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**ADMINISTRATIVE ORDER**  
No. 2010 - 09

**SUBJECT: PROVIDING FOR THE CLASSIFICATION AND REPORTING STANDARDS OF EXPLORATION RESULTS, MINERAL RESOURCES AND ORE RESERVES**

Pursuant to the pertinent provisions of Republic Act (R. A.) No. 7942, otherwise known as the Philippine Mining Act of 1995, and its implementing rules and regulations, and in line with the continuing thrust of Government to revitalize the Philippine minerals industry, the following guidelines are hereby promulgated for the guidance and compliance of all concerned:

**CHAPTER I**  
**INTRODUCTORY PROVISIONS**

**Section 1. Rationale**

To further ensure the effective implementation of R. A. No. 7942, Department Administrative Order No. 96-40, as amended, its revised implementing rules and regulations, and Executive Order No. 270, it is necessary to provide for appropriate classification and reporting standards of exploration results, mineral resources and ore reserves, which shall be consistent with the local industry standards, as well as the internationally accepted standards.

The imposition of such standards among mining contractors, permittees, permit holders and operators, together with mining applicants, is expected to harmonize and streamline the entire reporting process related to mineral exploration results and translate to a more expeditious evaluation and development of mining projects.

**Section 2. Objectives**

This Order intends to achieve the following objectives:

- a. To establish a standard for reporting exploration results, mineral resources and ore reserves based on the local industry and global standards;
- b. To promote transparency, competence and professionalism in reporting exploration results, mineral resources and ore reserves; and
- c. To achieve worldwide compatibility in reporting exploration results, mineral resources and ore reserves.



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### Section 3. Scope and Limitations

The standards provided herein shall apply only to the solid and non-energy mineral resources of the country. To provide for more clarifications, the Mines and Geosciences Bureau (MGB) may formulate and issue the necessary Supplementary Implementing Guidelines for the guidance of all concerned.

### Section 4. Definition of Terms and Acronyms

- a. **Accredited Professional Organization** or **APO** refers to a professional organization in the field of mining, metallurgy and geology, accredited by the Philippine Professional Regulation Commission (PRC), namely the Geological Society of the Philippines (GSP), Philippine Society of Mining Engineers (PSEM), or the Society of Metallurgical Engineers of the Philippines (SMEP).
- b. **Competent Person** is a person who is member or fellow of the GSP, PSEM and/or SMEP, duly accredited as such by the professional organization to which he/she belongs or of a Recognized Overseas Professional Organization (ROPO) included in a list promulgated as the need arises, subject to the professional laws supervised by the PRC. He/she must have a minimum of five years experience relevant to the style of mineralization and type of deposit under consideration and to the activity that such person is undertaking.
- c. **Contractor** is a qualified person acting alone or in consortium who is a party to a Mineral Agreement or to a Financial or Technical Assistance Agreement.
- d. **MGB** refers to the Mines and Geosciences Bureau of the Department of Environment and Natural Resources.
- e. **Permittee** is a holder of an Exploration Permit.
- f. **Permit Holder** is the holder of a mining permit other than an Exploration Permit.
- g. **ROPO** refers to a Recognized Overseas Professional Organization, in accordance with the framework of the Professional Laws of the Philippines.

## CHAPTER II SYSTEM OF CLASSIFICATION

### Section 5. Reference to the Philippine Mineral Reporting Code

The system of classification provided herein shall be guided by the local industry standards as contained in the Philippine Mineral Reporting Code (PMRC).

Attached as Table 1 and made as an integral part hereof is a set of guidelines in reporting on exploration results, mineral resources and ore reserves.



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## Section 6. General Framework

The classification of exploration results, mineral resources and ore reserves shall be guided by the stage or phase of mineral exploration, feasibility study and economic viability.

The stages or phases of mineral exploration shall start with prospecting followed by reconnaissance, semi-detailed and detailed exploration. The evaluation of exploration results is succeeded by the assessment and categorization of the mineral resources to Inferred, Indicated and Measured. Feasibility Study can be done on a Measured Mineral Resource and/or Indicated Mineral Resource to ascertain if either or both can be classified as Probable and/or Proved Ore Reserve. The state of economic viability of a mineral deposit is categorized as either economic or potentially economic.

## CHAPTER III REPORTING TERMINOLOGY

### Section 7. Statements to be used in Reporting Prospecting and Preliminary Exploration Results

When reporting results of prospecting and preliminary exploration activities involving a mineralization that cannot be classified as mineral resource or ore reserve owing to the insufficiency of data and thereby prevent the reasonable estimates of tonnage and average grade, such mineralization should be termed only as **Potential or Target Mineral Resource**. The exploration report prepared by the Competent Person and submitted to MGB must contain sufficient information to allow a balanced judgment on the significance of the results. The Competent Person shall be guided by the list of particulars in Table 1 of the PMRC.

### Section 8. Categories for Reporting Mineral Resources

**Mineral Resource** is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence, sampling and knowledge. Mineral Resource is subdivided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

- a. **Inferred Mineral Resource** is that part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is Inferred from geological evidence, sampling and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability.
- b. **Indicated Mineral Resource** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content



can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

- c. **Measured Mineral Resource** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

## **Section 9. Categories for Reporting Ore Reserves**

**Ore Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments to a minimum of a preliminary feasibility study have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. In the case of integrated mining operations, the preliminary feasibility study will have determined an ore treatment plan that is technically and commercially viable and from which the mineral recovery factors are estimated. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Ore Reserve is sub-divided in order of increasing confidence into Probable and Proved Ore Reserves:

- a. **Probable Ore Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments to a minimum of preliminary feasibility study have been carried out, and include consideration of, and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.
- b. **Proved Ore Reserve** is the economically mineable part of a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments to a minimum of preliminary feasibility study have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

## **Section 10. Reporting Special Types of Mineral Resources and Ore Reserves**

Subject to availability of documentation and to other provisions provided in this Administrative Order, all potentially economic mineralized materials including stockpiles,

remnants, stope-fills, pillars, dumps and tailings may be considered as mineral resource or ore reserve, respectively, depending on their economic viability. However, in the report, disclosure or public statement, the nature and form of the reported mineral resource and ore reserve must follow the resource and reserve classification provided herein. It must also be demonstrated in the report that there are reasonable prospects for eventual economic extraction, if classified as Mineral Resource, or economic extraction is reasonably justified if classified as Ore Reserve.

#### **Section 11. Reporting of Exploration Results, Mineral Resources and Ore Reserves to Government**

Every contractor, permittee and permit holder shall be guided by the standards provided herein in complying with the reporting requirements of the Mining Act and Department Administrative Order No. 96-40, as amended.

#### **Section 12. Administration of Mineral Resources and Ore Reserves Database**

Pursuant to the provision of Section 267 Department Administrative Order No. 96-40, as amended, a Mineral Resources and Ore Reserves database shall be established by the MGB and its Regional Offices to serve as a repository of all exploration and related data from mining projects for national and regional policy and planning studies, monitoring and research purposes. The MGB Central Office shall be the national repository of the said database.

All relevant data contained in reports on mineral resources and ore reserves shall be recorded and incorporated in this database. Public access to this database shall be subject to existing policies on disclosure of information.

### **CHAPTER IV RESPONSIBILITY OF REPORTING AND COMPILATION OF REPORTS**

#### **Section 13. Preparation of Reports on Exploration Results, Mineral Resources, Ore Reserves and Other Reports**

Exploration results, mineral resources and ore reserves reports for public disclosure must be prepared by a Competent Person.

All reports on mineral resources and ore reserves shall be signed and sealed by a Competent Person with a sworn statement affirming that he/she personally undertook or reviewed the relevant evaluation or acted as the leader of a team that undertook the relevant evaluation process.

If a report is prepared by a team of professionals or experts, the team leader should be a Competent Person who is responsible and accountable for the whole report. If responsibility is shared by the team leader with other Competent Person, each team member shall clearly state the coverage or scope of his/her responsibility in the report. The team leader and his/her members shall jointly sign the sworn statement and affix their individual scopes of responsibility to the report. In this case, the Competent Persons in the team share the responsibility over the report.

## **Section 14. Qualifications and Accreditation of a Competent Person**

A Competent Person is defined in this Administrative Order as a technical professional or expert possessing the following qualifications:

- a. Must be a Geologist, a Mining Engineer or a Metallurgical Engineer licensed by the PRC.
- b. Must be a member in good standing of any of the APO and accredited by the APO's respective accreditation committees; and
- c. Must have a minimum five (5) years experience to the style of mineralization and type of deposit under consideration, and to the activity that such person is undertaking.

A foreign geologist, mining engineer and/or metallurgical engineer may also be qualified as a Competent Person if the following conditions are satisfied:

- a. His/her professional organization has a reciprocal arrangement with the equivalent local accrediting professional organization/s.
- b. He/she is accredited or recognized as Competent Person by his/her professional organization/s in his/her home country.

A Competent Person shall be required to obtain an accreditation of his/her professional and educational qualification and relevant working experience from a professional organization recognized by the PRC. This accreditation shall certify that he or she is capable to perform mineral resources assessment based on his or her working experience and shall state the scope of his or her professional competency.

The professional organizations shall provide the MGB with a regular update of the roster of their accredited Competent Persons

## **CHAPTER V MISCELLANEOUS PROVISIONS**

### **Section 15. Penal Provision**

Any false statement, misrepresentation and/or misreporting in connection with the preparation and submission of reports on exploration results, mineral resources and/or ore reserves shall be a ground for filing a perjury or fraud case against the Competent Person concerned. It shall also constitute a violation of the terms and conditions of the mining contract or permit concerned.

### **Section 16. Separability Clause**

If any sentence, section and/or provision of this Order is held or declared unconstitutional or invalid by a competent court, the remaining parts of this same Order shall

continue to be in force as if such sentence, section and/or provision annulled or voided had never been incorporated.

**Section 17. Repealing and Amending Clause**

All orders inconsistent with this Administrative Order are hereby repealed or amended accordingly. The Secretary shall have the authority, *inter alia*, to amend, revise, add to, clarify, supplement, interpret, delete or make exemptions (to the extent not contrary to this Order) to any provision of this Order with the end in view of ensuring that this Order is appropriately implemented.

**Section 18. Effectivity**

This Administrative Order shall take effect fifteen (15) days after its complete publication in a newspaper of national circulation and registration with the National Administrative Register.

  
HORACIO C. RAMOS  
Secretary *ry*



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**TABLE 1**

**CHECKLIST OF ASSESSMENT AND REPORTING CRITERIA**

*Table 1 is a checklist and guideline that those preparing reports on Exploration Results, Mineral Resources and Ore Reserves should use as a reference. The checklist is not prescriptive and, as always, relevance and materiality are overriding principles that determine what information should be publicly reported. It is, however, important to report any matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Ore Reserves.*

*The order and grouping of criteria in Table 1 reflects the normal systematic approach to exploration and evaluation. Criteria in the first group, 'Sampling techniques and data,' apply to all succeeding groups. In the remainder of the table, criteria listed in preceding groups would often apply to succeeding groups and should be considered when estimating and reporting.*

Criteria	Explanation
<b>Sampling Techniques and Data</b> (criteria in this group apply to all succeeding groups)	
Sampling techniques.	<ul style="list-style-type: none"> <li>• Nature and quality of sampling (e.g., cut channels, random chips, etc.) and measures taken to ensure representative nature of samples.</li> </ul>
Drilling techniques.	<ul style="list-style-type: none"> <li>• Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, etc.) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether or not core is oriented and if so, by what method, etc).</li> </ul>
Drill sample recovery.	<ul style="list-style-type: none"> <li>• Whether or not core and chip sample recoveries have been properly recorded and results assessed.</li> <li>• Measures taken to maximize sample recovery and ensure representative nature of the samples.</li> <li>• Whether or not a relationship exists between sample recovery and grade and whether or not sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>
Logging.	<ul style="list-style-type: none"> <li>• Whether or not core and chip samples have been logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>• Whether or not logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> </ul>
Sub-sampling techniques and sample preparation.	<ul style="list-style-type: none"> <li>• If core, whether or not cut or sawn and whether quarter, half or all core taken.</li> <li>• If non-core, whether riffled, tube sampled, rotary split etc. and whether sampled wet or dry.</li> <li>• For all sample types, the nature, quality and appropriateness of the sample preparation techniques.</li> <li>• Quality control procedures adopted for all sub-sampling stages to maximize representative nature of samples.</li> <li>• Measure taken to ensure that sampling is representative of the <i>in situ</i> material collected.</li> <li>• Whether or not sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>
Quality of assay data	<ul style="list-style-type: none"> <li>• The nature, quality and appropriateness of the assaying and laboratory</li> </ul>





and laboratory tests.	<p>procedures used and whether the technique is considered partial or total.</p> <ul style="list-style-type: none"> <li>Nature of quality control procedures adopted (e.g., standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>
Verification of sampling and assaying.	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> </ul>
Location of data points.	<ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resources estimation.</li> <li>Quality and adequacy of topographic control.</li> </ul>
Data spacing and distribution.	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether or not the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether or not sample compositing has been applied.</li> </ul>
Orientation of data in relation to geological structure.	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>
Audits or reviews.	<ul style="list-style-type: none"> <li>The result of any audits or reviews of sampling techniques and data.</li> </ul>

**Reporting of Exploration Results**  
(criteria listed in the preceding group apply also to this group)

Mineral Rights and land tenure status.	<ul style="list-style-type: none"> <li>Type, reference name/number, location and ownership, including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, Indigenous People interests, historical sites, protected areas and reservations.</li> <li>The security of the tenure held at the time of reporting, along with any known impediments to obtaining a license to operate in the area.</li> </ul>
Exploration done by other parties.	<ul style="list-style-type: none"> <li>Acknowledgement and appraisal of exploration by other parties.</li> </ul>
Geology.	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralization.</li> </ul>
Data aggregation methods.	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g., cutting of high grades) and cut-off grades are usually material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregation should be shown in detail.</li> <li>The assumption used for any reporting of metal equivalent values should be clearly stated.</li> </ul>
Relationship between mineralization widths and intercept lengths.	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g., 'downhole length, true</li> </ul>



	width not known').
Diagrams.	<ul style="list-style-type: none"> <li>Where possible, maps and sections (with scales) and tabulations of intercepts should be included for any material discovery being reported if such diagrams significantly clarify the report.</li> </ul>
Balanced reporting.	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>
Other substantive exploration data.	<ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including, but not limited to: geological observation; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; and potential deleterious or contaminating substances.</li> </ul>
Further work.	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling.)</li> </ul>
<b>Estimation and Reporting of Mineral Resources</b> (criteria listed in the first group, and where relevant in the second group, apply also to this group)	
Database integrity.	<ul style="list-style-type: none"> <li>Measures taken to ensure that data have not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>
Geological interpretation.	<ul style="list-style-type: none"> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resources estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and geology.</li> </ul>
Dimensions.	<ul style="list-style-type: none"> <li>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>
Estimation and modelling techniques.	<ul style="list-style-type: none"> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, maximum distance of extrapolation from data points and the nature and degree of extrapolation. Interpolation means estimation that is supported by surrounding sample data. Extrapolation means estimation that extends beyond the spatial limits of the sample data.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate accounts of such data.</li> <li>The assumptions made regarding recovery of by-products.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (e.g., sulfur for acid mine drainage characterization).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> </ul>



	<ul style="list-style-type: none"> <li>Any assumption behind modelling of selective mining units.</li> <li>Any assumption about correlation between variables.</li> <li>The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.</li> </ul>
Moisture.	<ul style="list-style-type: none"> <li>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>
Cut-off parameters.	<ul style="list-style-type: none"> <li>The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>
Mining factors or Assumptions.	<ul style="list-style-type: none"> <li>Assumption made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It may not always be possible to make assumptions regarding mining methods and parameters when estimating Mineral Resources. Where no assumptions have been made, this should be reported.</li> </ul>
Metallurgical factors or assumptions.	<ul style="list-style-type: none"> <li>The basis for assumption or predictions regarding metallurgical amenability. It may not always be possible to make assumptions regarding metallurgical treatment processes and parameters when reporting Mineral Resources. Where no assumptions have been made, this should be reported.</li> </ul>
Bulk density.	<ul style="list-style-type: none"> <li>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> </ul>
Classification.	<ul style="list-style-type: none"> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors, i.e., relative confidence in tonnage/grade computations, confidence in continuity of geology and metal values, quality, quantity and distribution of the data.</li> <li>Whether or not the result appropriately reflects the Competent Person(s)' view of the deposit.</li> </ul>
Audits or reviews.	<ul style="list-style-type: none"> <li>The result of any audits or reviews of Mineral Resources estimates.</li> </ul>
Discussion of relative accuracy/ confidence.	<ul style="list-style-type: none"> <li>Where appropriate, a statement of the relative accuracy and/or confidence in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to qualify the relative accuracy of the resource within the stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</li> <li>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages or volumes, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>
<b>Estimation and Reporting of Ore Reserves</b> (criteria listed in the first group, and where relevant in the second group, apply also to this group)	
Mineral Resource estimate for conversion to Ore Reserves.	<ul style="list-style-type: none"> <li>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</li> <li>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</li> </ul>



Study Status.	<ul style="list-style-type: none"> <li>• The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</li> <li>• The Code does not require that a final feasibility study has been undertaken to convert Mineral Resources to Ore Reserves, but it does require that appropriate pre-feasibility studies have been undertaken, which would have determined a mine plan that is technically achievable and economically viable, and that all Modifying Factors have been considered.</li> </ul>
Cut-off parameters.	<ul style="list-style-type: none"> <li>• The basis of the cut-off grade(s) or quality parameters applied.</li> </ul>
Mining Factors or assumptions.	<ul style="list-style-type: none"> <li>• The method and assumptions used to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimization or by preliminary or detailed design).</li> <li>• The choice of, the nature and the appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strips, access, etc.</li> <li>• The assumptions made regarding geotechnical parameters (e.g., pit slopes, stope sizes, etc.), grade control and pre-production drilling.</li> <li>• The major assumptions made and Mineral Resource model used for pit optimization (if appropriate).</li> <li>• The mining dilution factors, mining recovery factors, and minimum mining widths used.</li> <li>• The infrastructures requirements of the selected mining methods.</li> </ul>
Metallurgical factors or assumption.	<ul style="list-style-type: none"> <li>• The metallurgical process proposed and the appropriateness of that process to the style of mineralization.</li> <li>• Whether the metallurgical process is well-tested technology or novel in nature.</li> <li>• The nature, amount and representatives of metallurgical testwork undertaken and the metallurgical recovery factors applied.</li> <li>• Any assumptions or allowances made for deleterious elements.</li> <li>• The existence of any bulk sample or pilot scale testwork and the degree to which such samples are representative of the orebody as a whole.</li> </ul>
Cost and revenue factors.	<ul style="list-style-type: none"> <li>• The derivation or assumptions made, regarding projected capital and operating costs.</li> <li>• The assumptions made regarding revenue, including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties etc.</li> <li>• The allowances made for royalties payable, both Government and private.</li> </ul>
Market assessment.	<ul style="list-style-type: none"> <li>• The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</li> <li>• A customer and competitor analysis along with the identification of likely market windows for the product.</li> <li>• Price and volume forecasts and the basis for these forecasts.</li> <li>• For industrial minerals the customers specification, testing and acceptance requirement prior to a supply contract.</li> </ul>
Other factors.	<ul style="list-style-type: none"> <li>• The effect, if any, of natural risk, infrastructure, environmental, legal, marketing, social or governmental factors on the likely viability of a project and/or on the estimation and classification of the Ore Reserves.</li> <li>• The status of titles and approvals critical to the viability of the projects, such as mining contracts/permits, discharge permits, and government and statutory approvals.</li> </ul>



Classification.	<ul style="list-style-type: none"> <li>• The basis for the classification of the Ore Reserves into varying confidence categories.</li> <li>• Whether or not the result appropriately reflects the Competent Person(s)' view of the deposit.</li> <li>• The proportion of Probable Ore Reserves, which have been derived from Measured Mineral Resources (if any).</li> </ul>
Audits or reviews.	<ul style="list-style-type: none"> <li>• The results of any audits or reviews of Ore Reserves Estimates.</li> </ul>
Discussion of relative accuracy/ confidence.	<ul style="list-style-type: none"> <li>• Where appropriate, a statement of the relative accuracy and/or confidence in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to qualify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</li> <li>• The statement should specify whether it relates to global or local estimate, and, if local, state the relevant tonnages or volumes that should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>• These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>



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