Optimization of mineral processing plant feed at Sarcheshmeh Copper mine by Geostatistical methods

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ABSTRACT

One of the most important geostatistical methods to show results of reserve estimation that is suitable in mine design and extraction, named “volume-variance” method. Using this method is very suitable in designing mines and mineral processing plant that encountered with grade deviation problem. Utilized data of this paper include blasting boreholes drilled in first six month of 1386 and exploration boreholes which have the same blasted borehole coordinate in five active bench mark of Sarcheshmeh copper mine. After approved that these two groups’ data haven’t had any systematic error, they are combined with each other. The relationship between Cu data grade and distance in each benches explained by fitting spherical model on experimental variograms. The sill of variograms in all t benches was constant but the effective radius changed in various directions. Then by calculating the optimized parameters of variogram, loaded tonnage in one shift (30000 tone per shift), volume-variance and selective mining unit variance relationship, the number of optimized extraction blocks for reaching to desired mineral processing plant variance (%0.08) was estimated between 80 to 100 blocks.

Keywords: Geostatistics, variogram, selective mining unit variance, volume-variance relationship.

بهینه کردن خوراک کارخانه فراوری مجتمع مس سرچشمه

به کمک روش‌های زمین آماری

چکیده

یکی از روش‌های مهم ارائه نتایج تخمین ذخیره که در طراحی و استخراج معادن مفید واقع می شود، استفاده از یک روش زمین آماری موسوم به رابطه حجم-واریانس است. استفاده از این رابطه در طراحی معادن و کارخانه های فرآوری که با مسئله تغییرات تناوبی عیار در طول استخراج مواجه هستند، بسیار مفید است.