

APPENDIX III

Annex to Decree #203 of Minister of Mining,

dated as of 11 September 2015

MINERALS DEPOSITS RESOURCES AND RESERVE CLASSIFICATION AND IDENTIFICATION GUIDELINES

ONE. RATIONALE

1.1. Minerals resources and the reserves of mineral deposits discovered resulting from geological exploration and research undertaken in the territory of Mongolia shall be determined/evaluated and classified in compliance with this classification and guidelines.

1.2. Pursuing the principle of scientifically grounded and step-by-step geological exploration and research, mineral resources and deposit reserves shall be determined/evaluated and reported.

1.3. This classification shall serve as the fundamental guidelines for correctly and accurately determining/evaluating the mineral resources and deposit reserves as a result of geological exploration and research, and the subsequent result (resources and reserves) determined/evaluated in compliance with this guideline may be accounted as grounds for further investment.

1.4. Mineral resources and deposit reserves shall be grouped considering the nature of deposit and banded ore formation and graded by the level of conducted geological exploration and survey grounded on mining, refinery-smelting, economics, market, legal, environmental, social and policy consideration.

Two. Classification of mineral resources and deposit reserves

2.1. Depending on the level of survey and exploration carried out on mineral deposit, occurrences, fields and ore zones, determined mineralization and accumulation ores shall be classified as mineral resources or deposit reserves.

2.1.1. “mineral resources” refers to definition set forth in provision 4.1.24 of Minerals Law specifying as follows; “Minerals resource” refers to the part of a deposit which was not estimated in details by geological mapping and was not studied or explored in terms of amount, volume, type, contents, composition and economic potential”;

2.1.2. “mineral deposit reserve” refers to definition set forth in provision 4.1.25 of Minerals Law specifying as follows; “deposit reserve” refers to the part of a deposit estimated by geological mapping and explored in terms of amount, volume, type, contents and composition, and has been determined to have economic viability and potential for industrial use and enrichment, and for use of technology during extraction”.

2.2. Subject to factors influencing the reserves of mineral deposits, the resource/reserve shall be classified as geological reserve (inferred) or production reserve (proved reserve).

2.3. Reserves of deposit that respective feasibility study has been made, but the influencing factors on parameters such as mining, refinery-smelting, economics, market, legal, environmental, social and policy aspects not projected in the feasibility study, shall belong to geological reserve.

2.4. Feasibility study for the deposit development may be developed based on the reserves classified as geologically proved (Category A), indicated (Category B) and probable (Category C-III, IV) reserves. The deposits, calculated as a result of this process, identifying the deposit reserves that could be mined fully or entirely, located within the boundaries of the deposit, calculating tailings and diluting materials; and that can be mined economically viable shall be referred to “Proved mineral reserve” (A’) or “Inferred mineral reserve” (B’).

Three. Mineral resources and deposit reserve grades, respective guidelines

3.1. Reserves of hard minerals shall be classified as Proved (A’) or Inferred (B’).

3.1.1. Proved reserve (A’) shall meet the following requirements: Based on the geological reserves of Proved (A) or Inferred (B) grades, which was evaluated as a result of exploration, Grade A reserve shall be identified in detail by calculating the factors such as technology and equipment for mining, economic calculations, experimental level study on the ore characteristics for the selected technology, engineering solutions, environment, occupational safety, health, legal environment, human resources, management and structure, infrastructure, social issues, supplies, economic viability and other factors as part of the “Feasibility Study”.

3.1.2. Inferred reserve (B’) shall meet the following requirements: Based on the geological reserves of Indicated (B) or Probable (C) grades, which was evaluated as a result of exploration, B reserve shall be identified by calculating the factors such as technology and equipment for mining, economic calculations, experimental level study on the ore characteristics for the selected technology, engineering solutions, environment, occupational safety, health, legal environment, human resources, management and structure, infrastructure, social issues, supplies, economic viability and other factors as part of the “Feasibility Study”.

3.2. Deposit geological reserves shall be classified as proved, inferred and probable (prognostic) and Proved reserves shall be marked as “A”, Inferred as “B” and Probable as “C”, respectively.

3.2.1. Proved (A) geological reserves shall meet the following requirements:

3.2.1.1. Form, size and location of ore body determined in details and high level of confidence; nature of changes in the composition and content of minerals identified; waste rock and unconditional mineralization parts in the ore body are clarified and clearly delineated; state of folds and faults, their locations, directions and magnitude identified.

3.2.1.2. Alteration and continuity of main parameters expressing the content of commercially viable components or thickness of mineral containing parts to be identified at high confidence level in all three spatial dimensions.

3.2.1.3. Natural types of minerals are properly identified; types of applicable technology and minerals sorts detected; and quality of mineral and content of ore substances determined.

3.2.1.4. Main and other minerals in the content and commercially viable parts that is recoverable by production methods are identified, and appropriate technological flow and scheme selected; primary documents for ore processing and separation is formulated through thorough study succeeding the level enabling to design the mining and processing facilities.

3.2.1.5. Content of profitable and diluting substances in mineral, concentrate and final produce, conditions and distribution to be studied and determined.

3.2.1.6. Boundaries of Proved reserves shall be set by drilling and trenches and according to conditions based on sampling result and calculations in the feasibility study.

3.2.2. Inferred (B) geological reserves shall meet the following requirements:

3.2.2.1. Form, size and location of ore body determined in considerable details and certain level of confidence; nature of changes in the composition and content of minerals identified; waste rock and unconditional mineralization parts in the ore body are clarified and clearly delineated; state of folds and faults, their locations, directions and magnitude identified.

3.2.2.2. Alteration and continuity of main parameters expressing the content of commercially viable components or thickness of mineral containing parts to be identified at considerable confidence level in all three spatial dimensions.

3.2.2.3. Natural types of minerals are properly identified; types of applicable technology and minerals sorts detected/delineated. In case that technological types and sorts are unable to be delineated, their nature of spatial location should be defined, along with quantitative ratio for technology type and sorts identified.

3.2.2.4. Main and other minerals in the content and commercially viable parts that is recoverable by production methods are identified, and appropriate technological layout/sketch selected;

primary documents for ore processing and separation is formulated through thorough study succeeding the level enabling to design the mining and processing facilities.

3.2.2.5. Content of profitable and diluting substances in mineral, concentrate and final produce, conditions and distribution to be clarified and determined.

3.2.2.6. Boundaries of Inferred reserves shall be set by drilling and trenches and according to conditions based on sampling result and calculations in the preliminary feasibility study, as well as by using extrapolation lines if the boundaries are guaranteed by criteria of geology, geophysics and geochemistry.

3.2.3. Probable (C) geological reserves shall meet the following requirements:

3.2.3.1. Form, size and location of ore body determined in general; nature of changes in the composition and content of minerals explained; state of larger faults, their locations, directions and magnitude studied at preliminary level.

3.2.3.2. Alteration and continuity of main parameters expressing the content of commercially viable components or thickness of mineral containing parts to be identified at considerable confidence level in dimensions.

3.2.3.3. Natural and technological types of minerals are identified; their general nature of spatial location defined, along with quantitative ratio studied.

3.2.3.4. Ore processing technology characteristics studied through a limited sample lab testing or defined by comparing with other parts of the deposit that is studied in depth or a similar other deposits.

3.2.3.5. Content of profitable and diluting substances in mineral, concentrate and final produce, conditions and distribution to be examined at the preliminary level.

3.2.3.6. Boundaries of Inferred reserves set by either by preliminary studies of feasibility study, or identified by the drilling, trenches and outcrops following the parameters set by comparing with the similar deposits, as well as by using extrapolation lines if the boundaries are guaranteed by criteria of geology, geophysics and geochemistry deviation and criteria.

3.3. Hard minerals are classified as Indicated (P_1), Approximate (P_2) and Prognostic (P_3) reserve grades.

3.3.1. Evaluation for the (P_1) grade shall apply to depth and boundary parts of deposits through research and research-evaluation on mineral occurrences and exploration results. Estimation of reserves (P_1) should be made covering the boundaries of mineralization on the geological structure, using extrapolation method at the margins of explored areas. It must also use findings of geophysics and geochemical survey in the distribution area, and studies on structure, lithology and stratigraphy. Estimations on ore quality and amount must use results from ore body

occurrence and limited number of trenches, and drill sampling coupled with comparative analyses on deposits similar in terms of origin and formation.

3.3.2. Approximate reserve (P_2) estimation must be based on geology-structural study in mineral occurrence areas and mineralization zones, which are discovered through large scale mapping and exploration stages, geophysical and geochemical deviation that approved the formation of deposit creation by the result of some drilling and trenches within the overall framework of exploration criteria and mineral signs. Evaluation on mineral quality and quantity should use results a few drill sampling coupled with comparative analyses on deposits similar in terms of origin and formation.

3.3.3. Prognostic reserve (P_3) estimation should be based on criteria identified from the larger scale geological mapping, aerial and space photography conversion, metallogenic and structural study, regional geophysics and geochemistry research; overall on theoretical study, and consider the potentials for deposit covering the ore region, ore area and ore bonds. In addition, Prognostic reserve is estimated through comparing the surveyed area with other ore regions and areas.

3.4. Reserves of by-products with significance of commercial production shall be estimated based on the overall scope of estimation of reserves of main mineral and the boundaries of estimation, distribution characteristics and forms in existence by classifying to the respective categories.

3.5. In estimating the mineral resources and reserves on software, boundaries of reserves and resources may be identified based on geo-statistical study and its implications.

3.6. Reserve estimation shall be made comprehensively, in other words considering the quality of minerals in the deposit, requirements of ore-processing technology and its development trends.

3.7. Mineral reserves, deposit reserve grade and classification may be made consistent or modified with specificity of instructions/guidelines made for specific type of minerals.

Four. Grouping of hard mineral deposits

4.1. Taking into account the geological specificity of the deposit, key indicators for the ore body (grade, thickness and etc), and economic indicators (required time and human resources for geological exploration at the deposit), mineral deposits and its components may be graded as follows:

4.1.1. Grade One. Mineral ore body that contains majority of reserves, had no alteration or slight alteration, little changes in internal structure, quality and thickness of ore body, key part of the ore body distributed evenly and a deposit with normal geological formation. Deposits meeting aforementioned criteria are evaluated as Proved, at maximum.

4.1.2. Grade Two. Deposits with altered and broken thickness, structure and quality of mineral ore body; or uneven distribution of main mineral; complicated geological structure or normal

geological structure, but difficult mining conditions. At the exploration stage, deposit reserves of this grade is estimated to Inferred/Measured reserve classifications.

4.1.3. Grade Three. Reserves with strong and sharp alteration on thickness and structure of mineral body; strongly broken; significant changes in quality, overall uneven distribution of key minerals; very complex formations and estimated as Measures/Inferred or Probable .

4.1.4. Grade Four. Thickness of ore body and internal formation, as well as ore quality, is highly altered; distribution of key ore is uneven; and deposit with geologically complex composite formations. Reserve shall be estimated at the prognostic grade and classification.

Five. Relevance of key stages for mineral survey, goal, reserve, reserve classification and economic evaluation

Key stages of geological survey, details and levels of confidence	Goal and objects	Reserve evaluation			
		Reserve classification and grade			Types of economic assessment
		Type of reserve	Classification	Marking	
Research	Research on geological formation, mineralization and occurrences	Estimated reserve	Approximate Prognostic	P ₃ P ₂	Geological estimation/assessment
Survey	Exploration on occurrences and separating the fields		Inferred	P ₁ (C)	(geology and economic study)
Exploration	Estimate mineral resources and deposit reserves	Geological reserve	Probable Proved	C B A	Preliminary feasibility study

	Detailed estimation of reserves for deposit and mining	Production reserve	Measured Proved	B' (C-3, 4 grades) A'	Feasibility study and design
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