Case Histories and Methods in Mineral Resource Evaluation

Edited by Alwyn E. Annels (University of Wales, Cardiff)

The volume covers a wide spectrum of activities in the field of mineral resource evaluation ranging from exploration models to exploration drilling and sampling, to ore reserves, to mine design, to financial evaluation, to mine sampling and grade control, and finally to reconciliation between estimated and mill recovered grades. The resources considered show a similarly large range and include precious and base metals, industrial minerals, coal, clay and aggregates. Deposits include examples from Australia, Chile, western USA, Bangladesh and Zimbabwe, as well as examples from the UK.

In addition many chapters consider the application of geostatistics. Also discussions highlight the inherent problems with using geostatistics and the need to take more account of the local mine geology. Though many geologists have had their fingers burnt in the past by applying geostatistics without adequate understanding of the method, there is clearly a greater appreciation of its values and greater willingness to experiment further with the technique. Some of the case histories present in this volume will be of value to those mine geologists who seek more practical guidance.

Outline of Contents
Mineral deposit models in exploration • Risk appraisal in mining investment • Reserves and resources • Assaying in resource evaluation • Mineralogy • Quarry design • Site investigation and quarry design • Geophysical logging for coal • Evaluation of coal borehole data • The Barapukuria coal deposit • Grade and ore reserve at Renco mine • Field computer data logger • Computer evaluation of a bedded clay deposit • Kaolin resources evaluation • 3D surface modelling • Computer applications at South Crofty mine • Low cost geostatistical reserve estimation • Whittle 3D optimization • Composite optimization • Computerized grade control • Reconciliation studies • Open pit grade control • Geostatistics • Geostatistical ore reserve estimation • Elliptical weighting techniques • Ore reserves at Los Pelambres • Conditional simulation • Modelling using fractal concepts

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