



# MEMORANDUM No.2010-0501

## The Philippine Stock Exchange, Inc.

<input type="checkbox"/> Trading Rules	<input type="checkbox"/> Computer Systems Update
<input type="checkbox"/> Membership Rules	<input type="checkbox"/> Administrative Matters
<input type="checkbox"/> Listing Rules	<input checked="" type="checkbox"/> Others: <b>Philippine Mineral Reporting Code</b>

To : **THE INVESTING PUBLIC AND TRADING PARTICIPANTS**

Subject : **IMPLEMENTING RULES AND REGULATIONS OF THE PHILIPPINE MINERAL REPORTING CODE**


Date : **October 27, 2010**

Please be informed that in a letter dated October 21, 2010, the Securities and Exchange Commission provided the Exchange a copy of the approved Implementing Rules and Regulations ("IRR") of the Philippine Mineral Reporting Code.

Attached herewith is the official copy of the IRR and its annexes.

For your information and guidance.

  
**VAL ANTONIO B. SUAREZ**  
 President & CEO

					
FID/CSD	Market Regulation Division	Issuer Regulation Division	Information Technology Division	Capital Markets Dev't Division	Office of the General Counsel
Tel. No. 688-7561/688-7508	Tel. No. 688-7541	Tel. No. 688-7510	Tel. No. 688-7480	Tel. No. 688-7534	Tel. No. 688-7411



Republic of the Philippines  
**SECURITIES AND EXCHANGE COMMISSION**  
SEC Bldg. EDSA, East Greenhills, Mandaluyong City

MARKET REGULATION DEPARTMENT

October 21, 2010

**PHILIPPINE STOCK EXCHANGE INC.**

PSE Plaza  
Ayala Triangle  
Makati City  
Fax: 891-4100

*Attention: Atty. Joselito Banaag, General Counsel*

Gentlemen:

Attached are two (2) copies of the approved ***PSE Implementing Rules and Regulations of the Philippine Mineral Reporting Code***, bearing the signatures of PSE representatives and countersigned by the Director, Market Regulation Department, SEC.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jose P. Aquino".

**JOSE P. AQUINO**  
Director

# **THE PHILIPPINE STOCK EXCHANGE, INC.**

## **IMPLEMENTING RULES AND REGULATIONS OF THE PHILIPPINE MINERAL REPORTING CODE**

### **1.0 FOREWORD**

The Philippine Mineral Reporting Code ("PMRC" or the "Code") dated July 1, 2007 sets minimum standards and guidelines for Public Reports of Exploration Results, Mineral Resources, Ore Reserves, and Metallurgical assessments and design related to mining in the Philippines. The Code is compatible with international standards. The formulation of the PMRC relied on the international codes from Australia, particularly the JORC Code (2004) of Australia, South Africa, European Union, Canada and the International Reporting Template (2006) by the Committee for Mineral Reserves International Reporting Standard (CRIRSCO).

The Implementing Rules and Regulations of the PMRC ("IRR") by The Philippine Stock Exchange, Inc. ("PSE" or the "Exchange") is based on the Code. Should the Code be amended, the PSE will update the IRR correspondingly.

The IRR provides listed mining and exploration companies and those applying to list in the Exchange with implementing guidelines and pro-forma outlines for complying with the reporting standards provided in the Code. The IRR aims to protect the investors by requiring full disclosure of material information, including economic viability of the property of the covered companies and prohibiting the disclosure of misleading information. The IRR adopts the PMRC principles of materiality, transparency and competence.

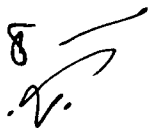
### **2.0 APPLICABILITY**

The PMRC and its IRR shall apply to the following listed companies and those applying to list in the Exchange:

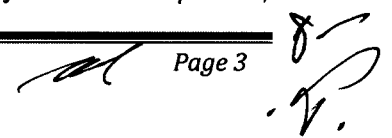
- 2.1. Companies whose primary purpose is to engage in mining, mineral development, or exploration activities;
- 2.2. Companies classified under the mining sector;
- 2.3. Companies who regularly engage in mining or exploration activities;
- 2.4. Companies with an equity or participating interest in companies or partnerships regularly engaged in mining or exploration activities, the value of which is at least ten percent (10%) of the book value of the listed company; or
- 2.5. Such other companies as may be determined by the Exchange to ensure full, fair and accurate disclosures of material information.

### 3.0 GLOSSARY OF TERMS AND ACRONYMS

- 3.1. **Accredited Professional Organizations (APOs)** refer to professional organizations in the mining, geosciences and metallurgical fields, accredited by the Professional Regulation Commission (PRC) consisting of the Geological Society of the Philippines (GSP), Philippine Society of Mining Engineers (PSEM), and Society of Metallurgical Engineers of the Philippines (SMEP).
- 3.2. **Beneficial Ownership of Securities** means any person considered as a “beneficial owner” under Securities Regulation Code (SRC) Rule 3 on the Definition of Terms Used in the Rules and Regulations.
- 3.3. **Competent Person (CP)** is a person who is a duly-licensed professional and is an active Member or Fellow of PSEM, GSP or SMEP, duly accredited as a CP 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. The accreditation of ROPOs is the responsibility of the APOs where reciprocal arrangements are considered. He/she must have a minimum of five (5) years experience, which is relevant to the style of mineralization and type of deposit under consideration and to the activity which that person is undertaking.
- 3.4. **Cut-off Grade** is the lowest grade of a contained element or metal which will make its recovery from the Mineral Resource economic. The Cut-off Grade is calculated from realistically estimated relevant costs of its production, which includes mining, ore beneficiation, processing, management, environmental mitigation, social development, royalty, etc., and its reasonably assumed market price. It may also refer to the lower limit of grade values that delineate the mineralization or Mineral Resource.
- 3.5. **Data Validation** is a process of establishing integrity of verified data for use in the current assessment. It is essential that previous data intended to be used in the current Mineral Resource and/or Ore Reserves estimation are validated through a field check sampling program of a scale that would demonstrate that the data could be reliably used.
- 3.6. **Data Verification** is a process of confirming that the data used were generated with “best practice procedures”, accurately transcribed from the reference and is suitable to be used. It is essential that original data are checked and that their integrity and credibility are demonstrated.
- 3.7. **Disclosure** is any, Public Report, structured or unstructured report submitted to the Exchange in accordance with the Revised Disclosure Rules. Disclosures include, but are not limited to, reports, announcements, notices, letters, press releases and such other documents containing material information.
- 3.8. **Exploration Results** are the data, information, interpretation, synthesis obtained from Mineral Exploration, or reports generated by exploration programmes that may be of use to investors and/or their financial advisers. The Exploration Results may or may not be part of a formal declaration of Mineral Resources or Ore Reserves.



- 3.9. **Feasibility Study** is a project study to determine the economic viability of mining a mineral deposit or group of deposits. The two stages of a Feasibility Study are:
- 3.9.1 **Pre-Feasibility Study (or Preliminary Feasibility Study)** is the assessment of the Indicated and/or Measured Mineral Resources to determine if it can be considered as an Ore Reserve that can be mined at a profit by taking into consideration relevant parameters such as: (a) realistically estimated costs of mining; ore beneficiation; other relevant engineering activities; management including legal, environmental and social matters to produce the desired element/mineral, and (b) taxes/fees as well as (c) its realistically assumed market price. The accuracy of the Pre-Feasibility study is  $\pm 30$  percent.
  - 3.9.2 **Final Feasibility Study** is the detailed assessment to ascertain the technical reliability and economic viability of a mining project covering the Ore Reserve verified by the Preliminary Feasibility Study to come up with a sound investment decision and realistic financing plan. The Final Feasibility Study mainly consists of detailed audit of all geological, engineering, and the other relevant parameters considered in the Preliminary Feasibility Study.
- 3.10. **Historical Estimate** refers to an estimate of Mineral Resources or Ore Reserves declared or reported prior to the PMRC on July 1, 2007.
- 3.11. **IRR** means the Implementing Rules and Regulations of the PMRC by the PSE.
- 3.12. **Issuer** is a company listed or applying to list in the PSE.
- 3.13. **Metal Equivalents** are used by companies to report polymetallic contents of mineral deposits outlined during exploration and converted in terms of a single equivalent grade of one major metal in the deposit.
- 3.14. **Mineral Exploration** means searching or prospecting for Mineral Resources by geological, geochemical and/or geophysical surveys, remote sensing, test pitting, trenching, drilling, subsurface sampling and other related means for the purpose of determining their existence, quantity and quality. The usual stages of Mineral Exploration are:
- 3.14.1 **Phase I. Prospecting and Preliminary Exploration** is an initial exploration activity. The main activities consist of rapid reconnaissance geologic mapping and widely spaced geochemical sampling of stream sediments, soils and rocks and remote sensing and airborne geophysical surveys, at times. The objectives are to locate surface and near-surface indications of mineralization and to obtain initial data on the general geology of the exploration area, characteristics of the minerals of interest and range of concentration of the contained elements.
  - 3.14.2 **Phase II. Exploration** is follow-up work done after Prospecting and Preliminary Exploration (Phase I). The main activities consist of geologic mapping and geochemical sampling at widely spaced observation and sampling points, including ground geophysical survey in selected places,



as well as limited trenching/pitting and/or drilling. The objective is to verify the existence of significant mineralization and initially delineate the lateral extent and depth of the mineral deposit, as well as roughly estimate its quantity (tonnage) and quality (grade). The desired target is **Inferred Mineral Resource**.

3.14.3 **Phase III. Semi-detailed Exploration** is conducted to delineate the area and depth extent of the mineralization. The main activities consist of geologic mapping and geochemical sampling at closely spaced observation and sampling points, soil grid sampling, and closely spaced drilling in the delineated mineralized areas. Other specialized exploration techniques are also applied such as geophysics. The objective is to be able to estimate the volume, tonnage and grade with **reasonable level of confidence**. The desired target is **Indicated Mineral Resource**.

3.14.4 **Phase IV. Detailed Exploration** is conducted to delineate **with a high level of confidence** the volume, tonnage and grade of the mineral deposit. The main activities consist of detailed geologic mapping and geochemical sampling at closer spaced and adequate observation points, and additional extensive/intensive drilling in the highly mineralized areas. The desired target is **Measured Mineral Resource**.

3.15 **Mineral Resource** refers to the 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 and sampling. Mineral Resources are subdivided in the order of increasing geological confidence, into Inferred, Indicated and Measured categories.

3.15.1 **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. (*Section VII, Clause 20, PMRC*)

3.15.2 **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. (*Section VII, Clause 21, PMRC*)

- 3.15.3 **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 VII, Clause 22, PMRC)*
- 3.16 **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 Reserves are sub-divided in the order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves. *(Section VIII, Clause 28, PMRC)*
- 3.16.1 **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. *(Section VIII, Clause 29, PMRC)*
- 3.16.2 **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 Pre-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 VIII, Clause 30, PMRC)*
- 3.17 **Potential and Targets** are tonnage and grade statements, from Mineral Exploration data, that have not been geologically and/or physically delineated to be included in the resource categories of PMRC.

3.18 **Public Reports**<sup>1</sup> include, but are not limited to, company annual reports, quarterly reports and other reports to PSE, or as required by law. It also applies to other publicly released company information in the form of postings on company web sites and briefing to shareholders, stockbrokers and investment analysts.

3.19 **Technical Report** is a Public Report on Exploration Results, Mineral Resources or Ore Reserves, prepared by a CP or CPs and compliant with the PMRC.

#### 4.0 DISCLOSURES

4.1 All Disclosures of geological, mining, metallurgical and related technical information made by the Issuer on the mineral project or property and material to the Issuer must be based upon the information prepared by or under the supervision of a PMRC-Competent Person(s). The following information must be submitted to the Exchange whenever a Disclosure is made:

4.1.1 The name, address and occupation/profession of the CP.

4.1.2 Validity of the CP accreditation – certificate issued by the APO, Valid CP Registration (APO).

4.1.3 The relationship of the CP to the Issuer (e.g. corporate position, consultant), and the number of shares (and/or options, warrants) that a CP beneficially owns, if any, in the Issuer's shares certified by the Issuer's Corporate Secretary.

4.1.4 The CP must also disclose other relationships with the Issuer, such as but not limited to:

- a. being a holder of tenement rights which is the subject of the Disclosure
- b. landlord-lessee relationship of land and/or infrastructure which has bearing on the Disclosure

4.1.5 The title and date of the Technical Report on which the Disclosure is based

4.1.6 Consent of the CP

- a. The CP must provide his consent to the public filing of the Technical Report, and to extract from, or a summary of, the Technical Report in the written Disclosure being filed in the context that it was reported.
- b. The CP should state that he has carefully reviewed the written Disclosure being filed, press releases and including management analysis; that it fairly and accurately represents the information

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<sup>1</sup> PMRC Section 5



embodied in the Technical Report; and that at the time of the report, to the best of the CP's knowledge, all technical information that is required to make the report not misleading has been included.

4.2 Disclosures should include Data Verification and Data Validation. The following information must be included:

4.2.1 A statement whether a CP has verified and validated the data disclosed which includes any, but not limited to, the following:

- a. sampling data
- b. sample handling
- c. analytical data
- d. quality assurance and quality control data
- e. opinions supporting the technical information in the Disclosure

4.2.2 Description of how the data was verified and any limitations on the verification process.

4.2.3 Explanation of any failure to verify the data.

4.3 Disclosure of Exploration Results, Mineral Resources and Ore Reserves

4.3.1 Exploration Results

- a. Disclosure of exploration results should be reported by a CP Geologist.
- b. Disclosures of geological, mining and related technical information in writing on exploration results material to the Issuer must include the information that are based on the checklist on Sampling Techniques and Data, and Reporting Exploration Results in Table 1 of the PMRC.

4.3.2 Mineral Resources and Ore Reserves

- a. Disclosures of Mineral Resources should be reported on by a CP Geologist.
- b. Disclosures of Ore Reserves should be reported on by a CP Mining Engineer.
- c. Disclosures on metallurgy which is part of the Feasibility Study of a mineral project should be reported on by a CP Metallurgical Engineer.
- d. The Issuer should report Mineral Resources and Ore Reserves separately. The Issuer shall report which Mineral Resource and Ore Reserve categories are included in the total Mineral Resources and Ore Reserves disclosed.
- e. The Issuer must not include Inferred Mineral Resources in the other categories of Mineral Resources in disclosing total Mineral Resource for the Pre-Feasibility Study or Final Feasibility Study. Inferred Mineral Resources may be included in the list of resources but should be labeled as such.

- f. Each category of the Mineral Resources and Ore Reserves disclosed must be reported with the corresponding tonnage and grade.
- g. The Cut-off Grades used for estimating Mineral Resources and Ore Reserves must be disclosed.
- h. A Pre-Feasibility or Final Feasibility Study is required in declaring Ore Reserves.
- i. Disclosures of geological, mining, metallurgical and related technical information in writing on Mineral Resources and Ore Reserves material to the Issuer must include the information that are compliant to the checklist on Estimation and Reporting of Mineral Resources, and, Estimation and Reporting Ore Reserves in Table 1 of the PMRC.

4.3.3 "Potential" or "Target" is an indication of the presence of a mineral deposit not suitable to be classified as part of the Mineral Resources disclosed. The Issuer must disclose that the potential grade and quantity of the resource is non-PMRC compliant as it is conceptual in nature and that there has been insufficient exploration to define Mineral Resources. The Issuer should disclose that it is uncertain if further exploration will result in the delineation of the deposit as a Mineral Resource. The Issuer must state the basis on which the disclosed potential quantity and grade has been determined.

#### 4.4 Prohibited Disclosures

- 4.4.1 If tonnage, grade or quality of a mineral or contained metal of a deposit is not categorized according to the PMRC Mineral Resources and Ore Reserve categories
- 4.4.2 Economic studies that includes Inferred Mineral Resources
- 4.4.3 Historical Estimate which is not adequately subjected to Data Verification and Data Validation. Such Historical Estimate should not be used in current Mineral Resource or Ore Reserve estimates. However, the Issuer may disclose Historical Estimate:
  - a. as part of previous work done in the property,
  - b. if the source and date of the Historical Estimate are identified,
  - c. if comments on the relevance, integrity and reliability of the Historical Estimate are provided, and
  - d. if Issuer states the Mineral Resources and Ore Reserve categories originally used and if they are different from the PMRC categories
- 4.4.4 Disclosures of economic value of Mineral Resources and Ore Reserves without a Feasibility Study
- 4.4.5 Disclosures of Mineral Resources, Ore Reserves and economic value at a Cut-off Grade of zero

4.4.6 Unqualified “Metal Equivalents” Disclosures. However, Metal Equivalents may be disclosed provided the following are included in the Disclosure:

- a. The assay of each metal is included in the Metal Equivalent disclosure
- b. The assumed commodity prices used in arriving at the Metal Equivalent grade
- c. The assumed mining and metallurgical recoveries for all metals and their bases
- d. A clear statement that all the elements included in the Metal Equivalent grade calculation have a reasonable potential to be recovered
- e. The calculation formula for arriving at the Metal Equivalent grade

## 5.0 TECHNICAL REPORT

5.1 Events requiring a Technical Report:

### 5.1.1 Exploration Companies

- a. Application for initial listing in the Exchange
- b. Any capital-raising activity conducted in the Exchange, such as Initial Public Offering, Follow-on Offering and Stock Rights Offering
- c. When reporting Mineral Resources and/or Ore Reserves for the first time
- d. When there is a 100 percent increase or 50 percent drop in the Mineral Resources (Indicated and/or Measured) and/or Ore Reserves of the Issuer.

### 5.1.2 Companies at Development Stage

- a. Application for initial listing in the Exchange
- b. Any capital-raising activity conducted in the Exchange, such as Initial Public Offering, Follow-on Offering and Stock Rights Offering
- c. When reporting Mineral Resources and/or Ore Reserves for the first time
- d. Submission of a Final Feasibility Study

### 5.1.3 Operating Mines

- a. Application for initial listing in the Exchange
- b. Any capital-raising activity conducted in the Exchange, such as Initial Public Offering, Follow-on Offering and Stock Rights Offering
- c. When reporting Mineral Resources and/or Ore Reserves for the first time
- d. When there is a 100 percent increase or 50 percent drop in the Mineral Resources and/or Ore Reserves of the Issuer from the most recent Technical Report prepared by a CP.

## 5.2 General requirements for Technical Report

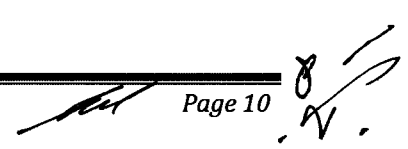
- 5.2.1 It should follow the report outline format as detailed in Annex I and II of this IRR.
- 5.2.2 It must be prepared in accordance with the PMRC and this IRR.
- 5.2.3 It must be prepared or supervised by a CP/s who is/are accredited by the relevant APO: GSP, PSEM or SMEP.
- 5.2.4 The CP(s) shall assume full responsibility for the Technical Report he/she/they has/have prepared or prepared under his/her/their supervision.

## 5.3 Author of a Technical Report

- 5.3.1 The Technical Report must be prepared by or under the supervision of one or more CPs.
- 5.3.2 Basic qualifications of a CP:
  - a. PRC-licensed professional (geologist, mining engineer or metallurgical engineer)
  - b. Member of good standing of his/her respective professional society (GSP, PSEM or SMEP)
  - c. Has relevant experience of at least five (5) years on the type of mineralization and technical scope being considered<sup>2</sup>
  - d. Duly accredited as a CP by the proper professional society (GSP, PSEM or SMEP)
  - e. Validity of the PRC license, membership with the APOs, and CP accreditation must be current/updated
- 5.3.3 If a specialist professional who is not a CP is engaged to cover certain facets of the preparation of the report, the supervising CP should take responsibility for the work of the said professional.
- 5.3.4 The Technical Report must be signed by each of the CPs. The date of the Technical Report must be stated.
- 5.3.5 The Technical Report must be prepared by the CP-in-charge or under his/her direct supervision as follows:
  - a. Exploration Results and/or Mineral Resources should be prepared by a CP Geologist;
  - b. Ore Reserves should be prepared by a CP Mining Engineer;
  - c. Data on metallurgy should be prepared by a CP Metallurgist.

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<sup>2</sup> PMRC Section 10



#### 5.4 Preparation of a Technical Report

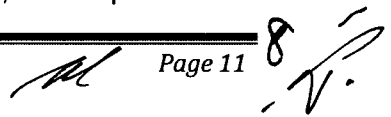
- 5.4.1 A Technical Report must be prepared on the basis of all available data relevant and material to the Disclosure that it supports.
- 5.4.2 Before an Issuer files a Technical Report, the Issuer must have the CP, or a professional under the CP's supervision, complete a current inspection of the property that is the subject of the Technical Report.
- 5.4.3 The Issuer must diligently keep records of verifiable data such as assay and other analytical certificates, drill core splits, sample rejects, drill core logs and other information referenced in the Technical Report or used as a basis for the Technical Report.

#### 5.5 Certificates and consents of CPs for Technical Reports

- 5.5.1 When filing a Technical Report, the Issuer must file certificates of each CP responsible for preparing or supervising the preparation of the Technical Report, and must be signed and dated by the CP(s).
- 5.5.2 The CP should prepare a certificate which must state the following:
  - a. Name, address and occupation of the CP
  - b. CP accreditation must be valid at the time of certification is filed.
  - c. Title and date of the Technical Report to which the certificate applies
  - d. That at the time of the report, to the best of the CPs knowledge, all technical information that is required to make the report not misleading has been included
  - e. Which part of the report was prepared by each CP
  - f. The relationship of the CP to the Issuer and the CP must declare any Beneficial Ownership of Securities, if any, in the Issuer
- 5.5.3 When filing a Technical Report with the Exchange, the Issuer must file a statement indicating the scope of work of each of the CPs responsible for preparing or supervising the preparation of each portion of the Technical Report, dated and signed by the CP(s).
- 5.5.4 The CP must provide his consent to the public filing of the Technical Report, extracts there from, or a summary of, the Technical Report in the written Disclosure being filed and in the context that it was reported.
- 5.5.5 The CP should state that he has carefully reviewed the written Disclosure being filed and that it fairly and accurately represents the information embodied in the Technical Report the CP has prepared or supervised that supports the Disclosure.

#### 5.6 Technical Report format

- 5.6.1 The Technical Report provides a summary of geological, mining and related technical information on Mineral Exploration, development and



production activities on a mineral property that is material to the Issuer. TR-FORM 1 to 3, in ANNEX II set out specific guidelines for the preparation and contents of the Technical Reports.

5.6.2 The CP preparing the Technical Report should follow the headings listed in TR-FORM 1 to 3, in ANNEX II and may create sub-headings, if required. If unique or infrequently used technical terms are required, clear and concise explanations must be included. Headings and subheadings that are not applicable may be omitted.


5.6.3 No Disclosure need be given in respect of inapplicable items and, unless otherwise required by the TR-Forms, negative answers to items may be omitted. Disclosure included under one heading is not required to be repeated under another heading.

## 6.0 PENALTIES

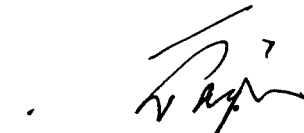
The penalties under the Revised Disclosure Rules shall apply to violations of the PMRC and the IRR.

THE PHILIPPINE STOCK EXCHANGE, INC.

SECURITIES AND EXCHANGE COMMISSION



**VAL ANTONIO B. SUAREZ**  
President & CEO



**JOSE P. AQUINO**  
Director  
Market Regulation Department



**JOSELITO V. BANAAG**  
General Counsel and  
OIC, Issuer Regulation Division

# **ANNEX I**

## **Philippine Mineral Reporting Code**

A copy of the Philippine Mineral Reporting Code is available for downloading at the PSE website ([www.pse.com.ph](http://www.pse.com.ph)).



# ANNEX II

## GUIDELINES IN THE PREPARATION OF TECHNICAL REPORTS

*These guidelines are intended to provide the form and content of the Technical Report required by PSE to comply with the PMRC. It is also a checklist of topics considered important in the assessment of exploration and mining projects. Some topics may not be relevant to the type of deposit being considered. Likewise there may also be topics or features of the project that may be relevant and should be included and which is not listed here. It is the responsibility of the CP or CPs to decide on the relevant topics to be included. The aim is to provide a concise and accurate account of the project. TR-Form 01 provides the format for exploration and/or Mineral Resources reports, TR-Form 2, for economic assessment and Ore Reserve estimation, and TR-Form 03, for metallurgical engineering study and assessment on a mineral deposit.*

- |                   |  |
|-------------------|--|
| <b>TR-FORM 01</b> | <b>OUTLINE OF TECHNICAL REPORT FOR EXPLORATION RESULTS AND MINERAL RESOURCES</b>                   |
| <b>TR-FORM 02</b> | <b>OUTLINE OF REPORT FOR ORE RESERVE ESTIMATION AND FESEABILITY STUDY</b>                          |
| <b>TR-FORM 03</b> | <b>OUTLINE OF REPORT FOR A METALLURGICAL ENGINEERING STUDY AND ASSESSMENT ON A MINERAL DEPOSIT</b> |





# TR-FORM 01

## OUTLINE OF TECHNICAL REPORT FOR EXPLORATION RESULTS AND MINERAL RESOURCES

### 1.0 TITLE PAGE

- 1.1 Title of the Report
- 1.2 Include Location of the Project and Mining Rights Coverage (in the title)
- 1.3 Include Location of Project (in the title)
- 1.4 Name and professional designation of each of the CPs
- 1.5 Effective date of the Report

### 2.0 CERTIFICATES AND CONSENTS OF CPs FOR TECHNICAL REPORTS

- 2.1 Certificates and Consents of CPs for Technical Reports
- 2.2 Scope of Work of each CP involved
- 2.3 Reliance on Other Experts indicating therein objective, nature and coverage
- 2.4 Signatures of CP

### 3.0 EXECUTIVE SUMMARY

### 4.0 TABLE OF CONTENTS

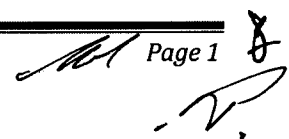
- 4.1 Listing of the contents of the report
- 4.2 Listing of Figures and Tables
- 4.3 Listing of photographs if applicable
- 4.4 Listing of attachments or appendices

### 5.0 INTRODUCTION

- 5.1 Who commissioned the report preparation and to whom it should be submitted
- 5.2 Purpose for which the report was prepared
- 5.2 Scope of Work or Terms of Reference
- 5.3 Duration of the preparation, including field visits and verification
- 5.4 Members of the Technical Report preparation team
- 5.5 Host company representative
- 5.6 Compliance of report with PMRC

### 6.0 RELIANCE ON OTHER EXPERTS OR CPs

- 6.1 If a CP relied on the report, opinion, statement of a legal or another expert, who is not a CP on matters pertaining to the mineral project, the CP may include a disclaimer of responsibility on such information incorporated in the Technical Report.



## **7.0 TENEMENT AND MINERAL RIGHTS**

### **7.1 Description of mineral rights**

- 7.1.1 Location of area, Barangay, Municipality, Province
- 7.1.2 Coordinate locations as per MGB
- 7.1.3 Number of claims and hectares covered by EP/MPSA/FTAA mode of agreement
- 7.1.4 Type of permit or agreement with government

### **7.2 History of mineral rights**

### **7.3 Current owners of mineral rights**

### **7.4 Validity of current mineral rights (state date of validity of rights at the date of reporting)**

### **7.5 Agreements with respect to mineral rights.**

### **7.6 In order to make clear the net revenue that may be derived from the project, include the following:**

- 7.6.1 Royalties, taxes, advances and similar payments paid or to be paid by the company to the mineral rights holder, joint venture partner(s), government, indigenous people, local government, and others
- 7.6.2 Receivables and payable sums to the company and mineral rights holder.

## **8.0 GEOGRAPHIC FEATURES**

### **8.1 Location and accessibility**

### **8.2 Topography, physiography, drainage and vegetation**

### **8.3 Climate, population**

### **8.4 Land Use**

### **8.5 Socio Economic Environment**

### **8.6 Environmental features**

## **9.0 PREVIOUS WORK**

### **9.1 History of previous work**

### **9.2 Briefly describe essential work done by previous workers**

### **9.3 Conclusions of each of the previous workers**

## **10.0 HISTORY OF PRODUCTION**

### **10.1 Production history of district and area, if any**

### **10.2 Which areas were mined within the subject tenement area**

### **10.3 General description of mining, ore beneficiation, concentrate, mineral product market**

### **10.4 Tonnage mined and sold**

## **11.0 REGIONAL AND DISTRICT GEOLOGY**

### **11.1 Regional Geologic Setting**

- 11.2 Stratigraphy
- 11.3 Structural Geology
- 11.4 Mineralization location(s) and general description
- 11.5 Historical Geology

## **12.0 MINERAL PROPERTY GEOLOGY**

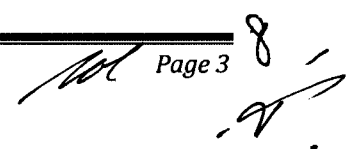
- 12.1 Geological work undertaken by the company in the property, to include scale of mapping and laboratory tests undertaken for the samples
- 12.2 Rock types and their geological relationships
- 12.3 Description of various geological structures and their trends

## **13.0 MINERALIZATION IN THE MINERAL PROPERTY**

- 13.1 Overview of the mineralization (as per reference reports)
- 13.2 Type of mineralization as mapped
- 13.3 Style of mineralization
- 13.4 Wall rock alteration, paragenesis
- 13.5 Geological structures
- 13.6 Localization of the deposit
- 13.7 Length, width, depth of mineralization
- 13.8 Element grade levels and patterns
- 13.9 Development of "ore shoots"
- 13.10 Continuity of mineralization

## **14.0 EXPLORATION**

- 14.1 Geological work (by Issuer)
  - 14.1.1 Geological data generated from mapping and surface sampling
  - 14.1.2 Geological map and sections
  - 14.1.3 Sample location map
- 14.2 Surface sampling (Refer to PMRC Table 1)
  - 14.2.1 Outcrop sampling (grab or measured)
  - 14.2.2 Trench sampling (measured vertical, horizontal, etc)
  - 14.2.3 Test pit sampling (measured vertical, horizontal, etc)
- 14.3 Drilling and sampling (Refer to PMRC Table 1)
  - 14.3.1 Describe type of drilling program (DDH, RC drilling, auger, etc)
  - 14.3.2 Drill site spacing, depth of drilling
  - 14.3.3 Describe Core logging, (lithological, core recovery, specific gravity, geotechnical, etc)
  - 14.3.4 Drill sample method and interval (regular interval or composite)
  - 14.3.5 Drill core photographs



- 14.4 Exploration Geochemistry (by Issuer or previous work)
  - 14.4.1 Describe geochemical survey type: drainage, soil, rock, vegetation, bogs, etc.
  - 14.4.2 Describe sampling and analytical methods employed
  - 14.4.3 Define background, threshold and anomaly levels for the elements determined
  - 14.4.4 Apply synthesis and interpretive techniques (for single and multi element) to bring out significant geochemical features related to mineralization.
  - 14.4.5 Describe geochemical anomalies detected
  - 14.4.6 Relate geochemical findings to geology and mineralization.
  
- 14.5 Applied Geophysics (by Issuer or previous work)
  - 14.5.1 Describe geophysical method used and objective of the survey
  - 14.5.2 Describe the whether a geophysical contractor, independent consultant or an in-house staff was engaged in the conduct of the geophysical survey
  - 14.5.3 Describe equipment used, its limitations and the survey parameters adopted
  - 14.5.4 Describe how it was carried out (design of stations with respect to mineralization trends).
  - 14.5.5 Describe interpretive tools used
  - 14.5.6 Discuss essential results with respect to the objective
  
- 14.6 Sample Preparation, Analyses and Security
  - 14.6.1 Security and Chain of Custody of Samples
  - 14.6.2 Preparation and assay facility (in-house, contracted or commercial)
  - 14.6.3 Sample preparation (description)
  - 14.6.4 Analytical methods used (describe types of methods employed and effective grade range)
  - 14.6.5 Quality Assurance /Quality Control of sample preparation and analysis (demonstrate with data, the precision and accuracy of analytical determinations from internal and external control standards, and check assays)
  - 14.6.6 Statement of the CP on the quality of sample security, preparation and analysis

## 15.0 MINERAL RESOURCES ESTIMATE

- 15.1 Mineral Resource Database used in the estimation of resources
- 15.2 Integrity of exploration and Mineral Resources database
- 15.3 Data Verification and Validation (limitations)
- 15.4 Cut-off Grades used in the estimations
- 15.5 Mineral Resource estimation method used

- 15.6 Mineral Resource categories used (PMRC/JORC)
- 15.6 Mineral Resources estimates

## **16.0 INTERPRETATION AND CONCLUSIONS**

- 16.1 Synthesis of all the data
- 16.2 Discuss the adequacy of data, overall data integrity and areas of uncertainty.
- 16.3 Overall conclusions by the CP
- 16.4 The CP must discuss whether the completed project met the objectives set forth.

## **17.0 RECOMMENDATIONS**

- 17.1 Based on the Summary and Conclusions, a series of recommendations are made to guide management on the course of action to take. Be it positive or negative, the CP should ascertain that there is adequate reason for such recommendations.

## **18.0 REFERENCES**

- 18.1 List of references used, whether published or unpublished

## **19.0 APPENDICES**

- 19.1 List of tables
- 19.2 List of figures
- 19.3 List of photographs
- 19.4 Relevant Database used
- 19.5 Other relevant data

# TR-FORM 2

## OUTLINE OF REPORT FOR ECONOMIC ASSESSMENT AND ORE RESERVE ESTIMATION

### 1.0 TITLE PAGE

- 1.1 Title of the Report
- 1.2 Include Location of Project (in the title)
- 1.3 Name and professional designation of each of the CPs
- 1.4 Effective date of the Report

### 2.0 CERTIFICATES AND CONSENTS OF CPs FOR TECHNICAL REPORTS

### 3.0 EXECUTIVE SUMMARY

### 4.0 TABLE OF CONTENTS

### 5.0 INTRODUCTION

### 6.0 RELIANCE ON OTHER EXPERTS OR CPs

### 7.0 TENEMENT AND MINERAL RIGHTS

### 8.0 GEOGRAPHIC FEATURES

### 9.0 PREVIOUS WORK

### 10.0 HISTORY OF PRODUCTION

### 11.0 REGIONAL AND DISTRICT GEOLOGY<sup>1</sup>

### 12.0 MINERAL PROPERTY GEOLOGY

### 13.0 MINERALIZATION

### 14.0 EXPLORATION

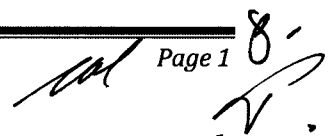
### 15.0 QA/QC OF DATA USED

### 16.0 DECLARED MINERAL RESOURCES

### 17.0 ECONOMIC ASSESSMENT OF THE MINING PROJECT

---

<sup>1</sup> Sections 11 to 16 will be obtained/copied from a CP Geologist Report that will be attached in the Appendix of the CP Mining Engineer's Report.

Handwritten signature and initials in the bottom right corner of the page.

- 17.1 Description of Mineral Resources estimates used as basis for conversion to Ore Reserves<sup>2</sup>
- 17.2 Type and Level of Feasibility Study
- 17.3 Brief Description of the Project

- 17.3.1 Planned mining and processing operations
- 17.3.2 Mining Method and capacity
- 17.3.3 Processing Method and capacity
- 17.3.4 Ore to be Mined / Product to be produced
- 17.3.5 Prospective Markets or Buyers
- 17.3.6 Estimated Mine Life
- 17.3.7 Total Project Cost/Financing
- 17.3.8 Production Cost / Production Schedule

17.4 Marketing Aspects

- 17.4.1 World Supply and Demand Situation
- 17.4.2 Prospective Markets or Buyers
- 17.4.3 Product Specifications
- 17.4.4 Price and Volume Forecasts
- 17.4.5 Sales Contract

17.5 Technical Aspects

17.5.1 Mining Plans

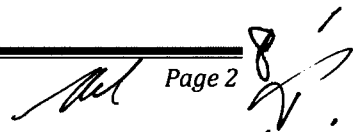
- a. Mining method
- b. Mine Design/Mining Parameters/Geotechnical Parameters
- c. Mining Recovery, Dilution and Losses
- d. Planned Capacity/Production Schedule/Estimated Life of mine
- e. Working Schedule
- f. List of Mining Equipment and Auxiliary Machinery/Mine Infrastructure
- g. Mine Development Plans and Schedule

17.5.2 Processing Plans<sup>3</sup>

- a. Metallurgical Test Works Results
- b. Metallurgical Process Flowsheet/Process Plant Design
- c. Materials Balance
- d. Plant Capacity/Production Schedule
- e. Plant Working Schedule
- f. Product Specification

<sup>2</sup> A report on the Mineral Resource prepared by a CP Geologist used in the estimation of Ore Reserves.

<sup>3</sup> Metallurgical aspects of the Feasibility Studies should be undertaken by a CP Metallurgical Engineer. The relevant report will be integrated in the CP Mining Engineer's Report and also attached in the Appendix.



- g. Tailings Specification
- h. Tailings Dam Siting
- i. List of Mill Machineries and Auxiliary Equipment
- j. Mill Plant Layout

#### 17.5.3 Mine Support Services

- a. Power Source / Power Generation Plant
- b. Mechanical Shop
- c. Assay Laboratory
- d. Industrial Water Supply
- e. Availability of Alternative Sources of Mine Support Services

#### 17.5.4 Environmental Protection and Management Plan

- a. Environmental Impacts
- b. Environmental Mitigating Measures
- c. Environmental Infrastructures
- d. Mine Closure Plan

#### 17.5.5 Mine Safety and Health Plan

### 17.6 Financial Aspects

#### 17.6.1 Total Project Cost Estimates and Assumptions

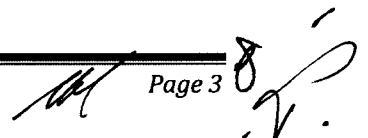
- a. Engineering Study Cost
- b. Exploration/Development Cost
- c. Pre-Operating Overhead
- d. Capital Equipment and Machinery
- e. Allied Mine Facilities and Infrastructures
- f. Environmental Equipment and Facilities
- g. Interest During Construction
- h. Working Capital
- i. Contingencies

#### 17.6.2 List of Capital Equipment and Works

#### 17.6.3 Financial Plans/Sources of Funds

#### 17.6.4 Production Cost Estimates and Assumptions

- a. Mining Cost
- b. Milling Cost
- c. Marketing Cost
- d. Mine Overhead Cost
- e. Environmental Cost
- f. Community Development Cost
- g. Excise Tax
- h. Head Office Overhead Cost
- i. Royalty, if any





17.6.5 Government Financial Incentives, if any

- a. BOI
- b. PEZA

17.6.6 Basis of Revenue Calculation

- a. Metallurgical Recovery
- b. Selling Price
- c. Exchange Rate
- d. Smelters/Freight/Treatment Charges
- e. Bonuses and Penalties
- f. Percentage of LME Price Payable

17.6.7 Pro-forma Financial Statements

- a. Balance Sheet
- b. Profit and Loss
- c. Cash Flow

17.6.8 Financial Analyses

- a. Break Even Analysis
- b. Sensitivity Analyses
- c. Profitability Analyses (ROI, IRR, NPV, Payback Period)

17.7 Economic Aspects

17.7.1 Employment/management

- a. Number, Nationality, Position and Annual Payroll
- b. List of Key Personnel and their Qualification
- c. Personnel Policies re Pay Scale
- d. Table of Organization
- e. Availability of Technical and Skilled Labor
- f. Township/Housing

17.7.2 Community Development Plan

17.7.3 Socio-economic Contributions

17.8 Project Schedule

17.8.1 EPCM Contract

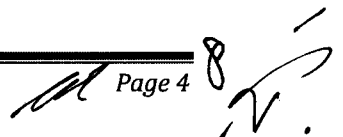
17.8.2 Construction Schedule

**18.0 ORE RESERVES ESTIMATES**

18.1 Database Used

18.2 Integrity of Database

18.3 Data Verification and Validation (limitations)



- 18.4 Ore Reserve Estimation Method Used
- 18.5 Ore Reserve Estimations
  - 18.5.1 Ore Specific Gravity / Density
  - 18.5.2 Mining Plans / Mining Recovery / Dilution Factor / Mining Losses
  - 18.5.3 Relevant Production Costs considered
  - 18.5.4 Basis of Revenue Calculation
  - 18.5.5 Cut-off Grade Determination
- 18.6 Ore Reserve Classification Used
- 18.7 Ore Reserves Estimates

## **19.0 INTERPRETATION AND CONCLUSIONS**

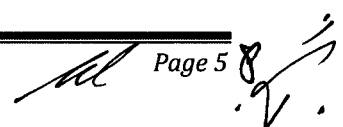
- 19.1 Synthesis of all the data
- 19.2 Discuss the adequacy of data, overall data integrity and areas of uncertainty.
- 19.3 Overall conclusions by the CP
- 19.4 The CP must discuss whether the completed project met the objectives set forth.

## **20.0 RECOMMENDATIONS**

- 20.1 Based on the Summary and Conclusions, a series of recommendations are made to guide management on the course of action to take. Be it positive or negative, there must be adequate reason for such recommendations.

## **21.0 REFERENCES**

- 21.1 List of references used, whether published or unpublished



# TR-FORM 3

## OUTLINE OF REPORT FOR A METALLURGICAL ENGINEERING STUDY AND ASSESSMENT ON A MINERAL DEPOSIT

*This Annex provides the guidelines and template for the form and content of the Technical Report for metallurgical engineering studies and assessments conducted on mineral deposits during its mining life cycle, e.g., from discovery, exploration, assessment, mine and mill design, development, production and, through to its closure. The report prepared following this guideline is intended primarily to support the reporting of Exploration Results, Mineral Resources, and Ore Reserves as stipulated under the PMRC. The template, however, may also be used for stand-alone reports or for parts of more extensive studies like a conceptual study, a Preliminary Feasibility Study, or, a Final Feasibility Study for a mine project. Depending on the type/stage of the study, the report template may be adopted in whole or bullet points may be added or deleted as maybe necessary and applicable.*

*The preparation of the report following this guideline shall be undertaken by a CP accredited under the PMRC. In cases where the preparation of the report requires the involvement of other experts, who are either CPs or not, the preparation of the said report shall always be under the supervision of a CP. Reports following this guideline and signed off by an expert and licensed metallurgical engineers other than by an appropriate CP may not be used for the purposes of the PMRC.*

### 1.0 TITLE PAGE

- 1.1 Title of the Report
- 1.2 Date and Revision Number of the Report
- 1.3 Official Issuance List of the Report

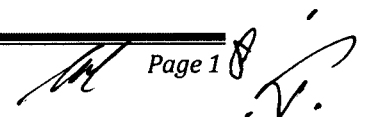
### 2.0 ROLES AND RESPONSIBILITIES

### 3.0 CERTIFICATES AND CONSENTS OF CPS FOR TECHNICAL REPORTS

- 3.1 Certificates and Consents of CPs for Technical Reports
- 3.2 Scope of Work of each CP involved
- 3.3 Reliance on Other Experts indicating therein objective, nature and coverage
- 3.4 Signatures of CP

### 4.0 TABLE OF CONTENTS

- 4.1 Listing of the contents of the report
- 4.2 Listing of Figures and Tables
- 4.3 Listing of Attachments, Appendices, exhibits, photographs, etc.



## **5.0 EXECUTIVE SUMMARY**

Indicate the salient point of the study and assessment and the major results, conclusions and recommendations included therein.

## **6.0 INTRODUCTION**

This section provides treatment of the following:

- 6.1 Who commissioned the report preparation and to whom it should be submitted
- 6.2 Purpose for which the report is prepared
- 6.3 Scope of Work or Terms of Reference
- 6.4 Duration of the Preparation, including field visits and verification
- 6.5 Members of the Technical Report preparation team
- 6.6 Host company representatives
- 6.7 Compliance of the report with the PMRC
- 6.8 Deliverables of the project

## **7.0 PROJECT LOCATION AND LOCAL INFRASTRUCTURES**

This section provides a general description of the location, geography and site characteristics of the mineral property and/or the project location and other infrastructures thereon which may impact on the eventual flow sheet development. Such characteristics may include terrain, rainfall, and presence of water sources, among others. Reference should be made to works of CP-Geologist/CP-Mining.

## **8.0 CURRENT PROJECT STATUS OR STATE OF DEVELOPMENT**

This section defines the current state of the development of the mineral property. The statements in this section may be generalized and is important that exploration and Mineral Resources report and/or Ore Reserve reports prepared by a CP Geologist/CP Mining from which the statements are derived should be cited.

- 8.1 Mining Rights and Project Approvals
- 8.2 Geology and Mineral Resources
- 8.3 Mining and Ore Reserves

## **9.0 MINERAL PROCESSING AND METALLURGICAL TEST WORKS**

- 9.1 Introduction
- 9.2 Sampling and Sample Collection Program

This shall include discussions on the origin of samples, type and nature of samples at every stage, samples collection procedures, protection of the samples from elements and natural aging of samples.

- 9.3 Mineralogical Characterization Studies

Studies of Minerals present, degrees of liberation and interlocking, extent of dissemination, size distribution of economic minerals and amount of alteration that may impact on amenability to treatment and recovery

#### 9.4 Mineral and Metallurgical Test Program and Procedures

This section comprises descriptions of the test programs and references to procedures performed on the ore samples to obtain the desired test results as provided below.

#### 9.5 Metallurgical Test Results and the Determination of Recoveries, Product Specifications, and Flow Process

Test results including those from the successful and unsuccessful tests may be included as the latter may be as meaningful as some of the good ones. The results of tests should be described and summary of those used as basis for the estimations of Mineral Resources as may be applicable in each of the categories under PMRC should be provided.

#### 9.6 Development of Process Response Models

After completion of the testing program, models should be developed to predict ore response to different operating conditions like feed grade-recovery relationship, grind-recovery, and concentrate quality-ore type. These models will be useful for mine planning, production forecasting and financial modeling purposes.

### 10.0 SELECTION OF PROCESS ROUTES AND TECHNOLOGIES

#### 10.1 Design Bases and Assumptions

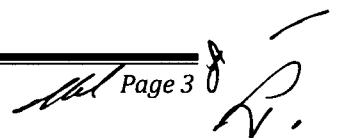
Depending on the stage of the mining life cycle, the design of the metallurgical treatment of the mineral resource may be significantly based on technical assumptions and not on the results of actual tests performed on the ore samples. As the mining life progresses, the design bases should become more firm and accuracy of designs should improve. These design bases and assumptions should be explicitly stated in this section of the report.

#### 10.2 Proposed Flow-sheets and Process Routes

Alternative flow sheets and process routes studied should be described providing thereof as much details as practicable.

#### 10.3 Material and Energy Balance

This section should provide material and energy balances for each of the major process routes being considered for the treatment and processing of the ore resource.



## **11.0 PROCESS PLANT DESIGN, COST ESTIMATES AND IMPLEMENTATION SCHEDULE**

This section describes the process routes being considered, the final design bases, plant layout, equipment listing, product and by-product specifications, the CAPEX and OPEX, the required infrastructures, among others. This section should be consistent with the overall mine life cycle including the actual mine design and development, among others.

- 11.1 Key Design Parameters
- 11.2 Plant Capacity and Production Schedule
- 11.3 Plant Layout and Operations Description
- 11.4 Product and by-product specifications
- 11.5 List of Capital Equipment and Works
- 11.6 Plant Infrastructures

This section describes the required infrastructures needed to support the continued and successful mill operations as proposed.

### **11.7 Capital Cost Estimates**

The accuracy of the estimates should be consistent with the stage of the study and should be stated thereon.

### **11.8 Operating Cost Estimates**

The operating cost estimates largely depend on the stage of the project and the tests conducted on the Mineral Resource.

### **11.9 Specifications, Standards and Codes**

The CP shall specify the standards used in the report in reference to metallurgical engineering, materials, equipment, test procedures, environment, among others. The standards used may be Philippine or international, such as those of the United States, Australia, Canada, World Bank and ISO standards

## **12.0 OTHER PROJECT ELEMENT CONSIDERATIONS**

Other important components and elements of the study not within the scope of the metallurgical study should be referred to in this section including, among others, environmental protection and management plan, social development plan, etc. and should be treated, together with the rest of the elements in a total systems approach. Other elements of the study should include water and water quality management plan and air quality management plan – this may be grouped in environmental protection but it should be specified explicitly as these two areas are very contentious issues.

### **13.0 PROJECT FINANCIAL PROJECTIONS AND ECONOMIC ANALYSIS**

The economic and financial analysis of the project should be treated in this section whether it is part of the bigger mine and mill development study or a stand-alone study for the mill project.

### **14.0 CONCLUSIONS AND RECOMMENDATIONS**

This should include a brief summary of the practical results of the study which will significantly impact on the overall mine and mill development project.

### **15.0 APPENDICES AND ANNEXES**

This section should comprise the detailed test results, related information, more detailed treatment than those presented above.

