

PINCOCK

Perspectives

Delivering Smarter Solutions

ISSUE NO. 61 — December 2004

PAH NEWS PIX

- CHINA, CUBA FORM NICKEL PARTNERSHIP
- COAL COMPANIES DISCUSS COST OF BUSINESS
- COPPER DEMAND INCREASES
- MEXICAN MINING STATES ASK FOR TAX BENEFITS

CALENDAR

- **Northwest Mining Association's 110th Annual Meeting**
December 6–10, 2004
Red Lion Hotel at the Park
Spokane, Washington
email: phewood@nwma.org
- **Mineral Exploration Roundup 2005 – Discovering Our Future**
January 24–27, 2005
Westin Bayshore Resort & Marina
Vancouver, B.C., Canada
email:
roundup@chamborofmines.bc.ca
- **SME Annual Meeting and Exhibit**
February 28–March 2, 2005
Salt Palace Convention Center
Salt Lake City, Utah
email: sme@smenet.org
- **PDAC 2005 International Convention**
March 6–9, 2005
Metro Toronto Convention Centre
Toronto, Ontario, Canada
email: info@pdac.ca

Current Perspectives On Coal Reporting Guidelines

General

With the recognition that geological uncertainty and engineering risk are critical considerations for accurate and reliable resource and reserve reporting, increasing attention is being given to all types of mineral reporting, including coal. In the United States (US), resource and reserve reporting for stock exchange purposes is reviewed by the United States Securities And Exchange Commission (SEC), which has increasingly addressed the need for coal reporting to become more consistent with SEC guidelines. SEC letters to coal operators in 2001 stressed this point by noting that reserves must be economically and legally producible at the time of determination. The variability in coal reporting practices in the United States is the result of a combination of factors, including the number of privately held coal companies that have become public and hence are now subject to these guidelines, increased scrutiny of mineral reserve reporting as a result of various metallic mineral, coal, and petroleum reserve write-downs, as well as a general tightening of all US company reporting in response to questionable accounting practices that led to the implementation of the Sarbanes-Oxley Act.

Historical United States Practice

Modern guidelines for coal reporting in the United States began with the development in 1976 of a coal resource/reserve classification system published jointly by the United States Bureau Of Mines (BOM) and the United States Geologic Survey (USGS), as USGS Bulletin 1450-B, Coal Resource Classification System Of The U.S. Bureau Of Mines and U.S. Geologic Survey. This was followed in 1980, with the publication of USGS Circular 831, Principles Of A Resource/Reserve Classification For Minerals, which

outlined a classification system for all minerals including metallic minerals, industrial minerals, and coal. In 1983, the USGS subsequently published an updated coal resource/reserve classification in USGS Circular 891, Coal Resource Classification System Of The United States Geologic Survey. USGS Circular 891 provided detailed coal reporting information lacking in the previous USGS Bulletin 1450-B, including standard resource/reserve classification criteria, guidelines, and methods required for uniform application of the principles outlined in the previous USGS Circular. USGS Circular 891 continues to be the definitive guide for coal resource/reserve reporting used by many coal companies.

USGS Circular 891 provides a “rules based” approach, rather than a “methods based” approach as is used in most current mineral guidelines. The rules based approach established specific rules regarding what could constitute coal resources/reserves, including minimum coal thickness, maximum parting thickness, and maximum distance from data points. This system allows for coal in the ground to be considered as original in-situ resources (measured, indicated, and inferred), while in mine plan areas, a quantification of relative economic reserves could be developed as reserves and marginal reserves. Reserves were considered to be part of a more all inclusive Resource Base, that was intentionally set up to allow not only for economic, but also marginal, as well as some sub-economic coal in the event of price/cost changes. The USGS Circular 891 uses other terms that are not standard industry practice such as “inferred reserves.”

Over the last 10 years, however, mineral reporting standards have been advanced by a number of

■ CHINA AND CUBA FORM NICKEL PARTNERSHIP

A series of agreements have been signed by Chinese and Cuban mining and finance officers to explore and develop nickel projects in Cuba. The projects include a ferro-nickel plant at Moa and an exploration joint venture for the San Felipe nickel property in eastern Cuba. The venture would be owned by Cuban nickel monopoly Cubaniquel (51 percent) and China's Minmetals (49 percent). The two companies are to establish a jointly owned company to explore nickel in the country's central province. Cuba has been on a major nickel expansion drive in hopes of lifting its economy from years of recession. It plans to expand nickel output to 150,000 mt/year by 2020. Cuba has the worlds' third biggest nickel reserves after Russia and Canada.

■ COAL COMPANIES DISCUSS COST OF DOING BUSINESS

Coal companies are taking a closer look at the costs of doing business and where to find finances to develop reserves. With the high costs of opening a new supply, coal companies may be looking for other firms, possibly utilities, to help with the financing. Currently coal mining investment returns are in the 15 percent range. In the mid to late 70s many mines were underwritten on cost-plus coal contracts, which allowed the mines to be installed and the capital to be amortized over a long term. Some believe that coal companies will need to have that type of commitment out of the utilities before establishing new reserves.

■ COPPER DEMAND INCREASES

The price of copper is expected to be strong over the next decade, according to industry experts who met at the San Francisco Gold & Precious Metal Investment Conference in November. With a total copper consumption demand of nearly 17 million metric tons next year, economic copper resources are being depleted while demand is increasing by over 400,000 tons per year. Because only three world-class high-grade copper deposits are anticipated to come on line annually, the lack of supply will generate higher prices, possibly \$2 per pound. For the last 10 years, copper has been underdeveloped and as a result, a large deficit exists. Copper is currently experiencing a 7 to 8 percent annual grown demand.

professional societies in various countries. These standards have been developed to be broadly applicable to all mineral commodities, including coal and are based on a methods based approach. The methods based approach relies on the use of relevant and accepted geologic and engineering methodologies, including the demonstration of overall positive project economics, as applied by an experienced professional (Qualified Person or Competent Person). In contrast to the rules based approach, the methods based approach does not attempt to institute any specific quantitative restrictions for coal, but leaves this to the discretion of the Competent Person.

Current United States Practice

In 1991, in the United States, the professional society of the Society of Mining, Metallurgy and Exploration (SME) developed the resource/reserve reporting guideline entitled A Guide For Reporting Exploration Information, Mineral Resources, And Mineral Reserves (SME Reporting Guide). The SME Reporting Guide was subsequently updated in 1999 and is similar to most other current reporting codes. The SME Reporting Guide was developed to address all mineral commodities, including metallic minerals, industrial minerals, and coal. The SME, however, is not a self-regulated professional organization (SRO), as it does not have a means of enforcement action for member non-compliance with professional standards, therefore limiting the usefulness of having a Competent Person (CP) under this guide. The Competent Person is responsible for the appropriate application of standard industry practices relevant to the particular deposit and is accountable for the reporting of the resulting resource and reserve.

The SME Reporting Guide requires that Mineral Resources have "reasonable prospects for eventual economic extraction," and must therefore include only material that under assumed and justifiable technical and economic conditions might become economically extractable, in the opinion of the CP. The SME Reporting Guide requires that Mineral Reserves be based on "appropriate assessments, which may include feasibility studies," to demonstrate that the reserves are economically viable. The SME Reporting Guide states, "under no circumstances can an Inferred Mineral Resource be converted to a Mineral

Reserve unless first converted to an Indicated or Measured Mineral Resource."

The SEC regulates the reporting of resources/reserves for publically traded mineral companies. The SEC has not recognized the SME Reporting Guide, but instead relies on its Industry Guide 7: Description of Property by Issuers Engaged or to be Engaged in Significant Mining Operations. Industry Guide 7 is not consistent with the SME Reporting Guide. One difference is the absence of an SEC requirement for a competent/qualified person. SEC practice is to have reserves defined by a feasibility study for undeveloped properties, with all necessary permits close to or having been issued. A mine plan or prefeasibility study is acceptable for additions to operating mines. Reserves are to be based on prices at the time of the determination, but can consist of a three year historic average to minimize price volatility. Industry observers believe that the SEC will have increasing difficulty bridging the gap between its Guide 7 and the SME Reporting Guide and that some changes may result.

The difficulty for mining companies is that the SEC does not have a definitive set of publicly available guidelines or definitions for minerals reporting, which combined with the variable background of US coal companies, has resulted in resource/reserve reporting that has been variable and potentially inconsistent. As a means of remedying these difficulties, not only for coal, but also for all types of mineral resource/reserve reporting, a study group was set up under the sponsorship of the SME. This group, the SEC Reserves Working Group of the SME Resources And Reserves Committee, has been working over the last year to develop a set of working papers on critical issues for all minerals companies. These papers will be presented to the SEC for consideration in the development of more definitive guidelines. Several US coal companies have participated in this effort, with a number of other coal companies providing input at a September 14, 2004 meeting organized by the SME working group. The SME is considered to be the best-qualified professional society to represent the US mining industry in this effort.

Following is a summary of coal resource/reporting practice in several other countries for which guidelines exist, allowing for a comparison to United States practice.

Australian Practice

In Australia, the resource/reserve reporting guideline is the Australasian Code for Reporting of Mineral Resources and Ore Reserves (the JORC Code) developed by the Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists, and the Minerals Council of Australia. The September 1999 release of the JORC Code is the most recent, with a new version of the JORC Code expected for release in late 2004. Because the JORC Code has been in use for more than 10 years and has been instrumental in establishing new concepts, it has been considered a “de facto” international standard for mineral resource and reserve reporting, used by many international minerals companies. The JORC Code explicitly states that it is “applicable to all solid minerals, including diamonds, other gemstones, and coal.”

All mineral companies with Australian and New Zealand stock exchange listings must report according to the JORC Code. The Australian Stock Exchange (ASX) and New Zealand Stock Exchange (NZSE) have included the JORC Code as part of its listing rules. The JORC Code establishes the role of a Competent Person (CP) as the responsible authority. The JORC Code requires that Mineral Resources have “reasonable prospects for eventual economic extraction” and requires that Mineral Reserves be based on “appropriate assessments, which may include feasibility studies,” carried out to demonstrate that the reserves are economically viable.

JORC Code addresses all mineral commodities, with special provisions related to coal. The JORC Code requires that Coal Reserves be reported on the same basis as any other mineral commodity. With regard to coal, the 2004 JORC Code will reference (as did the previous 1999 version) that additional coal guidelines are contained in the 2003 version of Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources, and Coal Reserves (Australian Guidelines For Coal) prepared by the Coalfields Geology Council Of New South Wales and the Queensland Mining Council. The JORC Code, however, notes “these guidelines do not override the provisions and intentions of the JORC Code for Public Reporting.” One new item in the pending 2004 JORC Code is the allowance

for the additional reporting of Marketable Coal Reserves (coal after beneficiation), but notes that this may not be used instead of the standard reporting of Coal Reserves (mine recoverable). The additional Australian Guidelines For Coal is compatible with the JORC Code, except for the allowance for Inventory Coal. Inventory Coal is coal that is not necessarily a Coal Resource as it may not meet the consideration that it has “reasonable prospects for eventual economic extraction,” but the reporting of this quantity is required by some local Australian jurisdictions.

Canadian Practice

In Canada, the resource/reserve reporting guideline is the CIM Standards On Mineral Resources And Reserves (CIM Standards) developed by the Canadian Institute Of Mining, Metallurgy and Petroleum (CIM) and adopted by CIM Council in August 2000. The CIM Standards addresses all mineral deposits, but note that coal reporting should also conform with separate Geologic Survey Of Canada guidelines. Canadian Securities Administrators (CSA) issued National Instrument 43-101 (NI 43-101) in February 2001, a rule that governs how stock issuers disclose technical information about mineral projects, requiring disclosure of resources and reserves using the definitions developed by the CIM. It requires that all disclosure be based on work by a Qualified Person (QP) and requires stock issuers to file Technical Reports, which are filed electronically and are available to the public on the Canadian Securities Administrators SEDAR website. NI 43-101 is currently in the process of being amended.

The CIM Standards stipulate that the reporting of coal resource and reserve estimates in Canada must also conform to the definitions and guidelines in Geological Survey of Canada (GSC) Paper 88-21: A Standardized Coal resource/Reserve Reporting System for Canada (1988). Unlike other current standards for coal reporting, this system reverts to a rules based approach, similar in approach to the old USGS system. The GSC system is rather elaborate and takes into consideration the geologic type (degree of geologic complexity), the deposit type (probable extraction technique), along with a number of specific quantitative parameters, to classify a coal resource and reserve. Based on these criteria, resources may be designated as measured, indicated, inferred, or speculative. The GSC system allows for the quantification of several categories of reserves, including

■ MEXICAN MINING STATES ASK FOR TAX BENEFITS

Four of Mexico's principal mining states, Durango, Chihuahua, Sonora and Coahuila, have asked the federal government to grant them additional benefits from taxes related to mining activities. This is not a new request, as many of the country's mining states have asked for additional benefits in the past, but no Mexican state currently receives any extraordinary benefits from mining production. The Mexican state collects taxes and redistributes them according to certain criteria. The country's constitution does not permit individual states to charge taxes, which can only be charged by the federal government. The government has been considering introducing a new tax on mineral production or a royalty. The only payment mining companies are currently obliged to make is a mining rights payment.

Minerals Corner—

Zeunerite

**$Cu(UO_2)_2(AsO_4)_2 - 10-16H_2O$,
Hydrated Copper Uranyl Arsenate**

Zeunerite is a rare uranyl arsenate that is similar to the more well known uranyl phosphate mineral torbernite. They are almost identical and share many similar properties. The structure of zeunerite is composed of arsenate tetrahedrons linked to uranium-oxygen groups that form distorted octahedrons. The arsenates and uranium groups form sheets that are weakly held together by water molecules. This structure produces the tabular habit, the one perfect direction of cleavage and the relative softness. The color of zeunerite varies from the typical emerald green to yellow. Zeunerite can lose water and convert to a different mineral called meta-zeunerite. Zeunerite specimens should be stored in a closed container to avoid water loss and should be kept away from other minerals that are affected by radioactivity. Zeunerite is named for Gustav Anton Zeuner, a German physicist and former director of the School of Mines in Freiberg, Saxony. It can be found in the Grandview Mine, Arizona, USA; Weisser Hirsche Mine, Scheneberg, Saxony, Germany; and Wheal Edward Mine, Cornwall, England.

In-place Reserves (mineable seam in the ground), Recoverable Reserves (with adjustments for mining recovery), and Saleable Reserves (with adjustments for beneficiation). The Geologic Survey Of Canada system is potentially inconsistent with the more recent Canadian CIM Standards, as well as other recent classification systems, which allows for possible confusion when applying these additional guidelines.

South Africa Practice

In South Africa, the resource/reserve reporting guideline is the South African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC Code) prepared by the South African Mineral Resource Committee (SAMREC) under the auspices of the South African Institute of Mining and Metallurgy (SAIMM), in March 2000. The SAMREC Code addresses all mineral deposits, with a separate section for special considerations for coal reporting. All mineral companies listed on the Johannesburg Stock Exchange (JSE) are required to report Exploration Results, Mineral Resources, and Mineral Reserves for public release in accordance to the SAMREC Code. The SAMREC Code is incorporated into Section 12 of the JSE Listing Requirements and is binding on JSE listed companies. JSE Listing Requirements specify that the Competent Person's (CP) name, address, and SAMREC recognized membership be provided.

The SAMREC Code also references definitions for terminology and methodologies for evaluating coal deposits contained in The South African Guide to the Systematic Evaluation Of Coal Resources and Coal Reserves. The SAMREC Code allows for the reporting of several categories of reserves, including Mineable In Situ Coal Reserves (that only include geologic loss factors within a mine plan), Run of Mine Coal Reserves (that include mining loss, dilution, and moisture factors), and Saleable Coal Reserves (coal

available for sale after beneficiation resulting from coal processing).

The United Kingdom Practice

In the United Kingdom, the resource/reserve reporting guideline is the Code For Reporting Of Mineral Exploration Results, Mineral Resources And Mineral Reserves (The Reporting Code) developed by the Institution Of Mining And Metallurgy (IMM) in conjunction with the European Federation Of Geologists (EFG) and the Institute Of Geologists Of Ireland (IGI), in October 2001. In November 2001, The Reporting Code was adopted by The Geologic Society of London (GSL). The Reporting Code is applicable to all solid minerals including "metals, gemstones, bulk commodities such as coal and iron ore, industrial minerals, stone or aggregates."

In the United Kingdom, the Financial Services Authority (FSA) is the competent authority, with listing through the UK Listing Authority (UKLA). The UKLA keeps the "Official List" of company stock shares, and creates the "Listing Rules" for the London Stock Exchange. The reporting situation in the United Kingdom has similarities to that of the United States, in that The UKLA has not yet adopted The Reporting Code, but instead relies on its own rules contained in Chapter 19 of the Listing Rules (Chapter 19). The UKLA, however, has indicated its intention to eventually accept The Reporting Code, once a complete review has been completed. Chapter 19 requires that reserves be based on a full feasibility study or on current operating experience, which shows that the reserves are economically viable. The Reporting Code requires that reserves be based on "appropriate assessments, which may include feasibility studies," carried out to demonstrate that the reserves are economically viable. The Reporting Code requires that a clear distinction be made

to identify mineable Coal Reserves (mining losses taken into account) and saleable Coal Reserves (mining and beneficiation losses taken into account), however, if saleable are reported, the corresponding recoverable coal reserves must also be reported.

Conclusions

In most countries for which standards have been developed over the last ten years, coal resource and reserve reporting standards are generally similar to that for other mineral commodities and are subject to the same guidelines. These are generally methods based approaches, rather than rules based approaches, as was originally practiced in the United States and Canada. A methods based approach relies on the use of relevant and accepted estimation methodologies and the demonstration of overall positive project economics, as applied by an experienced professional (Qualified Person or Competent Person). This is in contrast to the earlier rules based reporting systems in which qualifying coal criteria were quantified (minimum seam thickness, maximum parting thickness, maximum drill hole spacing, etc.). Some reporting standards allow for a few additional provisions to address considerations unique to coal. Some reporting standards reference additional guidelines, however, these are generally stipulated to not take priority over the basic reporting standards. Distinguishing between in-place coal resources and mineable coal reserves is an important consideration, with additional allowances for the separate reporting of saleable coal quantities. The goal of all of the current mineral reporting systems is to implement a more consistent approach for resource and reserve reporting for all mineral commodities, using standard terminology, in order to limit potential confusion.

This month's article was provided by Mark G. Stevens, C.P.G., Chief Geologist
mark.stevens@pincock.com



Pincock, Allen & Holt is a consulting and engineering firm serving the international mineral resource industry. Your comments and suggestions are always welcome. Contact Pincock, Allen & Holt • 274 Union Blvd., Suite. 200, Lakewood, Colorado 80228 • TEL 303.986.6950 • FAX 303.987.8907 •

www.pincock.com. Pincock Perspectives is published as a free information service for friends and clients. Information for News Pix is paraphrased from various sources; references available upon request.