

ABSTRAK

HUBUNGAN BATUAN DASAR DENGAN KARAKTERISTIK ENDAPAN NIKEL LATERIT BLOK “HSN” DAERAH WASILE SELATAN, HALMAHERA TIMUR, MALUKU UTARA

Oleh

Eka Hasan Yulizar

111220080

Program Studi Sarjana Teknik Geologi

Endapan nikel laterit terbentuk dari pelapukan batuan ultramafik. Halmahera Timur merupakan salah satu wilayah yang memiliki potensi sumber daya nikel laterit karena tersusun oleh kompleks batuan ultramafik yang berperan sebagai sumber nikel. Karakteristik endapan nikel laterit dipengaruhi oleh kondisi batuan dasar seperti variasi litologi dan tingkat serpentinisasi. Kajian mengenai hubungan batuan dasar dan karakteristik endapan nikel laterit diperlukan untuk memahami genesa dan distribusi nikel laterit. Tujuan dari penelitian ini adalah untuk mengetahui kondisi geologi, karakteristik batuan dasar, karakteristik endapan nikel laterit, dan hubungan antara batuan dasar dan endapan nikel laterit pada Blok “HSN” daerah Wasile Selatan, Halmahera Timur, Maluku Utara. Metode penelitian yang digunakan dalam penelitian ini adalah pemetaan geologi lapangan, petrografi, XRF, dan analisis stereografis. Hasil penelitian menunjukkan geomorfologi daerah penelitian disusun oleh Perbukitan Struktural (S1) dan Lereng Struktural (S2). Karakteristik batuan dasar daerah penelitian bervariasi berdasarkan litologi dan tingkat serpentinisasi antara lain harzburgit terserpentinisasi rendah, lherzolit terserpentinisasi sangat rendah, lherzolit terserpentinisasi rendah, dan serpentin. Secara fisik endapan nikel laterit dibagi menjadi zona *top soil*, limonit, saprolit, dan *bedrock*. Ketebalan limonit bervariasi dari 1-25,3 m dan saprolit antara 1 – 31 m. Secara geokimia, Ni terkayakan pada zona saprolit, sedangkan Co, Fe, dan Al_2O_3 terkayakan pada limonit. Harzburgit dan lherzolit umumnya berasosiasi dengan kadar Ni, Fe, dan MgO yang lebih tinggi dibandingkan serpentin, sedangkan serpentin menunjukkan kadar SiO_2 yang lebih tinggi. Tingkat serpentinisasi sangat rendah hingga rendah cenderung menghasilkan kadar Ni yang lebih tinggi, sementara serpentinisasi tinggi berhubungan dengan peningkatan SiO_2 . Tren SM *ratio* berbanding lurus dengan tingkat serpentinisasi. Pada kondisi morfologi dan struktur geologi yang relatif seragam, karakteristik batuan dasar menjadi salah satu faktor utama yang mengontrol distribusi nikel pada daerah penelitian.

Kata kunci: *Nikel Laterit, Batuan Dasar, Serpentinisasi, XRF, Wasile Selatan*

ABSTRACT

RELATIONSHIP BETWEEN BEDROCK AND CHARACTERISTICS OF NICKEL LATERITE DEPOSITS IN THE “HSN” BLOCK OF SOUTHERN WASILE, EAST HALMAHERA REGENCY, NORTH MALUKU

By

Eka Hasan Yulizar

111220080

Geological Engineering Undergraduate Program

Lateritic nickel deposits form through the weathering of ultramafic rocks. East Halmahera is one of the regions with potential for lateritic nickel resources because it consists of an ultramafic rock complex that serves as a source of nickel. The characteristics of lateritic nickel deposits are influenced by the conditions of the host rock, such as variations in lithology and the degree of serpentinization. A study of the relationship between the host rock and the characteristics of laterite nickel deposits is necessary to understand the genesis and distribution of laterite nickel. The objective of this study is to determine the geological conditions, characteristics of the host rock, characteristics of the laterite nickel deposits, and the relationship between the host rock and the laterite nickel deposits in the “HSN” Block in the South Wasile area, East Halmahera, North Maluku. The research methods used in this study include field geological mapping, petrography, XRF, and stereographic analysis. The results of the study indicate that the geomorphology of the study area consists of Structural Hills (S1) and Structural Slopes (S2). The characteristics of the bedrock in the study area vary based on lithology and the degree of serpentinization, including low-serpentinized harzburgite, very low-serpentinized lherzolite, low-serpentinized lherzolite, and serpentinite. Physically, the lateritic nickel deposit is divided into topsoil, limonite, saprolite, and bedrock zones. Limonite thickness varies from 1–25.3 m, and saprolite thickness ranges from 1–31 m. Geochemically, Ni is enriched in the saprolite zone, while Co, Fe, and Al_2O_3 are enriched in the limonite. Harzburgite and lherzolite are generally associated with higher Ni, Fe, and MgO contents compared to serpentinite, whereas serpentinite exhibits higher SiO_2 content. Very low to low levels of serpentinization tend to result in higher Ni content, while high serpentinization is associated with increased SiO_2 . The trend in the SM ratio is directly proportional to the degree of serpentinization. Given relatively uniform morphological and geological structural conditions, bedrock characteristics are one of the primary factors controlling nickel distribution in the study area.

Keywords: Nickel Laterite, Bedrock, Serpentinization, XRF, South Wasile