

ANALISIS PERBANDINGAN ANTARA METODE INVERSE DISTANCE WEIGHT (IDW) DAN METODE KRIGING PADA PERHITUNGAN CADANGAN Ni DI PT. WANATIARA PERSADA KECAMATAN OBI KABUPATEN HALMAHERA SELATAN PROVINSI MALUKU UTARA

Mujahid Fauzan Tatro

Program Studi Teknik Pertambangan, Fakultas Teknik Unkhair, Ternate

Email: mujahidfauzan46@gmail.com

Abstrak

PT. Wanatiara Persada adalah salah satu perusahaan Penanaman Modal Asing yang bergerak di bidang pertambangan serta pengolahan dan pemurnian bijih nikel. Wilayah IUP Operasi Produksi PT. Wanatiara Persada beroperasi di desa Kawasi kecamatan Obi kabupaten Halmahera Selatan propinsi Maluku Utara. Penelitian dilakukan pada lokasi PIT X dengan luasan blok sekitar 42,5 Ha. Tujuan dari penelitian ini adalah untuk menghitung cadangan Ni dengan metode Inverse Distance Weight (IDW) dan metode Kriging, untuk mengetahui perbandingan cadangan Ni dengan metode Inverse Distance Weight (IDW) dan metode Kriging. Data yang dibutuhkan pada penelitian ini adalah data assay, collar, geologi dan survei dari 158 titik bor dengan menggunakan Software Surpac 6.6.2. Estimasi cadangan Ni menggunakan metode Inverse Distance Weight (IDW) menghasilkan sekitar 1.599.542 ton dengan volume 1.494.590 m³, dengan rincian kadar Ni 0,8 – 1,2% Fe ≥ 48% atau low grade high fero ore 466.185 ton, kadar Ni 1,2 – 1,35% Fe ≥ 35% atau limonit 203.851 ton, kadar Ni 1,35 – 1,6% atau low grade saprolit ore 632.121 ton, kadar Ni 1,6 – 1,8% atau medium grade saprolit ore 201.102 ton, kadar Ni ≥ 1,8% atau high grade saprolit ore 96.283 ton. Hasil estimasi cadangan Ni menggunakan metode Kriging sebesar 1.960.178 ton dengan volume 1.973.613 m³, dengan rincian kadar Ni 0,8 – 1,2% Fe ≥ 48% atau low grade high fero ore 277.204 ton, kadar Ni 1,2 – 1,35% Fe ≥ 35% atau limonit 185.556 ton, kadar Ni 1,35 – 1,6% atau low grade saprolit ore 950.719 ton, kadar Ni 1,6 – 1,8% atau medium grade saprolit ore 353.074 ton, kadar Ni ≥ 1,8% atau high grade saprolit ore 193.625 ton. Berdasarkan hasil estimasi cadangan terdapat perbedaan selisih cadangan Ni antara metode Inverse Distance Weight (IDW) dan metode Kriging sebesar 360.636 ton dan volume 479.023 m³, dengan rincian selisih cadangan kadar Ni 0,8 – 1,2% Fe ≥ 48% atau low grade high fero ore 188.981 ton, kadar Ni 1,2 – 1,35% Fe ≥ 35% atau limonit 18.295 ton, kadar Ni 1,35 – 1,6% atau low grade saprolit ore 318.598 ton, kadar Ni 1,6 – 1,8% atau medium grade saprolit ore 151.972 ton, kadar Ni ≥ 1,8% atau high grade saprolit ore 97.342 ton.

Kata kunci: *Cadangan, Inverse Distance Weight, Kriging, Nikel Laterit*

COMPARATIVE ANALYSIS BETWEEN THE INVERSE DISTANCE WEIGHT (IDW) METHOD AND THE KRIGING METHOD IN CALCULATING THE RESERVE OF Ni AT PT. WANATIARA PERSADA OBI DISTRICT SOUTH HALMAHERA REGENCY NORTH MALUKU PROVINCE

Mujahid Fauzan Tatro

Mining Engineering Study Program, Faculty of Engineering Unkhair, Ternate

Email: mujahidfauzan46@gmail.com

Abstract

PT. Wanatiara Persada is one of the Foreign Investment companies engaged in mining as well as nickel ore processing and refining. The IUP area of PT. Wanatiara Persada operates in Kawasi village, Obi district, South Halmahera regency, North Maluku province. The research was carried out at the location of PIT X with a block area of about 42,5 Ha. The purpose of this study is to calculate Ni reserves by the Inverse Distance Weight (IDW) method and the Kriging method, to determine the comparison of Ni reserves with the Inverse Distance Weight (IDW) method and the Kriging method. The data needed in this study are assay, collar, geology and survey data from 158 drill points using Surpac 6.6.2 Software. Estimated Ni reserves using the Inverse Distance Weight (IDW) method produced around 1,599,542 tons with a volume of 1,494,590 m³, with details of Ni levels of 0.8 – 1.2% Fe ≥ 48% or low grade high ferro ore 466,185 tons, Ni levels 1.2 – 1.35% Fe ≥ 35% or limonite 203,851 tons, Ni levels 1.35 – 1.6% or low grade saprolite ore 632,121 tons, Ni level 1.6 – 1.8% or medium grade saprolite ore 201,102 tons, Ni level ≥ 1.8% or high grade saprolite ore 96,283 tons. The results of the estimation of Ni reserves using the Kriging method are 1,960,178 tons with a volume of 1,973,613 m³, with details of Ni levels of 0.8 – 1.2% Fe ≥ 48% or low grade high ferro ore 277,204 tons, Ni levels 1.2 – 1.35% Fe ≥ 35% or limonite 185,556 tons, Ni levels 1.35 – 1.6% or low grade saprolite ore 950,719 tons, Ni levels 1.6 – 1.8% or medium grade saprolite ore 353,074 tons, Ni level ≥ 1.8% or high grade saprolite ore 193,625 tons. Based on the results of the reserve estimation, there is a difference in Ni reserves between the Inverse Distance Weight (IDW) method and the Kriging method of 360,636 tons and a volume of 479,023 m³, with details of the difference in reserves of Ni content 0.8 – 1.2% Fe ≥ 48% or low grade high ferro ore 188,981 tons, Ni content 1.2 – 1.35% Fe ≥ 35% or limonite 18,295 tons, Ni content 1.35 – 1.6% or low grade saprolite ore 318,598 tons, Ni level 1.6 – 1.8% or medium grade saprolite ore 151,972 tons, Ni level ≥ 1.8% or high grade saprolite ore 97,342 tons.

Keyword: Reserve, Inverse Distance Weight, Kriging, Nickel Laterite