Chapter 1 | An Overview and Outline

Overview

Managing Risk in Feasibility Studies

Common Sense and Good Communication – Effective Team-Based Estimation and Classification of Mineral Resources and Ore Reserves

JORC and the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards – Major Changes and Developments for Competent Persons

Chapter 2 | The Resource Database

Overview – The Resource Database

Design Principles of Relational Databases and Management of Data Flow for Resource Estimation

Sampling and Analysis Protocols and Their Role in Mineral Exploration and New Resource Development

Geological Data Collection for Reliable Coal Resource Estimation

A Review of the Reliability and Validity of Portable X-Ray Fluorescence Spectrometry (pXRF) Data

How Sampling Biases Can Induce Decision-Makers to Make Wrong Decisions – An Introduction to Qualitative Sampling Theory

Practical Considerations and Shortcuts in Sampling

Geostatistical Criteria for Choosing an Optimal Ratio between Quality and Quantity of Samples – Method and Case Studies

Measurement of Bulk Density for Resource Estimation – Methods, Guidelines and Quality Control

Collection of Geotechnical Data from Drill Holes

Use and Abuse of Oriented Drill Core

Chapter 3 | Geological Interpretation and Geological Modelling

Overview – Geological Interpretation and Geological Modelling

Geological Interpretation for Resource Modelling and Estimation
Best Practice in Coal Exploration and Resource Evaluation
A Waltho, S Kristensen and C Harman

The Do’s and Don’ts of Geological and Grade Boundary Models and What You Can Do About It
J F H Barnes and B L Gossage

A Checklist for Grade Control
H Hoogvliet, A Grieve and D Sims

Calculated Mineralogy and Its Applications
S Halley

‘X-Ray Plunge Projection’ – Understanding Structural Geology from Grade Data
E J Cowan

Practical Implicit Dyke Modelling for Resource Estimation – Newmont Boddington Gold, Western Australia
D J Haddow and E J Cowan

The Pursuit of Best Practice and Use of Innovative Techniques – Case Studies in Geological Interpretation and Modelling, Gold Fields – Growth and International Projects
R Gradim, J Donaldson, J Levett, M Briggs, M Crawford, M Dusci and A Trueman

Wireframe-Free Geological Modelling – An Oxymoron or a Value Proposition?
E J Cowan, K J Spragg and M R Everitt

Chapter 4 | Mineral Resource Estimation

Overview – Mineral Resource Estimation
I Glacken and A Trueman

Mineral Resource Estimation of the Brockman 4 Iron Ore Deposit in the Pilbara Region by Rio Tinto Iron Ore
B Sommerville, C Boyle, N Brajkovich, J Phillips and A-A Latscha

Multivariate Iron Ore Deposit Resource Estimation – A Practitioner’s Guide to Selecting Methods
C De-Vitry, J Vann and H Arvidson

Tropicana Gold Mine, Western Australia – A Case Study of Non-Linear Mineral Resource Estimation
M Kent, B Catto, M Doyle, D Gibbs, M Matheson, R Singer, B Kendall and J Vann

Estimation of Underground Mineral Resources at the Sunrise Dam Gold Mine – A Case Study in Risk Management
F Clark, J T Carswell, N A Schofield and M Erickson

Mineral Sands – Some Aspects of Evaluation, Resource Estimation and Reporting
G Jones, B Gibson and V O’Brien

A Practitioner’s Guide to the Identification, Classification and Estimation of Inventory Coal and Coal Resources
K B Preston

O Rondon and A Trueman

Resource Estimation in Folded Deposits – A Review of Practice and Case Studies
J Glacken, P Blackney, D Gray and N Fogden

Drilling of Mineral Resources – Towards Better Investment Decisions
N A Schofield
Chapter 5 | Non-Resource Inputs to Estimation of Ore Reserves – The Modifying Factors

Overview – Non-Resource Inputs to Estimation of Ore Reserves – The Modifying Factors  
M F Whitham 373

The Influence of Geotechnical and Groundwater Factors on Ore Reserve Estimation  
T D Sullivan 385

Selecting a Mining Method for Metalliferous Orebodies  
F Kaesehagen 401

Transition from Open Pit to Underground Mining  
I T Ross 409

Mining Dilution and Losses in Underground Mining  
P L McCarthy 415

The Assessment and Management of Coal Recovery in Open Pit Mines  
A Scott 419

Metallurgical Input to the Determination of Ore Reserves  
P J Lewis 433

Geometallurgical Guidelines for Miners, Geologists and Process Engineers – Discovery to Design  
D David 443

Assessment of Iron Ore Reserves – Rio Tinto’s Pilbara Experience  
G Danckert and L Fouché 451

Case Study – Marketing of Industrial Minerals – Iluka Resources  
V E Hugo 457

Mineral Resources and Ore Reserves of Industrial Minerals – Markets and Other Modifying Factors  
S Border and B Butt 467

Infrastructure for Mining Developments  
F Blatt 473

The Influence of Revenue and Cost Factors on Ore Reserve Estimation  
R P Watkins 479

Environmental Constraints on Resource-to-Reserve Conversion  
M Ridd, P Eaglen and C Unger 487

Community Consultation – The Ok Tedi Experience  
M Werror 493

Chapter 6 | Ore Reserve Estimation

Overview – Ore Reserve Estimation  
G Dunstan 503

Feasibility Studies – Scope and Accuracy  
M E White and I Harrington 507

Reflections on Front-End Loading in Mine Project Development  
J H Shillabeer 519

Whittle Optimisation – The Money Mining Methodology and Its Impact on Ore Reserves  
G Whittle 525

Maximising the Value of Open Pit Gold Reserves – Where Are We Getting It Right?  
S Butel and A Ferrier 529

Block Caving Software – Practical Applications  
J-A Dudley 535

Reserve Estimation for Block Cave Mines Using PCBC  
T Diering 547

Geotechnical Modifying Factors to Be Considered When Determining the Status of Longwall Reserves  
R W Seedsman 557
Chapter 7 | Risk in Resource and Reserve Estimation

Overview – Risk in Resource and Reserve Estimation

Evaluating Resource Risk – The Due Diligence Process

The Importance of Understanding Uncertainty and Risk Associated with All Geological Inputs to Ore Reserves

Scenario Thinking – A Powerful Tool for Strategic Planning and Evaluation of Mining Projects and Operations

Non-Technical Risks and Their Impact on the Mining Industry

Exposing Uncertainty in Schedules for Proactive Stockpile Planning

Reserves, Reserves and not a Tonne to Mine – A Study of Reserves Reported Prior to Mine Closure

Back to Basics – Geological and Mining Risks and Financial Issues on Resource and Reserve Evaluation in Coal Projects

Chapter 8 | Monitoring and Exploiting the Reserve

Overview – Monitoring and Exploiting the Reserve

Predicting the Unpredictable – Evaluating High-Nugget Effect Gold Deposits

Effective Grade Control Systems

Grade Control Based on Economic Ore/Waste Classification Functions and Stochastic Simulations – Examples, Comparisons and Applications

Planning Strategies to Increase Project Value

Interpreting Long-Term Mine to Mill Trends at St Ives Gold Mine

Reconciliation Principles for the Mining Industry

Mining Reconciliation – An Overview of Data Collection Points and Data Analysis

A Strategy to Minimise Ore Grade Reconciliation Problems between the Mine and the Mill

Guide to Creating a Mine Site Reconciliation Code of Practice
Chapter 9 | Classification and Reporting

Overview – Classification and Reporting

Issues in Capital Raisings and Disclosure


Estimating and Reporting Potential Mineralisation at BHP Billiton – The Unconstrained View

Mineral Resource Classification – It’s Time to Shoot the ‘Spotted Dog’!

Reporting and Converting Resources to Reserves – How Confident Are We?

Mine Design Stages in Russia

Resource and Reserve Valuation Practices in Countries Forming the Russian Commonwealth of Independent States

Rio Tinto Mineral Resource and Ore Reserve Governance

Liability Issues Arising in Relation to Exploration, Mineral Resource and Ore Reserve Reports Included in Takeover Documents

Liability of Competent Person for JORC Reports

Competent Persons – Beyond JORC Code Requirements

Appendix | The JORC Code 2012

The JORC Code 2012 Edition

Indexes | Author and Subject Index

Author Index

Subject Index