

Formula 1

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Formula 2

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Formula 3

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Related Content

Title	Type	Slug
Blast Design Excel Template v4.2	resource	blast-design-excel-template
Drill Rig Maintenance Inspection Checklist	resource	drill-rig-maintenance-checklist
Rock Mass Rating (RMR) Field Survey Sheet	resource	rmr-field-survey-sheet
Drilling Energy Benchmarking Dashboard (Power BI)	resource	drilling-energy-dashboard
TBM Advance Rate Prediction Curve Library	resource	tbm-advance-rate-library

Detailed Explanation

Grade reconciliation is a cornerstone of Mine Metallurgical Process Integration, bridging geology, mining, and processing disciplines. The workflow standard establishes a repeatable, auditable sequence—starting from data acquisition (e.g., drill core assays, in-pit mapping, mill head assays) through statistical comparison, variance attribution (e.g., sampling error, geological uncertainty, blending effects), and root-cause analysis—to quantify and explain discrepancies between predicted and actual

grades. Central to the standard is the concept of 'reconciliation tiers': short-term (shift/daily), medium-term (monthly/quarterly), and long-term (annual/reserve-level), each with defined tolerance thresholds, reporting formats, and escalation pathways. The standard mandates metadata governance—including sample IDs, assay methods, detection limits, QA/QC flags—and requires version-controlled digital workflows to support real-time dashboards and automated alerts when reconciliation variances exceed predefined control limits. Crucially, it integrates feedback loops: reconciliation outcomes directly inform updates to geological models, mine planning assumptions, and metallurgical recovery predictions—enabling closed-loop process optimization and improved forecast reliability.

Key Components

#	Component
1	Data Provenance & Traceability Framework
2	Tiered Reconciliation Thresholds & Tolerance Bands
3	Root-Cause Classification Matrix (e.g., Sampling Bias, Geological Model Error, Blending Artifact)

Applications

#	Application
1	Supporting JORC/NI 43-101 compliant resource estimation reports
2	Optimizing mine plan sequencing by refining grade block model confidence intervals
3	Improving mill feed grade forecasting accuracy for throughput and reagent consumption planning

Related Concepts

#	Concept
1	Geological Model Validation

#	Concept
2	Sampling Theory and Gy's Sampling Equation
3	Metallurgical Accounting and Mass Balancing

Tags

mining, metallurgy, resource estimation, grade control, process integration

Grade Reconciliation Workflow Standard (PDF)

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