

PENENTUAN DISTRIBUSI ZONA PENGKAYAAN DAN POTENSI BIJIH NIKEL
MENGUNAKAN METODE ESTIMASI *ORDINARY KRIGING*
PADA DAERAH SOROWAKO DAN SEKITARNYA, KECAMATAN NUHA,
KABUPATEN LUWU TIMUR, SULAWESI SELATAN

SARI

JJ Ayasze Gifari Ayyala¹

¹Universitas Jenderal Soedirman

Kebijakan hilirisasi memaksa sektor pertambangan nikel untuk membangun smelter baru yang diklaim dapat mengolah material bijih nikel dari kadar rendah (1-1,5%) hingga kadar tinggi (>1,5%), sehingga dibutuhkan metode yang detail dan mendalam untuk rekalkulasi distribusi potensi bijih nikel, terutama terkait bijih nikel kadar rendah (1-1,5%). Dalam hal ini, metode yang digunakan adalah geostatistik estimasi *ordinary kriging* menggunakan perangkat lunak Leapfrog Geo 5.1 dan Datamine untuk mengetahui serta memvisualisasikan distribusi zona pengkayaan dan potensi bijih nikel. Penelitian ini menggunakan data *collar* dan *assay* sebanyak 218 titik bor dan nilai kadar nikel sejumlah 7.738 datum. *Cut off grade* produksi (Ni 1 & 1.5%) digunakan sebagai indikator simulasi nilai minimal kadar nikel pada material endapan laterit. Potensi optimal endapan nikel laterit dijelajahi dengan memasukan kontrol geologi domain endapan dan nilai kadar nikel melalui perkiraan kecenderungan kedalaman zona pengkayaan nikel, serta ekspresi jumlah volume distribusi nilai kadar nikel sehingga menghasilkan persentase potensi peningkatan volume nikel dibandingkan dengan hasil *cut off grade* produksi smelter lama. Berdasarkan hasil kalkulasi secara geostatistik menggunakan metode estimasi *ordinary kriging* pada daerah penelitian yang berlokasi di Sorowako, Sulawesi Selatan, menunjukkan potensi bijih nikel sebesar 80% dari total volume endapan nikel laterit dengan material kadar rendah (1-1,5%) sebesar >3.500.000 m³ dan kadar tinggi (>1,5%) sebesar >1.800.000 m³. Menariknya, potensi volume tersebut menghasilkan adanya peningkatan produksi nikel sebesar 200%. Sebagai informasi tambahan, diketahui tebal endapan laterit sekitar 30 meter dengan distribusi bijih nikel kadar rendah (1-1,5%) pada kedalaman 5-25 meter dan kadar tinggi (>1,5%) pada kedalaman 20-30 meter.

Kata kunci : Nikel, endapan laterit, *cut off grade*, zona pengkayaan, bijih, *ordinary kriging*, Sorowako

*DETERMINATING THE DISTRIBUTION OF NICKEL ENRICHMENT ZONE AND ORE POTENTIAL
USING ORDINARY KRIGING ESTIMATION METHOD
IN SOROWAKO AREA AND SURROUNDINGS, NUHA DISTRICT,
EAST LUWU REGENCY, SOUTH SULAWESI*

ABSTRACT

JJ Ayasze Gifari Ayyala¹

¹Jenderal Soedirman University

The downstream policy forces the nickel mining sector to build new smelters which are claimed to be able to process nickel ore material from low grade (1-1.5%) to high grade (>1.5%), therefore detailed and in-depth methods are needed to recalculate potential distribution. nickel ore, especially related to low grade nickel ore (1-1.5%). In this case, the method used is geostatistical ordinary kriging estimation using Leapfrog Geo 5.1 and Datamine software to determine and visualize the distribution of enrichment zones and nickel ore potential. This research used collar and assay data of 218 drill points and nickel content values for 7,738 datums. Production cut off grade of Ni (1 & 1.5%) is used as an indicator to simulate the minimum value of nickel content in laterite deposit material. The optimal potential for laterite nickel deposits is explored by including geological control of the deposit domain and nickel content values through estimating the tendency of the depth of the nickel enrichment zone, as well as expressing the total volume distribution of nickel content values so as to produce a percentage of potential increase in nickel volume compared to the cut off grade results of the old smelter production. Based on the results of geostatistical calculations using the ordinary kriging estimation method in the research area located in Sorowako, South Sulawesi, it shows that the potential for nickel ore is 80% of the total volume of laterite nickel deposits with low grade material (1-1.5%) of >3,500. 000 m³ and high levels (>1.5%) of >1,800,000 m³. Interestingly, its corresponding to the increasing of nickel production by 200%. In addition, the thickness of the laterite deposits is ±30 meters with a distribution of low grade nickel ore (1-1.5%) at a depth of 5-25 meters and high grade (>1.5%) at a depth of 20-30 meters.

Keyzwords: *Nickel, laterite deposit, cut off grade, enrichment zone, ore, ordinary kriging, Sorowako*