

QAQC: Proactive Quality Management (QM) supporting Reconciliation results

Oscar Dominguez

1.Global Principal Geoscientist QAQC, Resource Centre of Excellence, BHP, Perth, WA, 6000

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ABSTRACT

Benchmark practices in mining industry include the establishment of Quality Programs - Quality Assurance & Quality Control, QAQC – to monitor the correct execution of sampling protocols and control each stage of the "sample cycle ": sample collection, preparation (comminution) and analytical method.

QAQC reports commonly include statistical-numerical results that quantify performance of QAQC controls (field duplicates, preparation duplicates, blanks, standards, etc.). Graphics such as scatter plots, QQ plots, histograms, and cumulative frequencies are used to graphically represent the results. Statistical values including relative difference, absolute difference, relative variance, averages, AMPD, T-test, and Z-scores are used to quantitatively express the relationship between duplicate pairs... but is an effective quality program just a statistical exercise?

This paper aims to highlight, with examples, the concept of "Quality Management" (QM) as the precursor of continuous monitoring (ideally in real time) of QAQC controls results (on Exploration, Production, Processing and Port samples) determined by trend analysis performed on a time and/or grades basis. Currently, there is a paradigm in the process of quality assurance that if individual data points fall within a predetermined acceptance limit then they are necessarily acceptable and therefore suitable for informing operational and investment decisions. However, what is stated with respect to QM is that sometimes results found within the acceptance limits can indeed be internally biased, or show material deviations over a period of time, thereby impacting reconciliation results and/or potentially creating discrepancies at Port with the final buyers.

QM refers to the proactive detection of these "anomalous tendencies", the approach and communication with the area source of the information, the understanding of the reasons that caused the deficiencies, and the generation of agreed action plans to remedy the situation and ensure the consistency of results, in other words: continuous improvement on proactive manners.