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Geostatistical Simulation for Assessing an Inferred Deposit

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Geostatistics, a tool for accurate estimation of spatially correlated variables is used widely in mineral reserve estimations. Variogram model, which characterizes the spatial correlation of variables, is the first and essential step for any geostatistical estimation. Variogram model is primarily dependent on number of samples or boreholes intercepts within the ore body. The more the number of samples, it is always better. At times Geostatistics fail for estimation of a deposit if enough samples are not available for study. An indirect approach has been adopted here to simulate an iron ore deposit not having enough samples and later the results are compared with the estimations done on the basis of exploratory data. Variogram model depicts the spatial correlation between the variables of homogenous data within a deposit. This idea is extended, so that the spatial correlation among the variables of the deposit and the adjacent deposits is similar if both the deposits are geologically similar. To test this idea, a study has been taken up for two adjacent iron ore deposits, which belong to single basin of Precambrian period. The variogram model of the first deposit is utilized for simulation of second deposit and later the results have been compared with the geostatistical block model of the second deposit, which has been prepared with the complete exploration information. Later the same logic is used to get details about an unexplored near by deposit.