ABSTRAK

KAJIAN GEOLOGI DAN KANDUNGAN NIKEL (Ni) DI ENDAPAN NIKEL LATERIT DAERAH LANGGIKIMA, KAB. KONAWE UTARA, SULAWESI TENGGARA

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Daerah Langgikima, Kabupaten Konawe Utara, Sulawesi Tenggara, merupakan salah satu wilayah yang didominasi oleh batuan ultramafik sebagai batuan dasar pembentuk endapan nikel laterit. Variasi litologi, kelerengan, dan struktur geologi berperan dalam mengontrol proses pelapukan, pengayaan nikel (Ni), serta ketebalan profil laterit. Penelitian ini bertujuan untuk mengetahui hubungan faktor-faktor geologi tersebut terhadap kandungan Ni pada endapan nikel laterit di wilayah IUP PT. Indrabakti Mustika. Metode penelitian menggunakan pemetaan geologi permukaan yang dilaksanakan melalui tahapan akuisisi data, analisis, dan sintesis. Pengumpulan data meliputi studi pustaka, interpretasi citra, pengamatan lapangan, analisis petrografi, analisis stereografis, dan analisis *assay* kadar Ni. Hasil penelitian menunjukkan bahwa daerah penelitian termasuk dalam fisiografi Lengan Tenggara Sulawesi dengan pola pengaliran ubahan sub-dendritik (SDND); secara geomorfik daerah penelitian tersusun atas bentuk lahan perbukitan bergelombang lemah (D1), perbukitan bergelombang kuat (D2), lembah tererosi kuat (D3), antropogenik (A1) berupa lahan bukaan tambang,serta tubuh Sungai (F1); sedangkan stratigrafinya tersusun oleh Satuan dunit Lameruru, Satuan peridotit Lameruru, Satuan serpentinit Lameruru berumur Kapur, serta Satuan batulempung Lameruru berumur Paleogen; struktur geologi yang berkembang berupa sesar mendatar kiri, kekar berpasangan, dan urat yang terisi mineral silika serta garnierite; kadar Ni tertinggi dijumpai pada batuan dunit berkisar antara 0,11%–3,43%, sedangkan kadar pada batuan harzburgit berkisar antara 0,03%–1,76%; dan serpentinit sebesar 0,82%; ketebalan endapan laterit maksimum mencapai 83 m pada lereng landai, sedangkan ketebalan minimum sebesar 2 m dijumpai pada lereng yang sama akibat pengaruh struktur geologi dan tingkat pelapukan batuan dasar. Penelitian ini menunjukkan bahwa litologi batuan dasar mengontrol pengayaan Ni, sedangkan kelerengan dan struktur geologi mengontrol ketebalan endapan nikel laterit.

Kata kunci: batuan dasar, kadar Ni, kelerengan, ketebalan, nikel laterit.

ABSTRACT

GEOLOGICAL STUDY AND NICKEL (Ni) CONTENT OF LATERITIC NICKEL DEPOSITS IN THE LANGGIKIMA AREA, NORTH KONAWE REGENCY, SOUTHEAST SULAWESI, INDONESIA

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The Langgikima area, North Konawe Regency, Southeast Sulawesi, is one of the regions dominated by ultramafic rocks that serve as the parent rocks of laterite nickel deposits. Variations in lithology, slope gradient, and geological structures play important roles in controlling weathering processes, nickel (Ni) enrichment, and the thickness of the laterite profile. This study aims to determine the relationship between these geological factors and the Ni content of laterite nickel deposits within the Mining Business License (IUP) area of PT Indrabakti Mustika. The research employed a surface geological mapping method consisting of three stages: data acquisition, analysis, and synthesis. Data collection included literature review, image interpretation, field observations, petrographic analysis, stereographic analysis, and Ni assay analysis. The results indicate that the study area belongs to the Southeast Arm of Sulawesi physiographic province and is characterized by a modified sub-dendritic drainage pattern (SDND). Geomorphologically, the area consists of gently undulating hills (D1), strongly undulating hills (D2), intensely eroded valleys (D3), anthropogenic landforms (A1) represented by mining excavation areas, and river bodies (F1). The stratigraphy comprises the Cretaceous Lameruru Dunite, Lameruru Peridotite, and Lameruru Serpentinite units, as well as the Paleogene Lameruru Claystone Unit. The geological structures identified include left-lateral strike-slip faults, conjugate joints, and veins filled with silica and garnierite. The highest Ni content was recorded in dunite, ranging from 0.11% to 3.43%, whereas harzburgite contains Ni ranging from 0.03% to 1.76%, and serpentinite reaches 0.82%. The maximum laterite thickness reaches 83 m on gentle slopes, while the minimum thickness of 2 m also occurs on gentle slopes due to the influence of geological structures and the degree of parent-rock weathering. The results demonstrate that parent-rock lithology controls Ni enrichment, whereas slope gradient and geological structures control the thickness of laterite nickel deposits.

Keywords: *laterite nickel, Ni content, parent rock, slope gradient, thickness.*