

ABSTRACT

This research aims to analyze the estimation of laterite nickel in accordance with geostatistical methods. The area of “20/21” is located in Tanjung Buli, Maba Subdistrict, East Halmahera Regency, North Maluku where the research conducted is permit from effort for mining PT. ANTAM, Tbk. The data is taken from the nickel laterite-3D using 488 drillholes with space of 25x25meters among each drillholes and sampling 1meter per laterite nickel assay.

Geostatistical methods that are used in this research consist of ordinary kriging method (block kriging and point kriging), indicator kriging method (multiple indicator kriging and pod indicator kriging) and cokriging method (CK). Estimation parameters obtained to assess the resources of laterite nickel are based on contents variogram study, indicator variogram and cross variogram in vertical and horizontal directions. The estimation of laterite nickel and crossvalidation are conducted by using SGeMS (Stanford Geostatistical Modeling Software) processed with the principles of ordinary kriging. The methods of block kriging, point kriging, multiple indicator kriging (MIK), and cokriging utilize the data of laterite nickel assay to assess the resources of laterite nickel while PIK method with discriminator of 1,5% is used to assess the high contents of laterite nickel in the research area (blocks prospect).

The laterite nickel resource estimation results of geostatistical methods obtained show block kriging method having strong correlation coefficient values of 0.86 and interval of estimation laterite nickel values of 4,308%-Ni with which kriging variance values interval which is smaller of 0.55 than point kriging, MIK and CK method. The laterite nickel resource estimation results are obtained as the following: the block kriging method has a measured resource of 1.81million tons with the average grade of 2.89%-Ni, an indicated resource of 4.27million tons with the average grade of 1.95%-Ni, and an inferred resource of 2.99million tons with the average grade of 1.12%-Ni while the PIK method has a measured resource of 2.25million tons with the average grade of 2.81%-Ni, an indicated resource of 3.61million tons with the average grade of 2.03%-Ni, and an inferred resource of 100.313tons with the average grade of 1.84%-Ni. The spread direction of laterite nickel resources which is in the research area comes from southwest-northeast.

Key words: Geostatistics, Variogram, Resources, Laterite nickel.