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 Kapur Akhir-Eosen; 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 ***bedrock*** *for laterite nickel deposits. Variations in lithology, slope, and geological structures play significant roles in controlling weathering processes, nickel (Ni) enrichment, and the thickness of the laterite profile. This study aims to investigate the relationship between these geological factors and Ni content in laterite nickel deposits within the Mining Business License (IUP) area of PT Indrabakti Mustika. The research employed surface geological mapping through three main stages: data acquisition, analysis, and synthesis. Data collection included literature review, remote sensing 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 (SDND) drainage pattern. Geomorphologically, the area consists of gently undulating hills (D1), strongly undulating hills (D2), intensely eroded valleys (D3), anthropogenic landforms (A1) represented by open-pit mining areas, and river channels (F1). Stratigraphically, the study area comprises the Lameruru Dunite Unit, Lameruru Peridotite Unit, Lameruru Serpentinite Unit of Cretaceous age, and the Lameruru Claystone Unit of Late Cretaceous–Eocene age. The geological structures identified include left-lateral strike-slip faults, conjugate joints, and veins infilled with silica and garnierite minerals. The highest Ni grades were recorded in dunite, ranging from 0.11% to 3.43%, whereas harzburgite contains Ni grades ranging from 0.03% to 1.76%, and serpentinite records a maximum Ni grade of 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 variations in the degree of bedrock weathering. These findings demonstrate that bedrock lithology primarily controls Ni enrichment, whereas slope and geological structures are the dominant factors controlling the thickness of laterite nickel deposits.*

Keywords: *bedrock, nickel grade, slope, laterite thicknes, laterite nickel.*