ABSTRAK

HUBUNGAN KETERDAPATAN MINERAL SULFIDA DAN ALTERASI TERHADAP TINGKAT *RECOVERY* Au - Ag PADA PIT X DAERAH GUNUNG MURO DAN SEKITARNYA, KABUPATEN MURUNG RAYA, KALIMANTAN TENGAH

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Lokasi penelitian berada di area kerja PT. Indo Muro Kencana Daerah Gunung Muro dan sekitarnya, Kecamatan Tanahsiang, Kabupaten Murung Raya, Provinsi Kalimantan Tengah. Secara fisiografi, lokasi penelitian berada pada zona Pegunungan Schwaner dan Muller. Penelitian ini bertujuan untuk mengetahui kondisi geologi (geomorfologi, stratigrafi, dan struktur geologi), alterasi, mineralisasi, nilai *recovery* Au-Ag, dan hubungan keterdapatan mineral sulfida dan alterasi terhadap tingkat *recovery* Au-Ag. Metode penelitian dibagi menjadi empat yaitu pendahuluan, pengambilan data lapangan, analisis, dan penyusunan laporan. Geomorfologi pada lokasi penelitian dijumpai satuan bentuk lahan *pit* (A2)*, sump* (A1)*, hauling road* (A3), dan lahan bukaan tambang (A4) dengan stratigrafi yang ada pada lokasi penelitian tersusun dari dua satuan batuan berupa lava andesit dan lava Basaltt. Struktur geologi yang berkembang pada lokasi penelitian berupa sesar dan kekar tarik (*extensional joint*). Alterasi pada lokasi penelitian dibagi menjadi tiga yaitu zona silisik (Kuarsa ± Kaolinit), zona argilik (Kaolinit ± Illit ± Kuarsa), dan zona propilitik (Klorit ± Smektit ± Kuarsa ± Karbonat). Mineralisasi didominasi pada urat kuarsa (*lode*) dengan tekstur kuarsa yang dijumpai berupa *crustiform, colloform, Dogteeth (comb), Cockade, Cavities infilling, saccaroidal, massive, ginguro.* Mineral bijih yang ditemukan berupa pirit, sphalerit, galena, kalkopirit, kalkosit, akantit, hematite, dan jarosite. Karakteristik tipe endapan termasuk dalam endapan epitermal sulfidasi rendah pada zona X dan CC. Hasil *leaching test* didapatkan pada urat teroksidasi hematit (NS-1) dengan konsumsi sianida 1.88 kg/t; kapur 0.61 kg/t, urat teroksidasi jarosit (NS-6) dengan konsumsi sianida 2.20 kg/t; kapur 0.58 kg/t, urat segar (NS-4) dengan konsumsi sianida 1.88 kg/t; kapur 0.56 kg/t. Selain itu didapatkan juga nilai *recovery* emas dan perak urat teroksidasi hematit sebesar 98% Au; 79.4%Ag, urat teroksidasi jarosit sebesar 91.4% Au; 95.8% Ag, dan urat segar sebesar 96.6% Au; 79.7%Ag. Keberadaan mineral lempung serta mineral jarosit meningkatkan kebutuhan kapur, sementara mineral oksida memengaruhi konsumsi sianida. Akantit (Ag_2S) sebagai mineral pembawa perak teramati tersebar terbuka (*exposed*) dalam urat kuarsa tanpa terhalang oleh mineral sulfida lain sehingga perak mudah terlarut dalam *slurry* dan meningkatkan *recovery* Ag.

Kata kunci: Alterasi, Epitermal, Geologi, Geometalurgi, Mineralisasi

ABSTRACT

RELATIONSHIP OF SULFIDE AND ALTERATION MINERAL PRESENCE ON Au - Ag RECOVERY RATE AT PIT X IN THE GUNUNG MURO AND SURROUNDING AREA, MURUNG RAYA DISTRICT, CENTRAL KALIMANTAN

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The research location is in the work area of PT Indo Muro Kencana, Gunung Muro area and its surroundings, Tanahsiang Sub-district, Murung Raya Regency, Central Kalimantan Province. Physiographically, the research location is in the Schwaner and Muller Mountains zone. This study aims to determine the geological conditions (geomorphology, stratigraphy, and geological structure), alteration, mineralisation, Au-Ag recovery, and the relationship between the presence of sulphide minerals and alteration to the Au-Ag recovery rate. The research method is divided into four stages, namely introduction, field data collection, analysis, and report. Geomorphology at the research site found pit landform unit (A2), sump (A1), hauling road (A3), and mine opening land (A4), with stratigraphy at the research site composed of two rock units in the form of andesite lava and Basalttt lava. The geological structure that develops at the research site is in the form of faults and extensional joints. Alteration at the research site is divided into three zones, namely the siliceous zone (Quartz ± Kaolinite), argillic zone (Kaolinite ± Illite ± Quartz), and propylitic zone (Chlorite ± Smectite ± Quartz ± Carbonate). Mineralisation is dominated by quartz veins (lodes) with quartz textures found in crustiform, colloform, dogteeth (comb), cockade, cavities infilling, saccaroidal, massive, ginguro. Ore minerals are pyrite, sphalerite, galena, chalcopyrite, chalcocite, achantite, hematite, and jarosite. The deposit type characteristics are included in low-sulphidation epithermal deposits in the X and CC zones. Leaching test results obtained in oxidised hematite vein (NS-1) cyanide consumption 1.88 kg/t; lime 0.61 kg/t, oxidised jarosite vein (NS-6) cyanide consumption 2.20 kg/t; lime 0.58 kg/t, fresh vein (NS-4) cyanide consumption 1.88 kg/t; lime 0.56 kg/t. Gold and silver recovery values of hematite oxidised vein 98% Au; 79.4% Ag, jarosite oxidised vein 91.4% Au; 95.8% Ag, and fresh vein 96.6% Au; 79.7% Ag were also obtained. The presence of clay and jarosite minerals increases lime requirements, while oxide minerals affect cyanide consumption. Acanthite (Ag_2S) as a silver-bearing mineral was observed to be exposed in the quartz vein without being blocked by other sulphide minerals so that silver is easily dissolved in the slurry and increases Ag recovery.

Keywords: Alteration, Epithermal, Geology, Geometallurgy, Mineralisation