COMPARISON OF CLASSIFICATION SYSTEMS

In the United States, the United States Geologic Survey’s (USGS) Circular 831 (1980) Principles of a Resource/Reserve Classification For Minerals provided a basis for many modern classification systems. A more comprehensive update was published in 1991 by the International Society for Mining, Metallurgy, and Exploration, Inc. (SME) in a paper entitled A Guide for Reporting Exploration Information, Resources and Reserves. For stock exchange filings in the United States, the Securities and Exchange Commission (SEC) has specified similar terminology in their Industry Guide 7, and the SEC expects that property disclosure will report only proven and probable reserves. Banking institutions in the United States expect that reporting terminology used in disclosures will follow standard and acceptable engineering practice.

Australian classification terminology is very similar to that of the United States. The latest release of the Australian classification system is the 1996 revision of the Australian Code For Reporting Of Identified M Ineral Resources And Ore Reserves by the Joint Ore Reserve Committee (JORC) of the Australian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists, and the Australian Mining Industry Council. The Australian Stock Exchange (ASX) has adopted this code as the basis for disclosure. A distinguishing point of the Australian Code is its requirement that resource and reserve estimates are to be prepared under the direction of a “Competent Person,” who is experienced in such estimations. The classification systems of the United Kingdom and South Africa also embrace this concept.

Canadian classification terminology has been more variable due to the involvement of a number of professional and governmental groups, but through recent efforts is coming more in line with American and Australian practice. National Policy No. 2-A Guide For Engineers, Geologists, and Prospectors Submitting Reports on Mining Properties to Canadian Provincial Governments has long served as a basis for Canadian resource/reserve reporting and allows for the term “ore” to be used in a context synonymously with the term “reserve.” The policy allows for the reporting of proven and probable ore, as well as possible ore. National Policy No. 2-A is currently under review by Canadian Security Administrators (CSA) with revisions to be published in 1999 in National Instrument 43-101 Standards of Disclosure for Mineral Exploration and Development and Mining Properties, providing for terminology that is more consistent with other internationally accepted standards. Canada is currently moving ahead with requirements for a “Q-qualified Person” who has relevant experience and can be held accountable for their work.

A similar policy updating effort is also underway by the Toronto Stock Exchange (TSE) and the Ontario Securities Commission (OSC), major institutions that regulate international mine financing. Together they have formed the Mining Standards Task Force. On February 2, 1999, the Task Force issued a final report Setting New Standards: Proposed Standards for Public Mineral Exploration and Mining Companies and recommended that the resource and reserve definitions presented by the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) be adopted for public disclosure, both nationally and locally. The CIM definitions are similar to those of the United States and Australia except that the classification allows for possible reserves, with the qualification that possible reserves cannot be considered in the economic analysis of a property. The Toronto Stock Exchange (VSE) has adopted the resource and reserve definitions of the CIM, and they have been incorporated into Appendix 19C of the VSE’s Corporate Finance Policy and Procedures.

REFERENCES


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**Resource**: A concentration of naturally occurring solid, liquid or gaseous material in or on the earth's crust in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible. Location, grade, quality, and quantity are known or estimated from specific geological evidence.

To reflect increasing degrees of geological certainty, resources can be subdivided into measured, indicated, and inferred.

- **Measured**: Quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the result of detailed sampling. The sites for inspection, sampling, and measurement are spaced so closely, and the geological character is so well defined that size, shape, depth, and mineral content of the resource are well established.

- **Indicated**: Quantity and grade and/or quality are computed from information similar to that used for measured resources, but the sites for inspection, sampling, and measurements are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than for measured resources, is high enough to assume geological continuity between points of observation.

- **Inferred**: Estimates are based on geological evidence and assumed continuity in which there is less confidence than for measured and/or indicated resources. Inferred resources may or may not be supported by samples or measurements but the inference must be supported by reasonable geo-scientific (geological, geochemical, geophysical, or other) data.

**Reserve**: A reserve is that part of the resource that meets minimum physical and chemical criteria related to the specific mining and production practices, including those for grade, quality, thickness, and depth; and can be reasonably assumed to be economically and legally extracted or produced at the time of determination. The feasibility of the specified mining and production practices must have been demonstrated or can be reasonably assumed on the basis of tests and measurements.

The term "reserves" need not signify that extraction facilities are in place and operative. The term "economic" implies that profitable extraction or production under defined investment assumptions has been established or demonstrated. The assumptions made must be reasonable, including assumptions concerning the prices and costs that will prevail during the life of the project. The term "legally" does not imply that all permits needed for mining and processing have been obtained or that other legal issues have been completely resolved. However, for a reserve to exist, there should not be any significant uncertainty concerning issuance of permits or resolution of legal issues.

Reserves can be subdivided with increasing economic certainty into probable and proven categories.

- **Proven Reserve**: That part of a measured resource that satisfies the conditions to be classified as a reserve (as defined above).

- **Probable Reserve**: That part of an indicated resource that satisfies the conditions to be classified as a reserve (as defined above).