

**STANDARDS AND GUIDELINES
FOR VALUATION OF MINERAL
PROPERTIES**

**SPECIAL COMMITTEE OF THE
CANADIAN INSTITUTE OF MINING,
METALLURGY AND PETROLEUM ON
VALUATION OF MINERAL
PROPERTIES
(CIMVAL)**

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PREAMBLE

P1.0 BACKGROUND

P1.1 There are at present no comprehensive standards for valuation of Mineral Properties in the Canadian mining industry. The Mining Standards Task Force (MSTF) of the Toronto Stock Exchange and the Ontario Securities Commission in its Final Report (January 1999) specifically recommended that the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) form a committee of valuation practitioners to review and advise on approaches to valuation of Mineral Properties.

P1.2 On May 5, 1999 at the Calgary Annual General Meeting, CIM Council approved the formation of a Special Committee on Valuation of Mineral Properties (CIMVal) to be co-chaired by Keith Spence (Chairman of the CIM Mineral Economics Society) and Dr. William Roscoe (Roscoe Postle Associates Inc.).

P1.3 The mandate of CIMVal is to recommend Standards and Guidelines for Valuation of Mineral Properties to be used by the mining industry in general and to be adopted by Canadian securities regulators and Canadian stock exchanges.

P1.4 The members of CIMVal represent of a mix of professional disciplines and experience in the field of Mineral Property valuation:

Keith N. Spence (Co-chair), Alliance Pacific Resources Inc., Toronto

William E. Roscoe (Co-chair), Roscoe Postle Associates Inc., Toronto

Michael J. Bourassa (Secretary), Aird & Berlis LLP, Toronto

Christopher R. Lattanzi, Micon International Limited, Toronto

Ross D. Lawrence, Watts, Griffis and McOuat Limited, Toronto

Paul E. Lunney, Noranda Inc., Toronto

Craig A. Roberts, Pacific International Securities, Vancouver

David A. Scott, CIBC World Markets, Toronto

Ian S. Thompson, Derry, Michener, Booth & Wahl Consultants Ltd., Vancouver

Willoughby A. Trythall, retired Placer Dome executive and consultant, Vancouver

P1.5 At the CIM Annual General Meeting in Toronto (Mining Millennium 2000), the CIMVal Committee organized a “**Valuation Day**” on March 8, 2000. Various industry experts presented papers on valuation of Mineral Properties. A **proceedings volume** of the papers was subsequently published by CIM (copies are available by contacting the CIM Head Office in Montreal).

P1.6 In the Spring of 2000 the CIMVal Committee published an “**Initial Framework for Discussion**” which categorized and listed various issues for initial consideration in devising valuation standards. Input and comments were solicited via this publication and by direct and Internet requests to numerous organizations and individuals with an interest in mineral valuation. Fifteen responses were received and were considered in a Draft Discussion Paper along with input from the CIMVal Committee members.

P1.7 A “**Draft Discussion Paper**” was released at the CIM Annual General Meeting in Quebec in May 2001. Again, comments and submissions were requested from all interested parties. The Draft Discussion Paper set out the CIMVal Committee’s preliminary views, opinions and unresolved questions on the issues involved in establishing a set of Standards and Guidelines for Valuation of Mineral Properties. Twenty responses were received and were carefully considered in the “**Draft Standards and Guidelines for Valuation of Mineral Properties**”, released in February, 2002.

P1.8 On March 9, 2002, CIM Council adopted and approved the Draft Standards and Guidelines for Valuation of Mineral Properties, subject to any material changes in the final document being brought back to CIM Council for adoption and approval. The CIMVal Committee called for comments and submissions from all interested parties on the Draft Standards and Guidelines for Valuation of Mineral Properties. The CIMVal Committee received 39 submissions by April 30, 2002. Because some significant issues were raised in the submissions, the CIMVal Committee produced a “**Revised Draft Standards and Guidelines**” in September 2002 which was again distributed for comment.

P1.9 A further 17 submissions were received by November 29, 2002 with respect to the Revised Draft Standards and Guidelines. The committee evaluated and considered all submissions

during the course of several meetings in December 2002 and January 2003, prior to producing this final document. CIM Council adopted and approved this final document on March 9, 2003. The full name of this document is as stated on the cover page hereof. Within the document itself, it will be referred to as the “CIMVal Standards and Guidelines” or simply the “Standards and Guidelines”.

P2.0 COMMENTARY

P2.1 The guiding philosophy and intent of the CIMVal Standards and Guidelines is that Mineral Property Valuations be carried out by appropriately qualified individuals and that all relevant information be fully disclosed. The Standards and Guidelines are based on industry best practices and allow for professional judgement in certain instances.

For purposes of clarification, Valuation in the CIMVal Standards and Guidelines is concerned with the value or worth of a Mineral Property as opposed to “evaluation” where the key objective is an economic assessment or determination of the economic merit of a property.

P2.2 The CIMVal Standards and Guidelines are organized into two parts. The first part consists of Standards which are general rules that are mandatory in the Valuation of Mineral Properties. The second part contains Guidelines which elaborate on the Standards and, while not mandatory, provide guidance and best practices which are highly recommended to be followed in the Valuation of Mineral Properties. Definitions are given at the beginning of the Standards for terms used. Where practical, terms are defined in a manner consistent with National Instrument 43-101.

P2.3 As noted above, the MSTF Final Report recommended that CIM review and advise on approaches to Valuation of Mineral Properties. The majority of the respondents to the Draft Discussion Paper indicated that the Valuation approaches and methods should be chosen by the valuator. The Australian VALMIN Code, 1998 Edition (Section C24) states that the decision as to the valuation methodology or methodologies to be used is solely the responsibility of the valuator, and that the valuator must state the reasons for selecting each methodology used. OSC Rule 61-501 and Companion Policy 61-501 CP (Insider Bids, Issuer Bids, Going Private

Transactions, and Related Party Transactions) do not specify what valuations methods should be used.

P2.4 CIMVal has accepted the view that the valuator is responsible for choosing approaches and methods. CIMVal's view is that, although the valuator can choose the approaches and methods for Valuation of a Mineral Property, there is a body of published papers, published valuations, presentations and court judgments to guide his or her choice. Certain approaches and methods appear to be currently accepted as standard practice, although they could change over time. The Guidelines provide guidance and commentary on the use and application of various approaches and methods.

P2.5 Mineral Property Valuations are carried out for a variety of reasons, such as mergers and acquisitions, non arm's length transactions, a component of pricing of initial public offering of stock, listing support, support of audited financial statements, support for property agreements, determination of vendor considerations, litigation, expropriation compensation, income tax matters, insurance claims, and as components of corporate valuations and fairness opinions, among others.

P2.6 Regulatory bodies under certain circumstances require Valuations of Mineral Properties. CIMVal recommends that the Standards and Guidelines be followed for Valuation of Mineral Properties required by regulatory bodies or where such Valuations are prepared for purposes of public disclosure. CIMVal encourages the use of the Standards and Guidelines for other purposes, including internal corporate matters.

P3.0 OTHER VALUATION RELATED STANDARDS

P3.1 THE AUSTRALIAN VALMIN CODE

P3.1.1 In Australia, the VALMIN Code and Guidelines govern the technical assessment and/or valuation of mineral and petroleum assets and securities and set standards for independent expert reports. It was introduced in 1995 and revised in 1997 by The Australasian Institute of Mining and Metallurgy (AusIMM). The VALMIN Code is currently being reviewed by AusIMM to

assess its impact and its effectiveness, and to determine whether amendments may be required. The VALMIN Code is obligatory for AusIMM members for reports relating to mineral and petroleum assets required under Corporations law and is supported by many other entities, including the Australian Stock Exchange, the Australian Securities and Investment Commission, the Institute of Chartered Accountants in Australia, and the Australian Institute of Company Directors.

P3.1.2 The VALMIN Code is a comprehensive document which covers purpose and type of technical reports and valuation reports, qualifications of experts and specialists involved in valuations, valuation methodology, obligations of the commissioning entity, items to consider in the valuation, and contents of a report. The four main tenets of the VALMIN Code are transparency, materiality, competence, and independence. It is implicit in the VALMIN Code that reasonableness is another major tenet.

P3.1.3 The VALMIN Code has withstood the test of time, and is respected internationally. Many non-Australian valuers attempt to follow the VALMIN Code. Accordingly it provides an extremely useful model for Canada, and is already accepted by many Canadian valuers. Although the situation in Canada is somewhat different from that in Australia, the VALMIN Code has provided much useful material and many key concepts for the CIMVal Standards and Guidelines. The VALMIN Code, including Guidelines, can be downloaded from www.mica.org.au.

P3.2 NATIONAL INSTRUMENT 43-101 (NI 43-101)

P3.2.1 NI 43-101, Standards of Disclosure for Mineral Projects, came into effect on February 1, 2001. NI 43-101 was formulated by the Canadian Securities Administrators (CSA), an umbrella association of Provincial Securities Commissions across Canada. The Instrument includes Form 43-101F1 (Technical Report) and Companion Policy 43-101CP, and is now the principal regulatory document in Canada for disclosure of information on mining projects.

P3.2.2 NI 43-101 contains a number of items with relevance to issues in mineral valuation, as noted in several places in these Standards and Guidelines. Some of the definitions in the

Standards are consistent with those used in NI 43-101 (e.g. “Qualified Person”). NI 43-101 can be referenced on the Ontario Securities Commission website.

(www.osc.gov.on.ca/en/Regulation/Rulemaking/Rules.html)

P3.2.3 Part 4, Section 4.2(1) of NI 43-101 states that an issuer shall file a current Technical Report where a valuation is required to be prepared and filed under securities legislation. Section 4.2(1) does not refer to the contents of a valuation report to be prepared and filed in such circumstances. The CIMVal Standards and Guidelines recommend contents for a “Valuation Report”, and its relationship to a Technical Report.

P3.2.4 The CIMVal Standards and Guidelines are intended to augment NI 43-101, with respect to the valuation of Mineral Properties

P3.3 CANADIAN INSTITUTE OF CHARTERED BUSINESS VALUATORS

The Canadian Institute of Chartered Business Valuators (www.cicbv.ca) has standards for the valuation of businesses and corporations which its members must follow.

P3.4 ONTARIO SECURITIES COMMISSION RULE 61-501

On May 1, 2000, Ontario Securities Commission Rule 61-501 came into effect. This document replaced OSC Policy 9.1. It governs insider bids, issuer bids, going private transactions and related party transactions. Under certain situations, such as insider bids, a formal valuation is required. The rule provides that the valuator shall be qualified and independent and outlines certain requirements as to the content of a valuation report. The rule does not specifically deal with mineral valuations or the valuation standards or methodologies used in the valuation of mineral properties (www.osc.gov.on.ca/en/Regulation/Rulemaking/Rules/rules.html)

P3.5 INVESTMENT DEALERS ASSOCIATION OF CANADA

The Investment Dealers Association of Canada, in Bulletin #2827 dated March 5, 2001, issued Amendments and Interpretation Notes on “Disclosure Standards for Formal Valuations and Fairness Opinions in Transactions Governed by OSC Rule 61-501 Now in Force”. The intention of CIMVal is that the CIMVal Standards and Guidelines not conflict with this document. (www.ida.ca/Files/Regulation/Bulletins/B2827_en.pdf)

P3.6 INTERNATIONAL VALUATION STANDARDS COMMITTEE

The International Valuation Standards Committee (IVSC) is a sister organization of the International Accounting Standards Board. IVSC's aim is to develop a set of International Valuation Standards (IVS) which will ultimately be adopted globally. CIMVal intends to be consistent with the general thrust of this organization's work such that, if and when the IVSC's standards are adopted globally in the future, the CIMVal Standards and Guidelines will be readily adaptable. (www.ivsc.org/pubs/submission0106-A4.pdf)

P3.7 THE SOUTH AFRICAN SAMVAL CODE

The South African Institute of Mining and Metallurgy is coordinating an effort to constitute a set of standards and guidelines (SAMVAL) for valuation of mineral projects, properties and assets, for use by the South African securities regulators and stock exchanges. The SAMVAL Code is formulated to supplement the IVS being developed by the IVSC. The SAMVAL Code is in preparation and draws on the VALMIN Code, the CIMVal Standards and Guidelines, and the IVS. The CIMVal, VALMIN, and SAMVAL Committees are in communication with each other and with the IVSC and are working towards international consistency.

STANDARDS

The Standards are mandatory in the Valuation of Mineral Properties.

S1.0 DEFINITIONS

Commissioning Entity means the organization, company or person commissioning a Valuation.

Competence or *Competent* means having relevant qualifications and relevant experience.

Current means current with respect to, and relative to, the Valuation Date.

Data Verification means the process of confirming that data has been generated with appropriate procedures, has been accurately transcribed from the original source and is suitable to be used (NI 43-101, Section 1.2 Definitions).

Development Property means a Mineral Property that is being prepared for mineral production and for which economic viability has been demonstrated by a Feasibility Study or Prefeasibility Study and includes a Mineral Property which has a Current positive Feasibility Study or Prefeasibility Study but which is not yet financed or under construction.

Exploration Property means a Mineral Property that has been acquired, or is being explored, for mineral deposits but for which economic viability has not been demonstrated.

Fair Market Value means the highest price, expressed in terms of money or money's worth, obtainable in an open and unrestricted market between knowledgeable, informed and prudent parties, acting at arm's length, neither party being under any compulsion to transact (Income Tax Act of Canada).

Feasibility Study means a comprehensive study of a deposit in which all geological, engineering, operating, economic and other relevant factors are considered in sufficient detail that it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral production (NI 43-101, Section 1.2 Definitions).

Guideline means a best practices recommendation, which, while not mandatory in the Valuation of Mineral Properties, is highly recommended.

Independence or **Independent** means that, other than professional fees and disbursements received or to be received in connection with the Valuation concerned, the Qualified Valuator or Qualified Person (as the case requires) has no pecuniary or beneficial (present or contingent) interest in any of the Mineral Properties being valued, nor has any association with the Commissioning Entity or any holder(s) of any rights in Mineral Properties which are the subject of the Valuation, which is likely to create an apprehension of bias. The concepts of “Independence” and “Independent” are questions of fact. For example, where a Qualified Valuator’s fees depend in whole or in part on an understanding or arrangement that an incentive will be paid based on a certain value being obtained, such Qualified Valuator is not Independent. For securities purposes, in addition to the general definition above, section 6.1 of the Ontario Securities Commission Rule 61-501 (“Insider Bids, Issuer Bids, Going Private Transactions and Related Party Transactions”) and section 5.2 of its Companion Policy 61-501CP provide further guidance on the meaning of “Independence” and “Independent”.

Materiality and **Material** refer to data or information which contribute to the determination of the Mineral Property value, such that the inclusion or omission of such data or information might result in the reader of a Valuation Report coming to a substantially different conclusion as to the value of the Mineral Property. Material data and information are those which would reasonably be required to make an informed assessment of the value of the subject Mineral Property. In addition to the general definition above, section 2.4 of Companion Policy 43-101CP to National Instrument 43-101 provides further guidance on the meaning of “Material” and “Materiality”.

Mineral Property means any right, title or interest to property held or acquired in connection with the exploration, development, extraction or processing of minerals which may be located

on or under the surface of such property, together with all fixed plant, equipment, and infrastructure owned or acquired for the exploration, development, extraction and processing of minerals in connection with such properties. Such properties shall include, but not be limited to, real property, unpatented mining claims, prospecting permits, prospecting licenses, reconnaissance permits, reconnaissance licenses, exploration permits, exploration licenses, development permits, development licenses, mining licenses, mining leases, leasehold patents, crown grants, licenses of occupation, patented mining claims, and royalty interests

Mineral Reserves and Mineral Resources. The terms Mineral Reserve, Proven Mineral Reserve, Probable Mineral Reserve, Mineral Resource, Measured Mineral Resource, Indicated Mineral Resource, and Inferred Mineral Resource and their usage have the meaning ascribed by the Canadian Institute of Mining, Metallurgy and Petroleum (“CIM”) Standards on Mineral Resources and Reserves Definitions and Guidelines adopted by CIM Council on August 20, 2000 (CIM Bulletin October 2000), as may be amended from time to time by CIM, and as included by reference in NI 43-101.

Mineral Resource Property means a Mineral Property which contains a Mineral Resource that has not been demonstrated to be economically viable by a Feasibility Study or Prefeasibility Study. Mineral Resource Properties may include past producing mines, mines temporarily closed or on care-and-maintenance status, advanced exploration properties, projects with Prefeasibility or Feasibility Studies in progress, and properties with Mineral Resources which need improved circumstances to be economically viable.

Prefeasibility Study and ***Preliminary Feasibility Study*** mean a comprehensive study of the viability of a mineral project that has advanced to a stage where the mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, has been established, and which, if an effective method of mineral processing has been determined, includes a financial analysis based on reasonable assumptions of technical, engineering, operating, economic factors and the assessment of other relevant factors which are sufficient for a Qualified Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve (adapted from NI 43-101, Section 1.2 Definitions). A Prefeasibility Study is at a lower confidence level than a Feasibility Study.

Preliminary Assessment means a preliminary economic study by a Qualified Person that includes Inferred Mineral Resources. The Preliminary Assessment must include a statement that the Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, outlines the basis for the Preliminary Assessment and any qualifications and assumptions made, and specifies that there is no certainty that the Preliminary Assessment will be realized (adapted from NI 43-101, Section 2.3 (3)).

Production Property is a Mineral Property with an operating mine, with or without processing plant, which has been fully commissioned and is in production.

Professional Association is a self-regulatory organization of engineers, geoscientists or both engineers and geoscientists that (a) has been given authority or recognition by law; (b) admits members primarily on the basis of their academic qualifications and experience; (c) requires compliance with the professional standards of competence and the code of ethics established by the organization; and (d) has disciplinary powers, including the power to suspend or expel a member. (adapted from NI 43-101, Section 1.2).

Qualified Person is an individual who (a) is an engineer or geoscientist with at least five years of experience in mineral exploration, mine development or operations or mineral project assessment, or any combination of these; (b) has experience relevant to the subject matter of the mineral project and the Technical Report; and (c) is a member in good standing of a Professional Association (NI 43-101, Section 1.2).

Qualified Valuator is an individual who (a) is a professional with demonstrated extensive experience in the Valuation of Mineral Properties, (b) has experience relevant to the subject Mineral Property or has relied on a Current Technical Report on the subject Mineral Property by a Qualified Person, and (c) is regulated by or is a member in good standing of a Professional Association or a Self-Regulatory Professional Organization.

Reasonableness, in reference to the Valuation of a Mineral Property, means that other appropriately qualified and experienced valuers with access to the same information would value the property at approximately the same range. A Reasonableness test serves to identify Valuations which may be out of step with industry standards and industry norms. It is not sufficient for a Qualified Valuator to determine that he or she personally believes the value determined is appropriate without satisfying an objective standard of proof (adapted from NI 43-101CP, Section 1.6).

Report Date means the date upon which the Valuation Report is signed and dated.

Self-Regulatory Professional Organization means a self-regulatory organization of professionals that (a) admits members or registers employees of members primarily on the basis of their educational qualifications, knowledge and experience; (b) requires compliance with the professional standards of competence and code of ethics established by the organization; and (c) has disciplinary powers, including the power to suspend or expel a member or an employee of the member.

Standard means a general rule which is mandatory in the Valuation of Mineral Properties.

Technical Report means a report prepared, filed and certified in accordance with NI 43-101 and Form 43-101F1 Technical Report (NI 43-101, Section 1.2 Definitions).

Transparency and **Transparent** means that the Material data and information used in (or excluded from) the Valuation of a Mineral Property, the assumptions, the Valuation approaches and methods, and the Valuation itself must be set out clearly in the Valuation Report, along with the rationale for the choices and conclusions of the Qualified Valuator.

Valuation is the process of estimating or determining the value of a Mineral Property.

Valuation Date means the effective date of the Valuation, which may be different from the Report Date or from the cut-off date for the data used in the Valuation.

Valuation Report means a report prepared in accordance with these Standards and Guidelines.

S2.0 SCOPE AND LIMITATIONS OF THE STANDARDS

S2.1 The Standards are limited to Valuation of Mineral Properties (including any interests therein), and do not cover valuation of corporations or other entities that hold Mineral Properties as assets. However, it is recommended that the Standards govern the Valuation of Mineral Properties which are included as assets in the valuation of corporations and as assets in valuations related to fairness opinions.

S2.2 The Standards cover Valuation of metallic and non-metallic Mineral Properties, which also include bedrock, alluvium, placers, industrial minerals, dimension stone, aggregates, and energy fuels that could be produced by mining such as coal, uranium, oil sands and oil shales. Mining includes solution mining of such materials as uranium, potash and other salts. The Standards do not cover oil and gas properties.

S3.0 STANDARD OF VALUE

S3.1 Value in the Standards and Guidelines refers primarily to Fair Market Value. If some other type of value is utilized, a clear definition must be provided by the Qualified Valuator and highlighted in the Valuation Report.

S4.0 VALUATION TENETS

S4.1 The following basic tenets (see S1.0 Definitions) must be followed in the Valuation process and in the preparation of a Valuation Report. General principles of Valuation are discussed in the Guidelines.

- Materiality
- Transparency
- Independence
- Competence
- Reasonableness

S5.0 QUALIFICATIONS AND RESPONSIBILITIES OF VALUATORS

S5.1 A Qualified Valuator is responsible for the overall Valuation of a Mineral Property and the preparation of the Valuation Report. The Qualified Valuator may be assisted in, or rely on, various aspects of the Valuation and the Valuation Report by one or more Qualified Persons.

S5.2 In situations where a Qualified Valuator is not a Qualified Person as defined in NI 43-101, all technical data relating to the Mineral Property being valued is subject to Data Verification by one or more Qualified Persons. If a Current Technical Report already exists, the Qualified Valuator may rely on a Current Technical Report to support the Valuation, and shall clearly disclose in the Valuation Report the extent to which such reliance is made.

S5.3 The Qualified Valuator is responsible for assuring that the Qualified Persons who contribute to the Valuation, or upon whom the Qualified Valuator relies, are appropriately qualified and experienced.

S5.4 The Qualified Valuator must be Independent, except for circumstances specified in S5.5. There must be clear, full, and plain disclosure of any past, present or anticipated business relationships, direct or indirect, between the Qualified Valuator and the Commissioning Entity or other interested parties which may be relevant to the Qualified Valuator's Independence, or a lack thereof.

S5.5 If a Valuation is undertaken, which under the particular circumstances does not require the Qualified Valuator to be Independent, the Qualified Valuator must clearly disclose in the introduction and in the summary of the Valuation Report: (i) why Independence of the Qualified Valuator is not required in the particular circumstances; (ii) that he or she is not Independent; and (iii) his or her relationship to the Commissioning Entity, to the holder of any right, title or interest to the Mineral Property, and/or to the Mineral Property, as the case may be.

S5.6 A Qualified Valuator must certify in the Valuation Report that he or she meets all of the attributes of the definition of "Qualified Valuator", and must stamp the Valuation Report with his or her professional seal, if applicable. In addition, non-Canadian valuers must certify and

provide evidence that their professional organization meets all of the attributes of a Professional Association or a Self-Regulatory Professional Organization.

S5.7 The Qualified Valuator is responsible for adhering to the tenets of Materiality, Transparency and Reasonableness in the Valuation of the subject Mineral Property and in the Valuation Report.

S5.8 The Qualified Valuator shall retain his or her work file and all supporting data relating to a Valuation and to a Valuation Report for a minimum of five years after the Report Date.

S6.0 COMMISSIONING A VALUATION

S6.1 A Commissioning Entity must reasonably establish that the Qualified Valuator is sufficiently Competent and Independent to carry out the Valuation of the subject Mineral Property or Properties.

S6.2 The Commissioning Entity and the Qualified Valuator must agree, in an engagement letter or written contract, on the terms of reference of the Valuation assignment, which terms must be summarized and disclosed in the Valuation Report.

S6.3 The Commissioning Entity must represent in writing to the Qualified Valuator that complete, accurate and true disclosure is made to the Qualified Valuator of all Material data and information relevant to the Valuation and that the Qualified Valuator has reasonable access to the Commissioning Entity's records and personnel to enable a proper Valuation to be made.

S6.4 The Commissioning Entity must inform the Qualified Valuator which, if any, of the data and information supplied is confidential and the extent to which it should or should not be disclosed to the public.

S7.0 VALUATION

S7.1 The Qualified Valuator has the responsibility to decide which Valuation approaches and methods to use. The choice of the specific approaches and methods used, or excluded, must be justified and explained by the Qualified Valuator. The limitations of each method must be explained.

S7.2 The three generally accepted Valuation approaches of Income, Market and Cost must be considered and discussed in the Valuation Report. More than one approach should be used in the Valuation of each Mineral Property. If a Qualified Valuator is strongly of the opinion that only one approach should be used in particular circumstances, the Qualified Valuator must justify and explain why other approaches are not used.

S7.3 The Valuation of a Mineral Property must be reported as a range of values to reflect the uncertainty and subjective nature of the Valuation process. If reporting of a single value is required, the selection of a single value from the range must be explained.

S8.0 VALUATION REPORTS

S8.1 A Valuation under these Standards and Guidelines must be reported in a Valuation Report. Instructions for the preparation of a Valuation Report and a recommended table of contents are set out in the Guidelines.

S8.2 NI 43-101 (Part 4, Section 4.2(1)) states “an issuer shall file a current Technical Report where a Valuation is required to be prepared and filed under securities legislation”. For such Valuations that require a Technical Report to be filed, the Technical Report may be: (i) appended to the Valuation Report, or (ii) incorporated therein by reference, if the Technical Report is already publicly available. In such circumstances, the Technical Report may be referred to so that the same contents need not be repeated. The Technical Report must be Current, to the extent that there are no Material changes since the date of the Technical Report, which must be confirmed by a Qualified Person.

S8.3 All Current estimates of Mineral Resources and Mineral Reserves (as well as any reserves and resources that do not comply with or pre-date the CIM categories and definitions of Mineral Resources and Mineral Reserves) for the Mineral Property being valued must be disclosed and discussed in the Valuation Report, unless disclosed and discussed in an appended Technical Report. If there is more than one estimate of Mineral Resources and Mineral Reserves, a Qualified Person must decide which estimates are Material to use in the Valuation and state the reasons.

S8.4 If estimates of reserves and resources in non-Canadian jurisdictions and other reserves and resources which do not comply with or pre-date the CIM categories and definitions of Mineral Resources and Mineral Reserves are included in a Valuation Report, they must be disclosed and discussed along the lines specified in NI 43-101, Section 7.1. This allows the use of these reserves and resources, provided that a reconciliation by a Qualified Person to the CIM categories and definitions of Mineral Resources and Mineral Reserves is set out in the Valuation Report or the referenced Technical Report.

S8.5 The Valuation Report must specify the Valuation Date and refer to all previous Valuations of the subject Mineral Property within the last twenty-four months and explain any Material differences between them and the present Valuation.

S8.6 The Valuation Report must specify the key risks, assumptions and limitations in the Valuation and explain why the assumptions used are reasonable and appropriate in the circumstances.

S8.7 A Valuation Report must be signed by the Qualified Valuator who is responsible for the Valuation Report, or by a corporation, partnership, limited partnership or other entity (each an “Entity”) provided that the Valuation has been supervised by a Qualified Valuator employed or engaged by such Entity.

S8.8 The Valuation Report must include a certificate of qualifications for the Qualified Valuator who supervised or is responsible for the Valuation, and any Qualified Persons involved in the

Valuation. The certificate of qualifications must contain information similar to those specified in NI 43-101, Section 8.1.

S8.9 The Valuation Report must contain a statement that the Valuation complies with these Standards in their entirety. If such a statement is absent from the Valuation Report or is qualified or limited in any way, the Valuation does not comply with these Standards. However, in circumstances where Independence is not required, and proper disclosure is made in the Valuation Report in accordance with Standard 5.5, the Valuation Report may contain a statement that the Valuation complies with these Standards, with the exception of Independence.

S8.10 The Valuation Report must contain a statement regarding the extent to which the Valuation is consistent with the Guidelines. Such statement must disclose and explain the reasons for any inconsistencies or deviations from the Guidelines. If such a disclosure statement is absent from the Valuation Report, the Valuation does not comply with these Standards.

S8.11 The Qualified Valuator or a Qualified Person relied upon by the Qualified Valuator should undertake a site visit to the Mineral Property being valued. The date of the site visit, the name of the person who conducted the site visit, and the extent of the examination must be specified in the Valuation Report or the appended Technical Report. If a site visit is not undertaken, the reason or reasons must be given.

S8.12 A Valuation Report shall contain a summary and introduction section. A Valuation Report shall address, if applicable, each of the following topics. Guideline 5.0 provides recommendations on the discussion to be contained with respect to each topic:

Summary

Introduction and Terms of Reference

Scope of the Valuation

Compliance with the CIMVal Standards

Property Location, Access and Infrastructure

Property Ownership, Status and Agreements

History of Exploration and Production

Geology and Mineralization
Exploration Results and Potential
Sampling and Assaying
Mineral Resources and Mineral Reserves
Metallurgy
Environmental Considerations
Mining and Processing Operations
Key Assumptions, Risk and Limitations
Valuation Approaches and Methods
Valuation
Valuation Conclusions
References
Certificate of Qualifications

GUIDELINES

The Guidelines, while not mandatory, provide guidance and best practices which are highly recommended to be followed in the Valuation of Mineral Properties

G1.0 PROFESSIONAL ASSOCIATIONS FOR QUALIFIED VALUATOR

G1.1 For the purpose of the definition of “Qualified Valuator” in the Standards, the Qualified Valuator shall be a member of one or more of the following organizations:

- (a) a Professional Association; or
- (b) a Self-Regulatory Professional Organization. In addition to other organizations that meet the definition of “Self-Regulatory Professional Organization” in the Standards, the CIMVal Committee recognizes the following two organizations as acceptable Self-Regulatory Professional Organizations:
 - (i) Canadian Institute of Chartered Business Valuators (CICBV)
 - (ii) Investment Dealers Association of Canada (IDA).

There may be other associations or organizations that also meet the criteria set out in the definitions of Professional Association and Self-Regulatory Professional Organization.

G2.0 VALUATION PRINCIPLES

G2.1 There is a body of knowledge and accepted principles and standards in the general field of valuation that do not deal specifically with valuation of Mineral Properties. Many of these have application to the Valuation of Mineral Properties. A number of these widely accepted fundamental valuation principles, which must be applied when estimating value, are briefly described below. More information can be obtained in general literature on valuation.

1. Value relates to a specific point in time. Valuation opinions must be given as at the Valuation Date.
2. Value relates to Current and future expectations
3. The value of assets is based on, or directly related to, what they can earn.
4. If rights additional to mineral rights or mining rights are attached to the Mineral Property, the principle of “highest and best use” should be considered.

5. Hindsight is, in general, inadmissible in reaching valuation conclusions.
6. The market dictates the required rate of return.

G3.0 VALUATION APPROACHES AND METHODS

G3.1 The three generally accepted Valuation approaches are:

- Income Approach
- Market Approach
- Cost Approach

The *Income Approach* is based on the principle of anticipation of benefits and includes all methods that are based on the income or cash flow generation potential of the Mineral Property.

The *Market Approach* is based primarily on the principle of substitution and is also called the Sales Comparison Approach. The Mineral Property being valued is compared with the transaction value of similar Mineral Properties, transacted in an open market. Methods include comparable transactions and option or farm-in agreement terms analysis.

The *Cost Approach* is based on the principle of contribution to value. The appraised value method, is one commonly used method where exploration expenditures are analyzed for their contribution to the exploration potential of the Mineral Property.

G3.2 As applied to Mineral Properties, the Valuation approach depends on the stage of exploration or development of the property. For convenience, Mineral Properties can be categorized as four types. It should be noted that there are no clear-cut boundaries between these types, and it may be difficult to classify some Mineral Properties as to one specific category.

- Exploration Properties
- Mineral Resource Properties
- Development Properties
- Production Properties

G3.3 Table 1 shows which Valuation approaches are generally considered appropriate to apply to each type of Mineral Property.

TABLE 1. Valuation Approaches for Different Types of Mineral Properties

Valuation Approach	Exploration Properties	Mineral Resource Properties	Development Properties	Production Properties
Income	No	In some cases	Yes	Yes
Market	Yes	Yes	Yes	Yes
Cost	Yes	In some cases	No	No

G3.4 Valuation methods are, in general, subsets of Valuation approaches. For example the Income Approach includes several methods. Certain Valuation methods are more widely used and may be more generally acceptable as industry practice than others, although this could change over time. Some methods can be considered to be primary methods for Valuation while others are secondary methods or rules of thumb considered suitable only to check Valuations by primary methods.

G3.5 Table 2 lists a number of Valuation methods for Mineral Properties, classifies them as to approach, specifies whether it is ranked as a primary or secondary Valuation method, and provides comments. Methods with no primary or secondary ranking are considered to be unreliable or are not widely accepted.

TABLE 2. Valuation Methods for Mineral Properties

Valuation Approach	Valuation Method	Method Ranking	Comments
Income	Discounted Cash Flow (DCF)	Primary	Very widely used. Generally accepted in Canada as the preferred method.
Income	Monte Carlo Analysis	Primary	Less widely used, but gaining in acceptance
Income	Option Pricing	Primary	Not widely used and not widely understood but gaining in acceptance

Valuation Approach	Valuation Method	Method Ranking	Comments
Income	Probabilistic Methods		Not widely used, not much accepted
Market	Comparable Transactions	Primary	Widely used with variations
Market	Option Agreement Terms	Primary	Widely used but option aspect commonly not discounted, as it should be
Market	Gross "in situ" Metal Value		Not acceptable
Market	Net Metal Value or Value per unit of metal	Secondary	Widely used rule of thumb
Market	Value per Unit Area	Secondary	Used for large Exploration Properties
Market	Market Capitalization	Secondary	More applicable to Valuation of single property asset junior companies than to properties
Cost	Appraised Value	Primary	Widely used but not accepted by all regulators
Cost	Multiple of Exploration Expenditure	Primary	Similar to the Appraised Value Method but includes a multiplier factor. More commonly used in Australia
Cost	Geoscience Factor	Secondary	Not widely used

G3.6 A current sampling of recent papers on Valuation methods can be obtained from presentations made at the Mining Millennium 2000 Valuation Day published in a Mineral Property Proceedings volume (www.cim.org) and which were subsequently published in the CIM Bulletin, from publications on VALMIN by the AusIMM (www.ausimm.com.au/publications/books.asp), and in other publications (many of which are referenced in the above papers). The VALMIN publications are "Mineral Valuation Methodologies 1994" and "Mineral Asset Valuation Issues for the Next Millennium 2001".

G4.0 USE OF MINERAL RESERVES AND MINERAL RESOURCES

G4.1 All Mineral Reserves and Mineral Resources on a Mineral Property should be considered in its Valuation. Depending on the circumstances, the Income Approach, the Market Approach or the Cost Approach may be more appropriate for the Valuation of a Mineral Property containing Mineral Reserves and Mineral Resources.

G4.2 For the Income Approach methods, it is generally acceptable to use all Proven Mineral Reserves and Probable Mineral Reserves, and to use Measured Mineral Resources and Indicated Mineral Resources in the circumstances described below.

G4.3 Mineral Reserves and Mineral Resources used in the Income Approach must be estimated or confirmed by a Qualified Person and must be Current with respect to the Valuation Date.

G4.4 It is generally acceptable to use Mineral Resources in the Income Approach if Mineral Reserves are also present and if, in general, mined ahead of the Mineral Resources in the same Income Approach model, provided that in the opinion of a Qualified Person the Mineral Resources as depicted in the Income Approach model are likely to be economically viable.

G4.5 It is generally acceptable to use Measured and Indicated Mineral Resources in the Income Approach if Mineral Reserves are not present provided that in the opinion of a Qualified Person the Mineral Resources as depicted in the Income Approach model are likely to be economically viable.

G4.6 Where Measured and Indicated Mineral Resources are used in the Income Approach, the technical and related parameters used must be estimated or confirmed by one or more Qualified Persons and a qualifying statement must be included in the Valuation Report about the confidence level of the technical and related parameters relative to Feasibility Study or Prefeasibility Study confidence level. Technical and related parameters must be Current with respect to the Valuation Date.

G4.7 Where Measured and Indicated Mineral Resources are used in the Income Approach and/or where technical and related parameters are at a lower confidence level than Prefeasibility

Study level it is recommended that the higher risk or uncertainty be recognized by some means, which might include using a higher discount rate, reducing the quantum of the Mineral Resources, or delaying the timing of production of the Mineral Resources in the Income Approach model, or some other appropriate means of reflecting the higher risk of including Mineral Resources.

G4.8 Inferred Mineral Resources should be used in the Income Approach with great care, and should not be used if the Inferred Mineral Resources account for all or are a dominant part of total Mineral Resources. Any use of Inferred Mineral Resources in the Income Approach must be justified in the Valuation Report and treated appropriately for the substantially higher risk or uncertainty of Inferred Mineral Resources compared to Measured and Indicated Mineral Resources. Inferred Mineral Resources should only be used in the Income Approach if Mineral Reserves are present and if, in general, mined ahead of the Inferred Mineral Resources in the Income Approach model, and/or if Measured and/or Indicated Mineral Resources are used as specified in G4.3 to G4.7 and if, in general, mined ahead of Inferred Mineral Resources in the Income Approach model.

G4.9 It is not acceptable to use, in the Income Approach, “potential resources”, “hypothetical resources” and other such categories that do not conform to the definitions of Mineral Reserves and Mineral Resources.

G4.10 Technical and related parameters include, but are not limited to, Mineral Reserves, Mineral Resources, mining recovery, mining dilution, mining plan, production schedule, metallurgical testwork, metallurgical recovery, process plant design, project engineering, construction schedule, environmental aspects, permitting, socio-economic aspects, political risk, reclamation and rehabilitation, capital costs, operating costs, smelter terms, product marketing and sales contracts and commodity prices. The relevant technical and related parameters should be disclosed in the Valuation Report or the appended Technical Report.

G5.0 VALUATION REPORTS - RECOMMENDED TABLE OF CONTENTS

G5.1 The Valuation Report should consist of technical information and Valuation analyses. Where a Technical Report is appended to or supports the Valuation Report, the technical

information can be incorporated by reference to the Technical Report and need not be repeated in the Valuation Report.

G5.2 The following outline is intended to be a checklist for information purposes regarding the topics of discussion that must be addressed according to S8.12. The checklist is provided to assist the Qualified Valuator in identifying areas that may be appropriate to be included in a Valuation Report. It is not intended that the Valuation Report address all of the items on the checklist since it is in the discretion of the Qualified Valuator to determine their appropriateness to the Mineral Property being valued. Depending on the status of the property, the level of detail needed will vary. For instance, the information required in sections 8, 9 and 10 may be critical in valuing an Exploration Property, whereas the value of a Production Property will depend to a far greater extent on the information in sections 12, 13 and 14.

1. Summary

- Provide a brief description of the terms of reference, scope of work, the Valuation Date, the Mineral Property, its location, ownership, geology and mineralization, history of exploration and production, current status, exploration potential and/or production forecast, Mineral Resources and Mineral Reserves, production facilities if any, environmental and permitting considerations, Valuation approaches and methods, Valuation and conclusions.

2. Introduction and Terms of Reference

- Identify the Commissioning Entity for whom the Valuation is prepared, identify any other intended users, state the owner of the Mineral Property, and confirm who has paid for the Valuation.
- Describe the Valuation mandate and terms of reference.
- Outline the purpose of the Valuation and its intended use.
- Describe the Mineral Property briefly, state the interest in the property that is being valued and indicate its type and stage.
- State the Valuation Date and the Report Date.

- Name the Qualified Valuator and any Qualified Persons involved in the Valuation and their independence or lack of independence.
 - Provide a definition of the type of value being determined.
 - Provide other definitions used in the report.
3. Scope of the Valuation
- Scope of work performed.
 - Describe information reviewed, or relied upon, and its source.
 - Describe steps taken to assure the reliability of the information relied upon.
 - Describe how Data Verification was done.
 - Name the Qualified Valuator or Qualified Person who carried out the site visit, when it was done, and what was examined, or explain why such a visit was not undertaken.
 - Specify if data are confidential, and why.
 - State any disclaimers that apply to the data or the Mineral Property title, or that apply to the extent that certain information or opinions of others are relied on.
4. Compliance with the CIMVal Standards
- State that the Valuation complies with the Standards (as per S8.9).
 - Where the Valuation is inconsistent with the Guidelines, disclose and explain such inconsistencies or deviations and reasons therefor (as per S8.10).
5. Property Location, Access and Infrastructure
- Describe the Mineral Property location in detail, including area, and provide a location map.
 - Provide distances to major centres, and an outline of how the property can be reached.
 - Describe the availability of infrastructure such as roads, rail, shipping, airports, power, water, pipelines, labour, supplies and services.
 - Provide a summary of other relevant local issues such as military or terrorist activities, social unrest, seismic risks and the like.

- Provide maps on a regional and local scale, showing all relevant infrastructure including roads, railways, power lines, pipelines, and tailings disposal sites. Provide geographic coordinates using national and international systems.
6. Property Ownership, Status and Agreements
- Describe the Mineral Property title and the owner's interest in the property, including surface rights, including obligations that must be met to retain the property, and the expiry dates of claims, licences and other tenure rights, along with any encumbrances to the title.
 - Describe any applicable agreements, such as options, joint ventures, farm-ins, royalties, back-in rights, payments, and the like.
 - Describe the status of the Mineral Property at the Valuation Date including statutory work requirements, surface rights, water rights, easements, aboriginal land claims, any legal issues, environmental and permitting issues and the impact these may have on property development.
7. History of Exploration and Production
- Provide chronology of previous exploration programs, including methods employed and results, quality of the work, and ownership at the time of the work.
 - Tabulate historical Mineral Resource and Mineral Reserve estimates, if relevant, along with the source and the quality of the estimates.
 - Tabulate production history showing annual amounts and grades. Provide a reconciliation between Mineral Reserves and production, where possible.
 - Provide information of a similar nature for the region and for adjacent properties, if relevant.
8. Geology and Mineralization
- Describe the regional geology and mineralization.
 - Describe the detailed geology of the Mineral Property.
 - Describe the mineralization encountered on the property, the host rocks, and relevant geological controls. Give details on geometry and dimensions of the mineralized

zones, along with the type, character, continuity and distribution of the mineralization.

- Outline current thinking about sources and controls of mineralization and the models and concepts being applied to exploration.
- Provide similar information about adjacent properties, if relevant.
- Provide regional and property geology maps showing mineralization and other relevant details.

9. Exploration Results and Potential

- Describe recent exploration work on the Mineral Property and discuss results, their interpretation and their significance. Discuss the quality and reliability of the exploration work and the data.
- Provide opinion on the exploration potential for existence and discovery of economic mineralization on the Mineral Property.
- Where a significant mineral deposit is indicated, provide an assessment of the potential for the discovery of additional mineralization.
- Information from adjacent properties may be included provided that the distinction is clearly made between information on the adjacent properties and the property being valued.
- Describe any constraints to further success, such as legal disputes, land claims, permitting constraints, or physical impediments to effective exploration.

10. Sampling and Assaying

- Describe the methods of sampling and details of location, number, type, nature and spacing or density of samples collected, and the area covered.
- Identify any drilling, sampling or recovery factors that could materially impact the accuracy or reliability of results.
- Describe sample preparation, security and analytical procedures, assay quality assurance and quality control procedures, and check assays; and discuss their adequacy.

- Note where the analytical data have been verified by a Qualified Person and any limitations on that verification.

11. Mineral Resources and Mineral Reserves

- Provide estimates of Mineral Resources and Mineral Reserves, if any, and how Current they are, and confirm that the work was carried out by a Qualified Person.
- State the date when they were effective, and describe any subsequent sampling, production or other information that would change the Mineral Resources and Mineral Reserves.
- Describe the reserve/resource database and how it was validated.
- Discuss geological interpretation and continuity of mineralization.
- Describe estimation methods and how they were applied.
- Discuss technical and economic parameters such as cut-off grade, dilution and mining recovery.
- Provide details of any reconciliation between Mineral Reserve estimates and subsequent production results.
- Discuss the classification of the Mineral Resources and Mineral Reserves.
- Provide representative plans and sections depicting the configuration of sampling data and the Mineral Resource and Mineral Reserve outlines or blocks.

12. Metallurgy

- Describe mineralogy of the mineralization, and the results of thin section, polished section and similar studies.
- Describe sampling procedures for metallurgical tests and discuss the representativeness of the samples.
- Provide details of metallurgical testwork including the laboratories used, who supervised and carried out the work, methods employed, results obtained.
- Describe proposed beneficiation process and flowsheet.

13. Environmental Considerations

- Describe the environmental standards that have to be met, and the permits needed to continue work on the Mineral Property and any limitations they may impose on the exploration, development and production on the property.
- Describe the status of environmental baseline studies.
- Provide an outline of environmental issues that have to be dealt with, and the proposed means for dealing with them.
- Describe plans for bonding, pre-closure remediation, reclamation, closure plan, and post-closure responsibilities.

14. Mining and Processing Operations

- Outline current status and proposed activities for the future.
- Where property is at a Feasibility Study stage, provide a full description of the engineering, Prefeasibility Studies and Feasibility Studies completed and planned, and discuss the significance of these studies and the plans for future work.
- Where property is in production, provide a full description of mining and processing methods, mining dilution, metallurgical performance, throughput and output capacities, an assessment of operating costs, infrastructure, management capabilities and products marketing. Describe any technical or financial issues that may impact on Value, and discuss measures proposed to deal with these.
- Provide an outline of capital and operating costs, contracts, taxes, and royalties.
- Provide details and results of any cash flow analysis or economic study.

15. Key Assumptions, Risks and Limitations

- Describe and discuss all Material assumptions and limiting conditions that affect the analyses, opinions and conclusions reached and upon which the Valuation is based.
- Discuss the Material risks associated with the Mineral Property including technical, operating, financial, socio-economic, environmental, permitting, marketing, commodity prices and political risks.
- Describe reliance on information obtained from management.

16. Valuation Approaches and Methods

- Provide a list of recent Valuations of the Mineral Property (for at least the past two years), briefly describe the methods employed, and provide the resulting Valuations.
- Consider whether the highest and best use of the property may be other than its potential for the development of a mineral deposit, and, if so, describe the valuator's opinion of the highest and best use for the property.
- Discuss the possible application of various approaches and explain why each approach was utilized or not.
- Describe the methods selected for the Valuation and justify their applicability. Include a discussion of the exposure time to the market and the marketing effort assumed.

17. Valuation

- Provide an overview of the economic context within which the Valuation is carried out. For Exploration Properties, this might include comments on the demand for such properties by junior and major mining companies, and the availability of financing for exploration work. For Development Properties and Production Properties, the current economics of the mining industry and the particular commodity being studied should be discussed. The outlook for commodity prices and the availability and cost of funding should be outlined.
- Specify currency used and provide any exchange rates utilized.
- Provide details of database used to support each method.
- Provide a clear description and analysis of the information utilized, the methods followed, and the reasoning that supports the analysis, opinions and conclusions as to value.

18. Valuation Conclusions

- Provide a summary of the Valuation estimates reached using each method employed. Provide a reconciliation of justification of any significant differences in the Valuation estimates.

- State the Valuation conclusions, expressed as a range of values. Discuss any reliance on or weighting of different Valuation estimates used to develop the range of values.
- Where a single value is required, discuss the rationale used to select this value within the stated range.

19. References

- Include a detailed list of all sources of information cited in the Valuation Report

20. Certificate of Qualifications

- The Qualified Valuator (QV) and each Qualified Person (QP) who contributed to the Valuation report must provide a certificate of qualifications which should include the following information:
 - Name, address and occupation.
 - Qualifications including relevant experience, education, the name of each Professional Association or Self-Regulatory Professional Association to which the QV or QP belongs, and a statement that the person is a QV or QP for the purpose of the Valuation.
 - Dates of the most recent visits to the Mineral Property.
 - Sections of the report for which each QP is responsible.
 - That the QV, and QP if applicable, is not aware of any Material fact not in the Valuation Report which would make the report misleading.
 - If the QV and QPs are independent.
 - What prior involvement with the Mineral Property that the QV or QP may have had.
 - That the Valuation Report has been prepared consistent with these Valuation standards.
- Qualified Valuers belonging to non-Canadian Professional Associations or Self-Regulatory Professional Associations must certify that their professional organization meets all the attributes of a Professional Association or a Self-Regulatory Professional Association.