INTISARI

Penelitian terkait keterdapatan emas ini terletak di salah satu lokasi Izin Usaha Penambangan (IUP) milik PT. Sumber Energi Jaya Tbk. yang difokuskan pada Blok Picuan – Tokin, Kabupaten Minahasa Selatan, Provinsi Sulawesi Utara. Penelitian ini bertujuan untuk mengetahui karakteristik kondisi geologi, alterasi, mineralisasi bijih, geokimia bijih pada sistem endapan bijih epitermal. Metode penelitan dibagi ke dalam dua bagian utama, yaitu pekerjaan lapangan dan analisis laboratorium. Pekerjaan lapangan mencakup pemetaan geologi permukaan (litologi, stratigrafi, geomorfologi, struktur geologi, alterasi, dan mineralisasi) dan metode analisis laboratorium mencakup analisis petrografi, mineralogi bijih, XRD (*X-Ray Diffraction*), AAS (*Atomic Absorption Spectroscopy*), dan SEM EDX (*Scanning Electron Microscopy Energy Dispersive X-Ray)*.

Unit litologi tersusun atas satuan breksi vulkaniklastik, lapili tuf, tuf, batugamping, tuf terelaskan, dan breksi andesit. Terdapat tiga tipe alterasi yang terbentuk, yakni alterasi propilitik (klorit + epidot ± ilit-smektit), serisitik (serisit + ilit ± klorit), dan argilik (serisit + kuarsa + kaolinit ± smektit). Mineralisasi menunjukkan tipe pengisian rekahan berupa urat dan diseminasi yang terbatas di sekitar urat yang dikontrol oleh struktur bukaan akibat dari tegasan utama berarah utara-barat laut – selatan-tenggara (struktur *pre-syn* mineralisasi) dan utara-timur laut – selatan-barat daya (*late-post* mineralisasi). Emas yang terbentuk berupa elektrum dan emas pembawa perak-kadmium. Kadar rata-rata emas pada daerah penelitian sebesar 3,075 ppm. Tekstur *colloform* merupakan tekstur yang memiliki nilai rata-rata kadar emas paling tinggi, diikuti oleh tekstur *breccia*, *mold*, *massive chlacedonic*, *comb*, *lattice bladed*, dan *massive calcite.* Suhu pembentukan fluida pembawa bijih terbentuk pada kisaran suhu 195 – 197,5 ^{o}C. Terdapat tiga tahapan mineralisasi yakni tahapan *quartz-sulphide-base metal*, *quartz-sulphide-precious metal*, dan *quartz-oxide* yang diperkirakan terletak pada kedalaman 125 – 325 meter di bawah *paleosurface*. Berdasarkan karakteristik dari data tersebut, daerah penelitian termasuk ke dalam sistem epitermal sulfidasi rendah pembawa emas-perak.

Kata Kunci: Motoling, mineralisasi, epitermal

ABSTRACK

The research related to the discovery of gold is located in conract of work (COW) owned by PT Sumber Energi Jaya Ltd. which is focused on the Picuan – Tokin Block, South Minahasa District, North Sulawesi Province. The aims of this study are to determine the characteristics of the geological condition, hydrothermal alteration, ore mineralization, and ore geochemistry of ore deposit in the epithermal system. The research method is divided into two main parts, namely fieldwork and laboratory analysis. Fieldwork includes surface geological mapping (lithology, stratigraphy, geomorphology, geological structure, alteration and mineralisation), while laboratory analysis methods include petrographic analysis, ore mineralogy, XRD (X-Ray Diffraction), AAS (Atomic Absorption Spectroscopy), and SEM EDX (Scanning Electron Microscopy Energy Dispersive X-Ray).

The lithological units are composed of volcaniclastic breccia, lapilli tuff, tuff, limestone, welded tuff, and andesitic breccia unit. There are three types of alteration, such as propylitic (chlorite + epidote ± illite-smectite), sericitic (sericite + illite ± chlorite), and argillic alteration (sericite + quartz + kaolinite ± smectite). Mineralisation shows the fracture filling type in the form of veins and ore dissemination around the veins which is controlled by the opening structure as a result of the main stresses trending north-northwest – south-southeast (pre-syn mineralisation structures) and north-north east – south-southwest (late-post mineralisation structures). The gold occurs in the form of electrum and gold bearing silver-cadmium. The average gold content in the study area was 3.075 ppm. Colloform texture has the highest average gold content, followed by breccia, mold, massive chlacedonic, comb, lattice bladed, and massive calcite textures. The ore bearing fluid is formed in the temperature range 195 – 197.5 ^{o}C. There are three stages of mineralization including quartz-sulphide-base metal, quartz-sulphide-precious metal, and quartz-oxide which is estimated to form at a depth of 125 - 325 meters below the paleosurface. According to the characteristics above, the ore deposit in the research area can be categorized as the low suphidation epithermal Au-Ag.

Keywords: *Motoling, mineralisation, epithermal*