GEOLOGI DAN HUBUNGAN SERPENTINISASI TERHADAP KADAR NIKEL LATERIT PADA BLOK GURE, DAERAH JIKO MOI, KECAMATAN WASILE SELATAN, KABUPATEN HALMAHERA TIMUR, PROVINSI MALUKU UTARA

SARI

Blok “Gure” di daerah Jiko Moi, Halmahera Timur, merupakan salah satu wilayah prospektif bagi endapan nikel laterit yang berkembang di atas batuan ultramafik terserpentinisasi. Penelitian ini bertujuan untuk memahami peran proses serpentinisasi terhadap pengayaan nikel laterit, serta meninjau faktor lain seperti kemiringan lereng, curah hujan, dan kerapatan struktur geologi yang turut memengaruhi distribusinya. Metode yang digunakan meliputi pemetaan geologi, analisis petrografi, uji geokimia *XRF (X-ray fluorescence)*, serta interpretasi data morfologi dan struktur geologi. Hasil penelitian menunjukkan bahwa tingkat serpentinisasi memiliki hubungan tidak langsung terhadap mobilitas dan re-akumulasi unsur nikel. Proses serpentinisasi diyakini tidak terlalu berpengaruh terhadap pengayaan atau pengurangan kadar Ni karena serpentinisasi merupakan metamorfisme derajat rendah yang tidak akan mengubah sifat Ni yang *semi mobile*. Selain itu, faktor kemiringan lereng turut memengaruhi proses pelindian vertikal, di mana lereng landai memungkinkan pelapukan berjalan lebih stabil. Kerapatan struktur seperti kekar dan sesar meningkatkan infiltrasi air, mempercepat pelarutan unsur dan memperluas zona pelapukan. Sementara itu, curah hujan tinggi di wilayah tropis basah seperti Halmahera juga menjadi pendorong utama terbentuknya horizon laterit yang kaya nikel. Secara keseluruhan, interaksi antara kondisi geologi, tingkat ubahan batuan, dan faktor lingkungan memberikan pengaruh signifikan terhadap potensi pengayaan nikel laterit. Temuan ini diharapkan menjadi acuan dalam kegiatan eksplorasi nikel di wilayah dengan karakteristik geologi serupa.

Kata kunci: curah hujan, kemiringan lereng, nikel laterit, saprolit, serpentinisasi, struktur geologi

Geology and the Relationship of Serpentinization to Lateritic Nickel Enrichment in the Gure Block, Jiko Moi Area, Wasile Selatan Subdistrict, East Halmahera Regency, North Maluku Province

Abstract

The Gure Block, located in the Jiko Moi area of East Halmahera, is considered a prospective zone for lateritic nickel deposits that have developed over serpentinized ultramafic rocks. This research aims to understand the role of serpentinization in nickel enrichment and to examine other factors such as slope steepness, rainfall, and geological structure density that influence its distribution. The study employed geological mapping, petrographic analysis, X-ray fluorescence (XRF) geochemical testing, and interpretation of morphological and structural data. Research results indicate that the level of serpentinizatio has an indirect relationship with the mobility and re-accumulation of nickel elements. The serpentinizatio process is believed to have little effect on the enrichment or reduction of Ni content because serpentinizatio is a low-grade metamorphism that does not alter the properties of semi-mobile Ni. In addition, slope gradient plays a role in vertical leaching, where gentle slopes allow more stable and prolonged weathering. Structural density, including joints and faults, enhances water infiltration and accelerates the leaching of elements, thus widening the weathered zone. Moreover, high annual rainfall, typical of the humid tropical climate in Halmahera, is a major driving force in the development of nickel-rich lateritic horizons. Overall, the interplay between geological characteristics, alteration intensity, and environmental factors significantly influences the potential for lateritic nickel enrichment. These findings are expected to serve as a reference for exploration activities in regions with similar geological settings.

Keywords: *geological structure, lateritic nickel, rainfall, saprolite, serpentinization, slope gradient*