ABSTRAK

IDENTIFIKASI ZONA MINERALISASI SULFIDA MENGGUNAKAN METODE GEOLISTRIK *INDUCED POLARIZATION* (IP) KONFIGURASI *DIPOLE-DIPOLE* DI DAERAH TALIWANG, SUMBAWA BARAT

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Pulau Sumbawa Barat merupakan bagian dari Busur Sunda - Banda yang berpotensi mengandung mineralisasi sulfida epitermal akibat aktivitas subduksi dan vulkanisme. Identifikasi mineralisasi sulfida penting untuk mendukung penentuan target eksplorasi. Karena mineralisasi umumnya berada di bawah permukaan, metode geolistrik *Induced Polarization* (IP) digunakan karena sensitif terhadap mineral sulfida terdiseminasi melalui respons *chargeability* serta mampu mengidentifikasi litologi dan alterasi sebagai dasar evaluasi prospektivitas daerah. Penelitian ini bertujuan mengidentifikasi karakteristik litologi dan mineralisasi bawah permukaan, menentukan zona prospek mineralisasi sulfida, serta menganalisis pengaruh struktur geologi.

Akuisisi data dilakukan menggunakan metode *Induced Polarization* konfigurasi *dipole - dipole* pada delapan lintasan pengukuran yang saling berpotongan, dengan panjang lintasan 650 - 850 m, spasi elektroda 50 m, dan jarak antar lintasan sekitar 200 m. Data resistivitas dan *chargeability* diolah melalui inversi 2D, kemudian diintegrasikan menggunakan korelasi antar lintasan, pemodelan 3D, dan peta *slicing* untuk menginterpretasikan kondisi bawah permukaan.

Hasil penelitian menunjukkan bahwa bawah permukaan daerah penelitian tersusun atas satuan tuf <100 Ωm, breksi 100 - 300 Ωm, dan andesit >300 Ωm. Alterasi argilik berkembang pada resistivitas 15 - 30 Ωm, sedangkan alterasi argilik lanjut pada resistivitas <15 Ωm. Indikasi mineralisasi ditunjukkan oleh nilai *chargeability* >70 msec yang umumnya berasosiasi dengan tuf teralterasi. Zona prospek utama teridentifikasi pada Lintasan B berupa anomali *chargeability* tinggi berbentuk *body* dengan kontur menggantung, sedangkan anomali pada batuan andesit diinterpretasikan sebagai mineral terpolarisasi lokal. Persebaran zona prospek dikontrol oleh struktur geologi berarah barat laut - tenggara (NW - SE) dan barat daya - timur laut (SW - NE) yang berperan sebagai jalur migrasi fluida hidrotermal.

Kata kunci: alterasi hidrotermal, *chargeability*, *Induced Polarization*, mineralisasi sulfida, resistivitas.

ABSTRACT

IDENTIFICATION OF SULFIDE MINERALIZATION ZONES USING THE GEOLECTRICAL INDUCED POLARIZATION (IP) METHOD WITH DIPOLE-DIPOLE CONFIGURATION IN THE TALIWANG, WEST SUMBAWA AREA

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West Sumbawa is part of the Sunda - Banda Arc, which has high potential for epithermal sulfide mineralization due to subduction and volcanic activities. Identifying sulfide mineralization is essential for exploration target delineation. Since mineralization generally occurs beneath the surface, the Induced Polarization (IP) method was employed because of its sensitivity to disseminated sulfide minerals and its ability to characterize subsurface lithology and hydrothermal alteration. This study aims to identify subsurface lithology and mineralization, delineate prospective sulfide mineralization zones, and analyze the influence of geological structures.

Data were acquired using the dipole–dipole IP configuration along eight intersecting survey lines 650 - 850 m with 50 m electrode spacing and approximately 200 m line spacing. Resistivity and chargeability data were processed through 2D inversion and integrated using cross-line correlation, 3D modeling, and slicing maps to interpret subsurface lithology, alteration, and mineralization.

The results indicate that the subsurface consists of tuff <100 Ωm, breccia 100 - 300 Ωm, and andesite >300 Ωm. Argillic alteration is characterized by resistivity values of 15 - 30 Ωm, whereas advanced argillic alteration occurs below 15 Ωm. Sulfide mineralization is indicated by chargeability values exceeding 70 msec and is generally associated with altered tuff. The main prospective zone was identified along Line B as a high-chargeability body associated with altered tuff and argillic alteration, whereas anomalies within the andesite unit are interpreted as locally polarized minerals. The prospective zones are controlled by northwest–southeast (NW - SE) and southwest–northeast (SW - NE) geological structures that served as hydrothermal fluid pathways.

Keywords: chargeability, hydrothermal alteration, Induced Polarization, resistivity, sulfide mineralization.