INTERNATIONAL ASPECTS OF RESOURCE AND RESERVE REPORTING STANDARDS

JEAN-MICHEL RENDU

Vice President, Resources and Mine Planning Newmont Mining Corporation, Member CMMI International Resources/Reserves Definitions Group

ABSTRACT

International standards to estimate and report exploration information, mineral resources and mineral reserves, are an essential requirement for improved communications. A review of worldwide historical developments show that considerable progress has been made toward reaching such standards. However, much additional effort is needed to ensure that truly international standards are agreed on, and that such standards are accepted, followed, and understood by all entities that have a stake in the mining industry. Recommendations are made outlining steps to be taken to reach international agreement.

NEED FOR INTERNATIONAL STANDARDS

The mining industry has long recognised the need for international standards as a way to improve communications both within the industry and with stakeholders outside, but linked to the industry. Miners require significant capital to generate wealth from exploitation of mineral resources. Investors, who can make the necessary funds available, are looking for assurance of quality and the best opportunities. National and international organisations are concerned with the socioeconomic and environmental impact of mining operations. Governmental agencies put in place and enforce rules and regulations to reach specific political or economic objectives.

International standards are needed to create a common language, facilitate communications, and improve the quality of the information being released. Such standards are a minimum requirement if rational decisions are to be made on the basis of well-understood information. Miners need a means to describe what they have discovered, and the value of their discovery, while investors, community leaders, international agencies and regulators must understand the representation made by the miners, and must have reason to believe and have confidence in the information they are given.

National standards have long existed. These limited standards were sufficient when mining companies based in a given country sought funds only from the same country, and the international regulatory environment was somewhat more lenient than it is now. But internationalisation of the world mining industry has exponentially increased the need for effective means of communication. A mine located in Siberia may be operated by Russian geologists and engineers, managed by a mining company based in the United States, and funded by international banks from Germany and the United Kingdom, as well as investment banks representing mutual funds from Ireland and France and private investors from Australia. The same mine will be subject to Russian regulations while having to follow international environmental regulations, and being carefully monitored by a number of international non-governmental agencies. Only if meaningful international standards are available and enforced can any of the parties involved make sound decisions concerning their participation in the project.

HISTORICAL DEVELOPMENT OF INTERNATIONAL STANDARDS

A systematic effort to develop international standards for estimation and reporting of exploration information, mineral resources, and mineral reserves started in the 1990's (Figure 1). The "Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (the JORC Code)" was published in June 1988 and incorporated into Australian Stock Exchange (ASX) listing rules in July 1989. The "Guidelines to the Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves" was published in May 1990. In April 1991, the US Society for Mining, Metallurgy, and Exploration (SME) published "A Guide for Reporting Exploration Information, Resources, and Reserves". In 1991, the Institution of Mining and Metallurgy in the UK also revised its standards for reporting of mineral resources and reserves. This revision was based largely on the 1989 JORC Code.

In September 1994, the Fifteenth Congress of the Council of Mining and Metallurgical Institutions (CMMI), was held in Sun City, South Africa. During this congress, CMMI organized a meeting, headed by Norman Miskelly, to discuss international standards. This represented the first meeting of what was later to be called the CMMI International Resources/Reserves Definitions Group (the CMMI Group). The group is composed of representatives from Australia (AusIMM), Canada (CIM), South Africa (SAIMM), the United Kingdom (IMM) and the United States (SME). The group's primary objective was to develop a set of international definitions for reporting mineral resources and mineral reserves.

Concurrently, and since 1992, a Task Force of the United Nations Economic Commission for Europe (UN-ECE) was developing an international framework classification for resources and reserves. In November 1996, the United Nations published the "United Nations International Framework Classification for Reserves/Resources – Solid Fuels and Mineral Commodities".

In March 1997 the need for international standards, and stronger control of the reporting of mineral information, was made painfully obvious by the Bre-X scandal concerning the fictitious Busang gold deposit in Indonesia. Even though it was recognized that no regulation could have stopped Bre-X from happening, the lack of standards, and the lack of procedure to ensure that these standards are followed, was perceived as a significant contributing factor. The Toronto Stock Exchange and the Ontario Securities Commission formed a Mining Standards Task Force, whose final report, "Setting New Standards, Recommendations for Public Mineral Exploration and Mining Companies", was published in January 1999. This report recommends what is arguably the strongest set of standards to be followed. One of the recommendations is that the Canadian Institute of Mining and Metallurgy (CIM) work with the other international mining institutions to continue developing international standards.

A major breakthrough happened on October 18, 1997 when the CMMI Group met in Denver, Colorado and reached a provisional agreement - the "Denver Accord" - on definitions of mineral resources and mineral reserves. A joint meeting was held in Geneva on October 4, 1998 between the CMMI Group and the UN-ECE Task Force. Agreement was reached to incorporate the CMMI standard definitions, with minor modifications, into the UN Framework Classification, thus giving truly international status to the CMMI definitions.

Following the October 1998 meeting, Australia, South Africa and the United States updated their national guides. "A Guide for Reporting Exploration Information, Mineral Resources, and Mineral Reserves" was accepted by SME in March 1999. The revised "Australasian Code for Reporting of Mineral Resources and Ore Reserves (the JORC Code)" became effective September 1999. The "South African Code for Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code)" became effective in late February 2000.

In November 1999, the CMMI Group met again with the UN-ECE Task Force, to continue the process of developing international definitions and guidelines. With only minor differences between countries, which are of no material significance, the following defined terms were accepted (Figure 2):

- Mineral Reserves
- Proved Mineral Reserves
- Probable Mineral Reserves
- Mineral Resources
- Measured Mineral Resources
- Indicated Mineral Resources
- Inferred Mineral Resources

With these terms and their definitions being accepted, the CMMI Group is now taking responsibility for development of international guidelines. These guidelines must illustrate the conditions to be satisfied for classification of exploration information, resources, and reserves according to the accepted international definitions. Responsibility for estimation of resources and reserves must be clearly assigned to a "Competent Person", a term originally introduced in the JORC Code. Country specific guidelines, and country specific definitions of the Competent Person already exist. The CMMI Group set a new objective to develop international guidelines, as well as an international definition of the Competent Person, including reciprocity conditions for recognition of the Competent Person across national boundaries.

CURRENT STATUS

A brief review of the current status of the national codes and guidelines is needed to understand the steps to be taken before international standards are developed and uniformly recognized.

AUSTRALIA

The JORC Code forms the basis of all the other national codes developed over the last ten years. The JORC Code must be followed by all companies listed on the Australian Stock Exchange (ASX) and the New Zealand Stock Exchange (NZSE). As a result, all Australian and New Zealand companies, as well as all international companies listed in Australia or New Zealand, have accepted the Code. The JORC Code is also recognized as a standard by most international financial institutions and large consulting companies. By necessity, or for historical reasons, the JORC Code contains country specific terms and requirements. For example, the JORC Code uses the terms "Mineral Resources" and "Ore Reserves", while the CMMI Group and the UN-ECE have accepted the more general terms "Mineral Resources" and "Mineral Reserves".

Over the years, the JORC Code was improved by taking into account codes and guidelines developed by other countries, which were themselves based on earlier versions of the JORC Code. This improvement process has been proven very effective and should be maintained even after international standards are accepted.

SOUTH AFRICA

The entire mineral industry of South Africa, as well as the South African regulatory agencies have accepted the new South African Code for Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code). The SAMREC Code must be followed by all companies reporting information in South Africa or listed on the Johannesburg Stock Exchange (JSE). This code

includes the international definitions of Mineral Reserves and Mineral Resources. As with all other national codes, country specific requirements are included, such as conditions for qualification as a Competent Person in South Africa.

USA

The SME Guide for Reporting Exploration Information, Mineral Resources, and Mineral Reserves is accepted, but not required to be followed by the US mining industry. The SME guide is essentially compatible with the JORC Code and other international codes, but as such is not fully compatible with the current requirements of the US regulatory agencies such as the US Securities and Exchange Commission (US SEC). Currently, the US SEC does not allow the use of the term "Resources" when publishing material not in reserve. The SME guide requires that mineral reserves and mineral resources be prepared by, or under the direction of a Competent Person. It is likely that international standards will require that Competent Persons are members of a self-regulating professional association with disciplinary powers. This is already the case in Australia and South Africa and will be so in the UK. SME does not have disciplinary power over its members and there is no organizational structure currently in place to fill this gap.

CANADA

CIM has accepted the definitions of the CMMI Group. At this point in time the recommendations of the Mining Standards Task Force of the Toronto Stock Exchange and Ontario Securities Commission includes terms and definitions that diverge from those used in other countries. For example the Task Force recommends that the use of the term "Possible Reserve" be maintained, while the reserve definitions accepted by the CMMI Group only include "Proven Reserves" and "Probable Reserves". The Task Force also recommends using the term "Qualified Person" as opposed to "Competent Person". The Task Force does recommend that CIM and the Canadian mining industry actively contribute to the development of international standards that would be considered for acceptance by the Canadian regulatory agencies.

Two strands are currently at work. The CIM Reserves Committee is preparing a draft revised Code based on the international CMMI definitions and corresponding closely to the JORC Code. The new CIM code will not contain the category of Possible Reserves, making it in line with the CMMI standards. The draft is expected to be published later this year. In addition, discussions are being held with the Canadian Securities Administration (CSA) which is the umbrella body for mining professional and securities organizations from each province. The CSA can suggest changes to the reporting rules but these must be accepted by each province. CIM is holding back from finalizing its Code until agreement is reached with CSA.

UNITED KINGDOM

IMM has accepted the international definitions of mineral reserves and mineral resources. Most mining companies based in the UK, being active on an international scale and listed on most major stock exchanges, are actively promoting the development and acceptance of international standards.

In 1999, the merger of the Institution of Mining and Metallurgy with the Institute of Mining Engineers delayed progress on revision of the UK Code. In September 1999, the IMM Mineral Reserves Committee was reconstituted and was given a mandate to proceed with redrafting of the UK Code, along the lines of the JORC Code. It was expected that the consultation draft would be ready in the first quarter of this year.

UNITED NATIONS

The United Nations have adopted the CMMI definitions. It is recognized that the financial resources required to develop mineral deposits are likely to come from countries represented by the CMMI Group, and that these countries are moving toward a single standard, whose recognition would benefit all member countries of the United Nations. The UN-ECE Framework Classification takes into account requirements from the private and state controlled mining industry, as well as governmental needs for mineral inventory classification. For these reasons the CMMI definitions satisfy only part of the UN-ECE classification requirements. To satisfy the needs of countries with a variety of centralized and decentralized economic backgrounds, the United Nations defined terms such as “Reconnaissance Resource”, “Prefeasibility Resource”, and “Feasibility Resource”, which are not recognized by the CMMI Group.

COMPETENT PERSONS

Rules, regulations or guidelines concerning the Competent Person differ from country to country. The U.S. SEC does not specifically require that a Competent Person sign a public report. The Australian and New Zealand Stock Exchanges require that public releases be based on information compiled by a “Competent Person” as defined by the JORC Code. The Johannesburg Stock Exchange requires that public releases be based on the work of a “Competent Person” as defined by the SAMREC Code. The Mining Standards Task Force of the Toronto Stock Exchange and Ontario Securities Commission recommended that the concept of “Qualified Person” be incorporated formally into rules applicable to the publication of mineral resources and mineral reserves.

The UK Code will also incorporate updated Competent Person provisions, following the JORC and SAMREC wording. The London Stock Exchange (LSE) is only interested in policing with regard to stock exchange listed companies, but not with regard to the Competent Person. The UK mining industry will therefore need a form of self-regulation with a system that the LSE could respond to.

NEXT STEPS TOWARD INTERNATIONALIZATION

The CMMI Group and the United Nations have accepted international definitions for mineral resources and mineral reserves. For these definitions to be meaningful, international standards must also be developed, and procedures must be put in place to ensure that these standards are understood and followed. The CMMI Group decided to prepare the following draft documents, and to submit them to its member countries for review and international acceptance:

- International Guidelines for Reporting Mineral Resources and Mineral Reserves.
- International Definition of the “Competent Person”.
- International Code of Ethics for the Competent Person.
- Reciprocity Conditions, or conditions which must be satisfied for a Competent Person to be recognized across national boundaries.

Definition of Resources and Reserves

As discussed above, all members of the CMMI Group have accepted international definitions of reserves and resources.

Guidelines to Estimate and Report Resources and Reserves

National guidelines have been prepared by each member country of the CMMI Group. The last set of guidelines, as reviewed in Geneva in November 1999, showed great similarities between countries. A single set is now being drafted to form the basis of common guidelines to be accepted by all countries. It is recognized that, as the guidelines are being used, experience will dictate the need for modifications. Once international guidelines have been accepted, the CMMI Group will coordinate requests for changes or enhancements, and decide which changes should become part of the guidelines. It is also recognized that country specific national requirements, such as those imposed by national regulatory agencies, are likely to remain and should be additive to the international guidelines.

Definition of "Competent Person"

The CMMI Group recognizes that definitions and guidelines do not mean much unless responsibility for following these guidelines can be assigned to a specific individual or group of individuals. The need to define a "Competent Person", and to clearly specify the responsibilities of this person, is apparent. The conditions to be satisfied to qualify as a Competent Person must be defined. The international mining industry requires international recognition of the Competent Person. For international recognition, the Competent Person will need to have specified levels of expertise and to belong to a self-regulating professional organization, whose members are bound by a code of ethics and which has disciplinary powers over its members.

The legal responsibility of the Competent Person, and the consequences of his or her actions, are likely to vary significantly from country to country. In some countries, a Competent Person could be sued personally if there are indications that public statements were made which were of a fraudulent nature. The risk of legal action should significantly decrease the likelihood of unfounded or misleading statements. But the increased legal responsibility of the individual estimating and reporting resources and reserves, will have consequences which will need careful assessment.

National Organizations, Code of Ethics and Disciplinary Powers

For international recognition of the Competent Person, the conditions imposed by one country cannot be significantly different from those in another country. International recognition is likely to require a minimum level of relevant experience, as well as membership in a professional organization which has a code of ethics, disciplinary powers over its members, and the willingness to exercise these powers. The legal responsibilities of such a professional organizations will vary between countries. AusIMM, SAIMM, IMM, and other organizations listed in national codes are likely to satisfy the requirements for international recognition. In the United States, SME does not have disciplinary powers, and there is no existing organization that could serve the needs of all individuals likely to qualify as Competent Persons. Such an organization may have to be created.

International Organization to Ensure Reciprocity

At the national level, membership in a recognized professional organization will be one of the requirements for qualification as a Competent Person. Reciprocity between countries will require international recognition of the national requirements. An umbrella organization, such as an extension of the CMMI Group, will be needed to specify the conditions that national organizations must satisfy if their members are to be recognized as Competent Persons outside their national boundaries. The same umbrella organization will review national organizations requesting international recognition, and should have the power to discipline member organizations which no longer satisfy the conditions for reciprocity (Figure 3).

CONCLUSION

Reaching agreement for the implementation of international standards is a necessity that the world mining industry has recognised. These standards will improve the quality of communication both within and outside the industry. They will also impose a higher level of self-discipline and self-regulation on the industry which should not be considered as an additional hindrance, but rather as a means toward improved public relations.

The JORC Code played a critical role in initiating the development of international standards. The CMMI Group succeeded in developing internationally recognised definitions of reserves and resources. The full development of international standards is moving forward at an accelerated pace. Such standards will require that individual countries have in place self-disciplined professional organisations, internationally qualified to recognise Competent Persons. The success of international standards will also require a concerted and prolonged education effort. The benefits which will result from these standards must be demonstrated, not only to the mining industry, but as importantly to all other stakeholders, those investing in the industry, the regulatory agencies, and the non-governmental organisations which directly or indirectly influence the viability of the industry.

FIGURE 1: DEVELOPMENT OF INTERNATIONAL STANDARDS - HISTORICAL HIGHLIGHTS

Date	Place	Event
September 1994	Sun City, South Africa	First Meeting of the CMMI International Resources/Reserves Definitions Group
November 1996	Geneva, Switzerland	Publication of the "United Nations International Framework Classification for Reserves/Resources – Solid Fuels and Mineral Commodities"
March 1997	Indonesia and Canada	Bre-X Scandal
October 1997	Denver, Colorado	Second Meeting of the CMMI International Resources/Reserves Definitions Group "The Denver Accord"
October 1998	Geneva, Switzerland	Third Meeting of the CMMI International Resources/Reserves Definitions Group First Meeting with the UN-ECE
January 1999	Toronto	"Setting New Standards, Recommendations for Public Mineral Exploration and Mining Companies" published by Toronto Stock Exchange and Ontario Securities Commission
November 1999	Geneva, Switzerland	Fourth Meeting of the CMMI International Resources/Reserves Definitions Group Second Meeting with the UN-ECE "the Geneva Accord"

FIGURE 2: RELATIONSHIP BETWEEN EXPLORATION INFORMATION, MINERAL RESOURCES AND MINERAL RESERVES

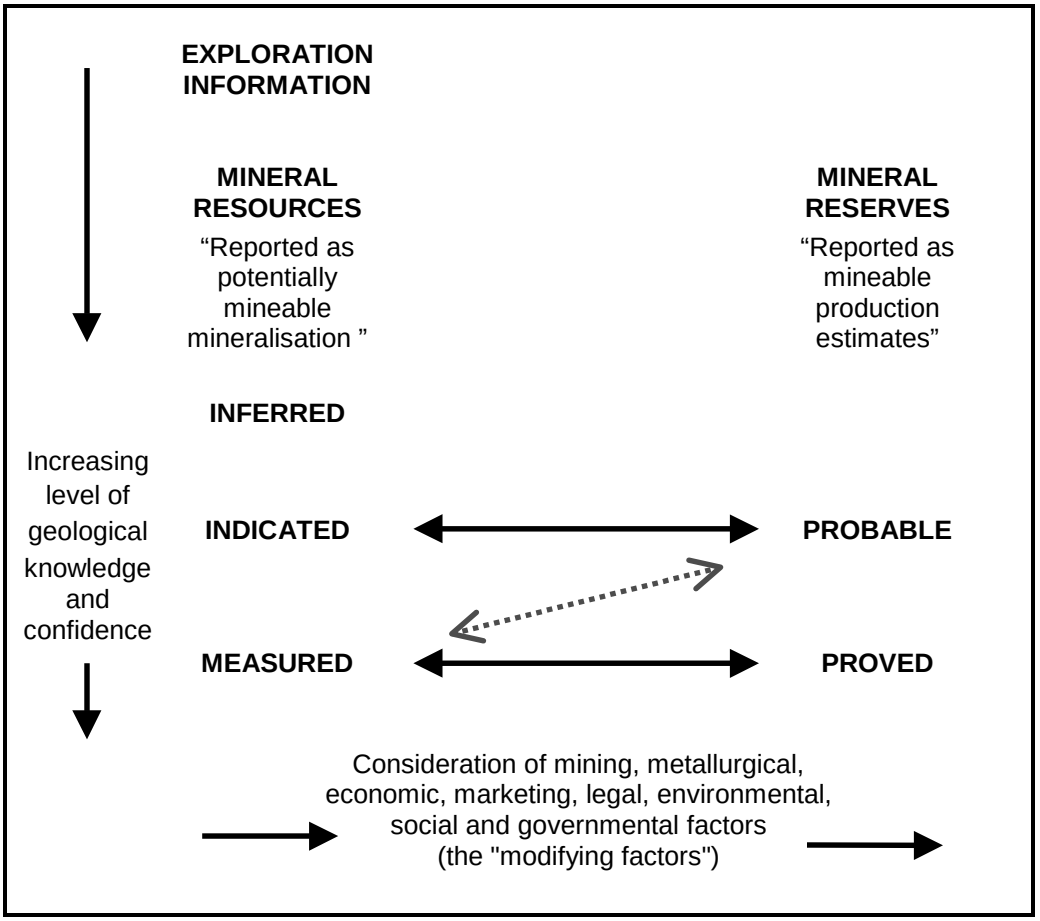

FIGURE 3: AN INTERNATIONAL ORGANIZATION FOR COMPETENT PERSONS