

Peer review and technical audit: Improved assurance for mineral resource and ore reserve estimates and reporting



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Why the need for improved assurance?

Risk is an inherent component of the mining industry and risk governance is an integral part of corporate assurance and business decision making. Similar to the requirements for financial, legal and environmental governance, assurance regarding the processes applied to data collection, estimation and reporting of mineral resources and ore reserves is required. Mineral resources and ore reserves are the key assets of a mining company, and senior management, company boards and external stakeholders require assurance on the accuracy of estimated and reported technical information.

Improved assurance is particularly crucial at a time in the industry when companies are running lean or relying on teams that have limited technical and/ or management oversight experience. Despite industry guidance and some companies having standards expecting or requiring reviews and/ or audits of mineral resource and ore reserve generation and reporting processes, it is surprising how infrequently or ineffectively these are actually carried out.

What seems to be going wrong?

There are many examples where errors and improvements identified after the fact could have been avoided. For example, some errors concern basic data verification and data preparation processes, rather than somewhat more subjective choices about

estimation-related parameters. Such issues highlight the lack of experience of the people tasked with the estimation and the lack of adequate internal peer review to identify such issues early.

A common concern is that some companies and managers have not recognised the critical role that peer review plays in improving the skills of individuals and in supporting confidence in the technical outputs. In some cases, while the importance of peer review is formally recognised by companies as part of their standard procedures, there is actually no practical or effective peer review process being carried out.

The importance of people, processes and systems

A balance between the core elements of people, processes and systems is essential for managing the risk and reducing exposure to inaccurate mineral resource and ore reserve generation and reporting. Having competent people following adequate and effective processes, and making use of appropriate systems, will ensure reliable estimates are consistently generated and reported.

What can be done to improve assurance?

All companies large or small, whether publicly listed or not, require some form of quality control and demonstrable assurance to support good governance. The assurance of reliable mineral resource and ore reserve

reporting must therefore be included in a mining company's risk management and control framework.

An effective assurance process for the governance of mineral resources and ore reserves consists of three layers of defence; a layer of self-validation and peer review where and when the work is performed; a layer of internal peer review/ oversight; and a final level of independent review or audit that is administered and monitored by appropriately mandated levels of management and/ or board oversight.

Peer reviews are ideally carried out concurrently with the preparation of data, selection of estimation procedures and validation of outputs from mineral resource and ore reserve estimation prior to the handover of results between disciplines, or the final reporting of results. Audits, on the other hand, are generally retrospective reviews by independent and/ or external reviewers who rate the risks inherent with an already completed process, identifying opportunities for improvements in the future.

Reviews and audits improve the level of assurance in the reliability of estimated and reported exploration results, mineral resources, ore reserves, and mine reconciliation. Peer reviews and audits contribute not only to governance processes, but also identify valuable improvement opportunities, and provide mentoring and professional development guidance to those whose work is being reviewed.

Conclusion

If a company does not, at a minimum, have a system of internal peer review (as opposed to a formal external assurance process) to provide verification or validation of the actual numbers generated, this lack of internal control may represent a weak link in the assurance of the resource and reserve estimates generated and reported. Indeed, for companies not having an established internal audit function or activity, senior management and/ or the Board should disclose to their stakeholders how adequate assurance on the effectiveness of the company's governance, risk management and control structure will be provided. •