

ABSTRAK

MODEL TENTATIF ENDAPAN PORFIRI DAN SKARN BERDASARKAN ANALISA DATA GEOFISIKA TERPADU SERTA DATA GEOLOGI DI LAPANGAN “RUMBO”, OKSIBIL, PAPUA

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Busur Irian Jaya merupakan produk hasil konvergensi lempeng samudera pasifik dengan kraton Australia. Pada busur ini, terdapat jalur metalogenik berupa zona mineralisasi logam, hasil dari aktivitas magmatisme berumur Miosen hingga Pliosen yang menerobos endapan *passive margin* karbonat. Tipe mineralisasi yang umumnya hadir yaitu endapan Porfiri dan Skarn, seperti yang terdapat disalah satu IUP Eksplorasi PT. Aneka Tambang Tbk daerah Oksibil, Papua.

Pendekatan yang dilakukan untuk mengetahui keberadaan endapan tersebut berupa pendekatan geologi dan geofisika, kedua pendekatan ini diperlukan dalam membangun model tentatif endapan porfiri dan skarn daerah penelitian. Integrasi data geofisika dilakukan menggunakan metode *Geomagnetic* dan *Time Domain Induced Polarization*, kedua metode ini dinilai cukup efektif untuk menggambarkan sistem endapan porfiri dan skarn daerah penelitian. Metode *Geomagnetic* pada penelitian terbagi menjadi 2 pengukuran yaitu Airbone dan Ground. Metode Airbone terdiri dari atas dua metode yaitu magnetic dan radiometric, keduanya digunakan untuk mengetahui indikasi tubuh porfiri secara regional, area pengukuran airbone memiliki luasan sebesar 2,780.6 km². Metode Groundmagnetik pada penelitian digunakan untuk mengetahui keberadaan endapan porfiri dan skarn secara detail, area pengukuran groundmagnetik memiliki luasan sebesar 12.25 km². Metode *Time Domain Induced Polarization* digunakan untuk mendeliniasi zona alterasi dan mineralisasi dibawah permukaan secara *vertical*. Pengukuran TDIP terdiri atas 6 lintasan berorientasi barat-timur dengan panjang lintasan hingga 3.8 km.

Berdasarkan analisis data *airbone magnetic*, terdapat anomali magnetik *moderate-high* yang merupakan respon dari struktur regional sesar aktif, dan juga terdapat empat pola CFT yang berkorelasi dengan nilai *high potassium* yang di indikasikan sebagai endapan porfiri, dimana dua diantaranya berada dalam area groundmagnetik. Pada analisis data groundmagnetik, terdapat lima pola *circular feature* sebagai indikasi tubuh porfiri, dan juga terdapat struktur berupa sesar geser yang terbaca pada data groundmagnetik dengan orientasi NW-SE dan SW-NE. Analisa data TDIP menunjukkan respon mineralisasi sulfida yang menerus dari utara hingga selatan, terdapat korelasi nilai resistivitas dan chargeabilitas yang berkaitan dengan alterasi SCC dan Potasik. Analisa data geologi dan alterasi menunjukkan adanya 3 intrusi batuan beku yang saling menerobos satu sama lain, serta menerobos batuan gamping, hasil dari penerobosan ini menghasilkan alterasi berupa SCC (*Sericite-Clay, Chlorite*), *Sericitic*, dan *Prophylic* yang mendominasi daerah penelitian. Hasil integrasi dari seluruh analisa data geofisika menunjukkan terdapat indikasi endapan porfiri dan skarn pada Rumbo B dan Rumbo E, namun pada Rumbo E nilai potassium *low-moderate* sehingga terdapat kemungkinan tubuh potasik tidak berada di area pengukuran. Model tentatif yang dibuat menunjukkan terdapat 3 fase intrusi, fase *early* yaitu *monzodiorite*, kemudian fase *intermineral* yaitu *biotite diorite*, fase akhir yaitu *diorite equigranular*. Tiga intrusi ini membentuk endapan porfiri serta endapan skarn pada bagian atas dari Rumbo B.

Kata Kunci : Oksibil, Porfiri, Skarn, Geomagnetik, *Time Domain Induced Polarization*

ABSTRACT

TENTATIVE MODEL OF PORPHYRY AND SKARN DEPOSIT BASED ON INTEGRATED GEOPHYSICAL DATA AND GEOLOGICAL DATA ANALYSIS IN “RUMBO” FIELD, OKSIBIL, PAPUA

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The Irian Jaya arc is a convergence product of the Pacific Ocean plate with the Australian Craton. In this arc, there's a metallogenic path in the form of a metal mineralization zone, which is the result of magmatism activity from the Miocene to Pliocene that breaks through the passive margin carbonate deposit. The common type of mineralization present in Papua is Porphyry and Skarn deposit, as found in the Exploration IUP PT. Aneka Tambang Tbk, Oksibil area, Papua.

Geological and Geophysical approach was taken to determine the presence of these deposit, both of these approaches are needed in building a tentative model of porphyry and skarn deposits in the study area. Geophysical data integration was carried out using the Geomagnetic and Time Domain Induced Polarization methods, both methods were considered quite effective for describing the porphyry and skarn deposit systems in the study area. The Geomagnetic method in this study, divided into 2 measurements, namely Airborne and Ground. The Airborne method consists of two methods, namely magnetic and radiometric, both of them are used to determine regional indications of porphyry bodies, the airborne measurement area has an area of 2,780.6 km². The groundmagnetic method in this study is used to determine the presence of porphyry and skarn deposits in detail scale, the area of the groundmagnetic measurement has an area of 12.25 km². The Time Domain Induced Polarization method was used to vertically delineate the alteration and mineralization zones in the subsurface. The TDIP measurement consists of 6 lines, that oriented east-west with length of up to 3.8 km.

Based on the airborne magnetic data analysis, there is a moderate-high magnetic anomaly which is a response to the regional active fault structure, and there are also four CFT patterns that are correlated with high potassium values, which are indicated as porphyry deposits, two of which are in a magnetic ground area. In the groundmagnetic data analysis, there are five circular feature patterns as an indication of the porphyry body, and there is also a structure in the form of a shear fault, that has been read on the groundmagnetic data with orientations of NW-SE and SW-NE. TDIP data analysis shows a continuous response of sulfide mineralization from north to south, there is a correlation between resistivity and chargeability values associated with SCC and Potassic alteration. Geological and alteration data analysis, shows that there are 3 igneous rock intrusions that break through each other, and break through limestone rocks, the results of this breakthrough produce alterations in the form of SCC (Sericite-Clay, Chlorite), Sericitic, and Propylitic which dominate the study area. The integration results from all geophysical data analysis show that there are indications of porphyry and skarn deposits in Rumbo B and Rumbo E, but in Rumbo E the potassium value is low-moderate, so there is a possibility that potassic bodies are not in the measurement area. The tentative model shows that there are 3 intrusion phases, the early phase is monzodiorite, then the intermineral phase is biotite diorite, and the final phase is equigranular diorite. These three intrusions formed porphyry deposits as well as skarn deposits in the upper part of Rumbo B.

Keyword: Oksibil, Porphyry, Skarn, Geomagnetic, Time Domain Induced Polarization