

GEOLOGI DAN STUDI HUBUNGAN KOMPOSISI BATUAN DINDING TERHADAP ZONASI SKARN PADA TAMBANG BAWAH PERMUKAAN BIG GOSSAN, DISTRIK ERTSBERG, PAPUA.

ABSTRAK

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Daerah penelitian secara administratif berada pada Kontrak Karya “A” PT Freeport Indonesia, Distrik Pertambangan Ertsberg, Kecamatan Tembagapura, Kabupaten Mimika, Provinsi Papua. Penelitian dilakukan menggunakan data batuan inti bor dari 6 sumur bor yaitu BG210W-01, BG210W-02, BG210W-03, BG210W-04, BG210W-05, dan BG210W-06. Metode penelitian yang dilakukan berupa detail core logging, analisa petrografi, analisa mineragrafi dan analisa geostatistik untuk menentukan satuan batuan, tipe alterasi, zonasi skarn, zonasi mineralisasi, dan koefisien korelasi pada mineral kalk-silikat dengan mineralisasi pada daerah telitian.

Stratigrafi pada daerah penelitian terdiri atas 6 satuan berurutan dari tua ke muda, antara lain, batupasir kuarsa; batulempung terubah; hornfels; dolomit terubah; breksi polimik; dan intrusi porfiri diorit. Sedangkan tipe alterasi pada daerah penelitian dibagi menjadi alterasi propilitik luar, propilitik dalam, endoskarn, skarnoid, potasik, exoskarn 1, exoskarn 2, dan exoskarn 3 berdasarkan dominasi himpunan mineral.

Pengamatan dalam drift dan inti bor menunjukkan bahwa zonasi mineral pada cebakan Big Gossan dibagi menjadi zona mineral *anhydrous* (anhidrit + andradit + diopside) dan zona mineral *hydrous* (aktinolit-tremolit + serpentin-talk). Secara umum, zona *anhydrous* mineral melimpah pada kontak dolomit terubah dengan hornfels dan secara gradual menghilang ke arah marmer. Zona *hydrous* mineral memiliki pola menyebar pada Dolomit Terubah, dan menggantikan beberapa *anhydrous* mineral. Mineral kalkopirit sebagai pembawa endapan Cu pada cebakan Big Gossan memiliki pola yang tidak teratur mengikuti beberapa pola dari zona *anhydrous* dan *hydrous* mineral. Fase skarnifikasi pada daerah telitian, dimulai dari fase *decalcification*, *prograde*, *retrograde*, dan mineralisasi berdasarkan pola alterasi yang terbentuk.

Berdasarkan data spasial dan statistik, terdapat korelasi hubungan yang cukup dan positif antara kehadiran mineral anhidrit dan andradit terhadap kelimpahan mineral kalkopirit serta hubungan yang sangat lemah dan negatif pada kehadiran mineral diopsid, aktinolit-tremolit dan serpentin-talk, sehingga kelimpahan mineral kalkopirit akan banyak, jika mineral anhidrit dan andradit memiliki jumlah yang banyak, namun sebaliknya akan terjadi penurunan jumlah mineral kalkopirit jika kandungan mineral diopsid, aktinolit-tremolit, dan serpentin-talk tinggi.

Kata Kunci : Mineralogi, Zonasi Skarn, Big Gossan.

GEOLOGY AND CORRELATION RESEARCH OF THE WALL ROCK COMPOSITION TOWARDS SKARN ZONATION IN BIG GOSSAN UNDERGROUND MINING, ERTSBERG DISTRICT PAPUA

ABSTRACT

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The research area is located in COW "A" PT Freeport Indonesia at Ertzberg Mining District, Tembagapura, Mimika, Papua. Research are conducted using core data from 6 diamond drill hole, which are BG210W-01, BG210W-02, BG210W-03, BG210W-04, BG210W-05, and BG210W-06. The research methods are core logging detail, petrography analysis, mineragraphy analysis, and geostatistics analysis to determine lithostratigraphy unit, alteration type, skarn zonation, mineralization zonation, and coefficient of correlation between mineralization and calc-silicate minerals.

The stratigraphy of the research area is consists of 6 lithostratigraphy units, ordered from oldest yo youngest, quartz sandstone; altered claystone; hornfels; altered dolomite; polymictic breccia; and porphyritic diorit intrusion. Meanwhile the alteration type in the research area can be divided into outer prophyllitic, inner prophyllitic, endoskarn, skarnoid, potassic, exoskarn 1, exoskarn 2, and exoskarn 3 based on dominance of minerals assemblages.

The observation is arranged in tunnel drift and core data itself indicates that mineral zonation on Big Gossan Skarn deposit can be divided into anhydrous mineral zone (anhydrite + andradite + diopside) and hydrous mineral zone (actinolite-tremolite + serpentine-talc). The anhydrous mineral zone is considerably abundance at the contact between altered dolomite unit with hornfels unit and gradually dissapear heading the marble zone. Whereas hydrous mineral zone has spreading pattern in altered dolomite unit and substitute some anhydrous minerals. Chalcopyrite mineral as the main Cu mineralization in Big Gossan deposit has irregular pattern that indirectly followed some of anhydrous mineral and hydrous mineral zone patterns. Skarnification phases in research area is started from decalcification phase, prograde, retrograde and the last phases is mineralization based on alteration pattern in research area.

Related to spatial and statistic data, there is a fair and positive correlation between the presence of anhydrite and andradite mineral regarding of chalcopyrite mineral abundance. On the other hand, there is a weak and negative correlation between diopside, actinolite-tremolite, and serpentine-talc, hence the abundace of chalcopyrite minerals will increase simultaneously with the presence of andradit and anhydrite mineral, whereas the amount of chalcopyrite minerals will decrease if there are any high presence of diopside, actinolite-tremolite, and serpentine-talc minerals.

Key Words : Mineralogy, Skarn Zonation, Big Gossan.