISASI (IP)* KONFIGURASI DIPOLE-DIPOLE PADA LAPANGAN BISORI, HALMAHERA SELATAN, MALUKU UTARA

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Penelitian ini dilakukan di daerah pulau Karisuta berlokasi di Desa Bisori Kabupaten Halmahera Selatan Provinsi Maluku Utara, secara geografis daerah ini dibatasi oleh koordinat $127^{\circ} 05' 28''$ - $127^{\circ} 12' 56''$ Bujur Timur dan $0^{\circ} 17' 41''$ - $0^{\circ} 28' 57''$ Lintang Selatan. Penyelidikan menggunakan metode geolistrik induksi polarisasi konfigurasi *dipole-dipole* dengan panjang bentangan 230 m kearah utara selatan dan selatan utara sebanyak 18 lintasan dengan spasi antar lintasan 30 meter dan spasi antar elektroda 20 meter.

Data hasil pengukuran menggunakan metode geolistrik diproses menggunakan *software Ms. Excel* untuk melakukan perhitungan, *software RES2DINV* untuk menginversi data pengukuran menjadi penampang 2D, dan *software Rockwork15* untuk mendapatkan model geometri 3D dan peta kedalaman nilai *chargeability*.

Hasil analisis Nilai *resistivity* daerah penelitian mempunyai nilai *resistivity* 1,53 sampai 3851 ohm.m. Nilai *resistivity* 0-20 ohm.m yang diduga merupakan zona alterasi argilik, nilai *resistivity* 20-500 ohm.m diinterpretasikan sebagai batuan pasir - breksi yang telah mengalami alterasi propilitik sampai silisifikasi dan nilai *resistivity* >500 ohm.m diinterpretasikan sebagai alterasi silisifikasi yang terjadi pada batuan beku basalt. Daerah penelitian berada pada Formasi Tawali dengan umur tua (oligosen) yang diduga menyebabkan nilai *resistivity* batuan mengalami penurunan. Nilai *chargeability* daerah penelitian didominasi dengan nilai *chargeability* sedang sampai tinggi dengan nilai 100-810 msec menandakan adanya mineralisasi sedang-kuat dengan kandungan mineral logam >10%. Mineralisasi terjadi pada semua lintasan pengukuran tetapi mineralisasi paling banyak di bagian utara membentuk blok dan bagian selatan membentuk spot-spot. Geometri alterasi argilik membentuk spot-spot pada bagian sisi utara maupun selatan, alterasi propilitik juga membentuk spot-spot atau seperti vein hal ini karena alterasi propilitik terjadi pada rekahan batu sedimen sampai batuan beku, alterasi silisifikasi membentuk sebuah blok-blok pada daerah penelitian. Hasil penelitian didominasi oleh alterasi silisifikasi dengan kandungan mineral logam >20 %.

Kata kunci : geolistrik, *dipole-dipole*, *resistivity*, *chargeability*, mineralisasi, alterasi, argilik, propilitik, silisifikasi.

ABSTRACT

METAL MINERAL EXPLORATION WITH GEOELECTRIC INDUCED POLARIZATION (IP) METHOD CONFIGURATION DIPOLE-DIPOLE IN BISORI, SOUTH HALMAHERA, NORTH MALUKU

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This research was conducted in the area of Karisuta Island, located in Bisori Village, South Halmahera Regency, North Maluku Province, geographically this area is limited by coordinates 127 ° 05 '28 " - 127 ° 12' 56" East Longitude and 0 ° 17 '41 " - 0 ° 28 '57 " South Latitude. The investigation used the geoelectric induction method of polarization in dipole-dipole configurations with a length of 230 m to the north south and south north as many as 18 tracks with a spacing between 30 meters and a space between the electrodes of 20 meters. This research was conducted in 2010 by the Geophysics team of UPN "Veteran" Yogyakarta.

The data measured using the geoelectric method are processed using Ms. Excel software to perform calculations, RES2DINV software to invert measurement data into 2D sections, and RockWork15 software to obtain 3D geometry models and chargeability value depth maps.

The results of the analysis of the resistivity value of the study area have a resistivity value of 1.53 to 3851 ohm.m. The resistivity value of 0-20 ohm.m which is thought to be an argillic alteration zone, the resistivity value of 20-500 ohm.m is interpreted as sandstone - breccia that has undergone propylitic alteration to silicification and a resistivity value > 500 ohm.m is interpreted as a silicification alteration that occurs in igneous rock basalt. The research area is in the Tawali Formation with old age (oligocene) which is thought to cause the resistivity value of rocks to decrease. The chargeability value of the study area is dominated by moderate to high chargeability values with a value of 100-810 msec indicating moderate-strong mineralization with metal mineral content > 10%. Mineralization occurs in all measurement lines but mineralization is mostly in the northern part forming blocks and the southern part forming spots. Argillic alteration geometry forms spots on the north and south sides, propylitic alteration also forms spots or like veins, this is because propylitic alteration occurs in sedimentary rock fractures to igneous rock, silicification alteration forms blocks in the study area. The results were dominated by silicification alteration with metal mineral content > 20%.

Key words: *geoelectric, dipole-dipole, resistivity, chargeability, mineralization, alteration, argillic, propylitic, silicification*