Pemodelan Tiga Dimensi Suseptibilitas Magnetik Berdasarkan Korelasi Data Suseptibilitas Magnetik Batuan dan Data Geologi di Wilayah Tujuh Bukit, Banyuwangi, Jawa Timur = Three Dimensional Modelling of Magnetic Susceptibility Based on Correlation of Rock Magnetic Susceptibility Data and Geological Data in the Tujuh Bukit Region, Banyuwangi, East Java

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Abstrak

Tujuh Bukit merupakan wilayah yang memiliki deposit porphyry Cu-Au-Mo dengan kadar mineralisasi Cu dan Au tinggi yang terletak di Banyuwangi, Jawa Timur. Deposit porphyry memiliki beberapa tipe alterasi dan litologi yang memiliki konten magnetik tinggi dan berkorelasi dengan adanya mineralisasi Cu dan Au. Adanya hubungan antara konten magnetik dengan alterasi, litologi, dan mineralisasi pada deposit porphyry, menyebabkan pentingnya pengukuran geofisika yang mampu mengukur sifat fisis dari konten magnetik pada batuan deposit porphyry. Pada penelitian ini dilakukan pengukuran suseptibilitas magnetik batuan menggunakan instrumen magnetic susceptibility meter Terraplus KT-10. Hasil pengukuran suseptibilitas magnetik batuan selanjutnya dikorelasikan dengan data alterasi, litologi, dan mineralisasi. Korelasi dilakukan menggunakan strip log dan analisis statistika berupa box plot dan violin plot. Selanjutnya, dilakukan pemodelan tiga dimensi suseptibilitas magnetik dengan menggunakan metode interpolasi Radial Basis Function pada software Leapfrog Geo dan metode Kriging pada software Oasis Montaj untuk melihat persebaran suseptibilitas magnetik di sekitar titik penelitian. Hasil korelasi dan pemodelan tiga dimensi suseptibilitas magnetik menunjukan bahwa alterasi argillic, intermediate argillic, litologi old tonalite dan litologi precursor diorite memberikan respon nilai suseptibilitas magnetik yang tinggi dan berkorelasi dengan mineralisasi chalcopyrite, bornite, covellite, enargite, dan chalcocite.
.....Tujuh Bukit is an area that has Cu-Au-Mo porphyry deposits with high levels of Cu and Au mineralization located in Banyuwangi, East Java. Porphyry deposits have several types of alteration and lithology that have high magnetic content and correlate with the presence of Cu and Au mineralization. The relationship between magnetic content with alteration, lithology, and mineralization in porphyry deposits, causes the importance of geophysical measurements that are able to measure the physical properties of magnetic content in porphyry deposit rocks. In this study, the magnetic susceptibility of rocks was measured using the Terraplus KT-10 magnetic susceptibility meter instrument. The results of rock magnetic susceptibility measurements were then correlated with alteration, lithology and mineralization data. The correlation was carried out using strip logs and statistical analysis in the form of box plots and violin plots. Furthermore, three-dimensional modeling of magnetic susceptibility was carried out using the Radial Basis Function interpolation method in Leapfrog Geo software and the Kriging method in Oasis Montaj software to see the distribution of magnetic susceptibility around the research point. The results of correlation and three dimensional modeling of magnetic susceptibility show that argillic alteration, intermediate argillic, old tonalite lithology and diorite precursor lithology give a high magnetic susceptibility value response and correlate with chalcopyrite, bornite, covellite, enargite, and chalcocite mineralization.