Current State of Chinese Standard

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1. Comparison between Chinese Standard (solid minerals), UNFC and CRIRSCO Template

The below table is the classification of Chinese Standard, named *Classification for resources / reserves of solid fuels and mineral commodities*.

Table for solid minerals resources and reserves classification

<table>
<tr><td rowspan="2">Geological Assurance
Classification and Type
Degree of Economic Viability</td><td colspan="3">Total Identified Mineral Resources</td><td>Undiscovered Resources</td></tr>
<tr><td>Measured</td><td>Indicated</td><td>Inferred</td><td>Reconnaissance</td></tr>
<tr><td rowspan="4">Economic</td><td>Proved Extractable Reserve (111)</td><td colspan="3" rowspan="2"></td></tr>
<tr><td>Basic Reserve (111b)</td></tr>
<tr><td>Probable Extractable Reserve (121)</td><td>Probable Extractable Reserve (122)</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Basic Reserve (121b)</td><td>Basic Reserve (122b)</td></tr>
<tr><td rowspan="2">Marginal Economic</td><td>Basic Reserve (2M11)</td><td colspan="3"></td></tr>
<tr><td>Basic Reserve (2M21)</td><td>Basic Reserve (2M22)</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Sub-marginal Economic</td><td>Resources (2S11)</td><td colspan="3"></td></tr>
<tr><td>Resources (2S21)</td><td>Resources (2S12)</td><td colspan="2"></td></tr>
<tr><td>Intrinsic Economic</td><td>Resources (331)</td><td>Resources (332)</td><td>Resources (333)</td><td>Resources (334)?</td></tr>
<tr><td colspan="5">Notes: Of the codes (111-334) used in the table above, the first digital number indicates the degree of economic viability: 1=economic, 2M=marginal economic, 2S=sub-marginal economic, 3=intrinsic economic, ?=economic interest undefined; the second digital number indicates phases of feasibility assessment: 1=feasibility study, 2=pre-feasibility study, 3=geological study; the third digital number indicates geological assurance: 1=measured, 2=indicated, 3=inferred, 4=reconnaissance, b=before the deduction of extractable quantities lost in the process of designing and mining.</td></tr>
</table>

From the table, we can see degree of economic viability involves the viability assessment of identified mineral resources of different geological assurances after different phases of feasibility assessment. It can be classified into economic, marginal economic, sub-marginal economic and intrinsic economic, in accordance with the viability of the real time economy.

Table for Comparing between UNFC, CRIRSCO Template and Chinese Standard

Cat.	2004 Coal, uranium and other solid minerals	CRIRSCO Template	Proposal for revised UNFC definitions	Chinese Standard
E1	Quantities, reported in tonnes/volume with grade/quality, demonstrated by means of a prefeasibility study, feasibility study or mining report, in order of increasing accuracy, that justify extraction under the technological, economic, environmental and other relevant commercial conditions, realistically assumed at the time of the determinatio	E1 without a sub-category refers to Mineral Reserves. Applied where extraction is technically and economically viable.	Extraction and sale is economically viable. Refer to definitions of E1.1 and E1.2	**Economic:** the quantity and quality is calculated in accordance with production indicators determined by the market price. Mining under the real time market conditions when feasibility study or pre-feasibility study are carried out is technological feasible, economically viable and permitted by other factors including environment, which indicates that the average value of mineral products exploited every year is sufficient for the investment return required by investors, or exploitation is possible with government subsidies and (or) other supportive measures.
E1.1	Extraction is justified under competitive market conditions. Thus, the average value of the commodity mined per year must be such as to satisfy the required return on investment.	Appropriate assessments and studies should 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. The term 'economically mineable' implies that extraction of the Mineral Reserve has been demonstrated to be viable under reasonable financial assumptions.	Extraction and sale is economically viable on the basis of realistic assumptions of future market conditions.	Not defined.

E1.2	**Exceptional (conditional) economic** quantities are at present not economic to extract under normal economic conditions. Their extraction is made possible through government subsidies and/or other considerations	Applies to projects where interim negative net cash flows are accommodated for short periods provided that the longer-term forecasts still indicate positive economics. Examples of such situations might be commodity price fluctuations expected to be of short duration, mine emergency of a nonpermanent nature, transport strike etc. It may also apply where company management has made a deliberate decision to operate on a non-economic basis or where extraction is deemed to be economic as a consequence of government subsidies.	Extraction and sale is economic in spite of current adverse market conditions that are expected to be of a short-term nature as long-term forecasts are economic. Extraction that is deemed to be economic as a consequence of subsidies also falls into this sub-category.	Not defined.
E2	Quantities, reported in tonnes/volume with grade/quality, demonstrated by means of a prefeasibility study, feasibility study or mining Report, in order of increasing accuracy, not justifying extraction under the technological, economic, environmental and other relevant commercial conditions, realistically assumed at the time of the determination, but possibly so in the future.	E2 without a sub-category refers to an identified concentration or occurrence of material of economic interest in or on the Earth's crust where studies have not yet validated a mining plan.	Economic extraction has not been fully demonstrated to be economically viable. Refer to definitions of E2.1 and E2.2.	Not defined.
E2.1	Marginal economic quantities are quantities that at the time of determination are not economic, but border on being so. They may become economic in the foreseeable future as a result of changes in technological, economic, environmental and/or other relevant commercial conditions	E2.1 refers to Mineral Resources: A concentration or occurrence of material of economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction but the modifying factors have not been fully addressed.	Extraction has not yet been fully demonstrated to be economic. but on the basis of realistic assumptions of future market conditions, it is more likely than not that economic extraction will take place in the foreseeable future.	**Marginal economic:** exploitation is not economically viable at the time when feasibility study or pre-feasibility study are carried out but borders on loss and gain. Only with the improvement of technological, economic and environmental conditions in the future or with supportive measures granted by the government can exploitation become economically viable.

E2.2	Sub-marginal economic quantities are quantities that would require a substantially higher commodity price or a major cost-reducing advance in technology to render them economic.	Portions of an identified mineral deposit that do not have reasonable prospects for eventual economic extraction. Any mineralization categorized as E2.2 relates to material that should not be publicly reported but which may be retained in inventories pending future changes in technical or economic circumstances that would enable a re-assessment.	Extraction and sale is not economically viable on the basis of realistic assumptions of future market conditions, and eventual economic extraction would require a substantially higher commodity price or a major reduction in costs to render it economic.	**Sub-marginal economic:** exploitation is not economically viable or technologically feasible at the time when feasibility study or pre-feasibility study are carried out, and can be turned into economically viable only after the price of mineral products are significantly raised or advances made in technology cut costs.
E3	Quantities, reported in ones/volume with grade/quality, estimated by means of a geological study to be of intrinsic economic interest. Since the geological study includes only a preliminary evaluation of economic viability, no distinction can be made between economic and potentially economic. These resources are therefore said to lie in the range of economic to potentially economic. Generally only in-situ quantity figures are reported.	E3 without a sub-category refers to Exploration Results where work is insufficiently advanced to determine economic	Extraction is not available for sales, or is not commercial or economic to extract, or economic viability has not yet been determined. Refer to definitions of E3.1, E3.2 and E3.3.	**Intrinsic economic:** it is only proved by geological study and makes assessment for investment opportunities without being submitted to feasibility study and pre-feasibility study. Because of the great number of uncertain factors, it is impossible to define whether it is economic, marginal economic or sub-marginal economic.
E3.1	Not defined.	Material that may be extracted in the course of mining but which is currently uneconomic and therefore will not be sold. Such material may include dumps of low grade material that may become economic in future.	Extraction without sale.	Not defined.
E3.2	Not defined.	Where evaluation is in progress such that it is premature to estimate a mineralized volume or to determine the ultimate chance of economic viability, it is acceptable to note that economic status is “undetermined.	Economic viability of extraction has not yet been determined	Not defined.
E3.3	Not defined.	Applied to in- situ mineralization with no potential for eventual economic extraction (e.g. where the material will be sterilized in permanent pillars).	Estimated quantities that are insitu, but where there is currently considered to be no potential for eventual economic extraction.	Not defined.

F1	Mining Report and/or Feasibility Study has demonstrated extraction of the reported quantities to be justified. Cost data must be reasonably accurate, and no further investigations should be necessary to make the investment decision. The information basis associated with this level of accuracy comprises the reserve figures based on the results of detailed exploration, technological pilot tests and capital and operating cost calculations such as quotations of equipment suppliers.	F1 without a sub-category refers to Mineral Reserves. Feasibility Studies have demonstrated extraction of the reported quantities to be justified. Cost data must be reasonably accurate and no further investigations should be necessary to make the investment decision.	A development project that has been demonstrated to be technically and commercially feasible. Refer to definitions of F1.1, F1.2 and F1.3.	**A 'Feasibility study'** assesses in detail the economic viability of a mining project, whose result can provide a detailed assessment for the technological and economic assurance of planned projects and serves as the basis for the investment decision. The adopted cost data are of high accuracy and usually based on reserves obtained in detailed exploration and corresponding test result in processing and refining performance. Costs and quoted price of equipment are that of the real time market price, and impact made by factors concerning geology, engineering, environment, law and economic policies is taken into consideration, which complemented the timeliness of feasibility study. See Appendix C for the contents of feasibility study.
F1.1	A Mining Report is understood as the current documentation of the state of development and exploitation of a deposit during its economic life including current mining plans. The operator of the mine generally makes it. The study takes into consideration the quantity and quality of the minerals extracted during the reporting time, changes in categories of economic viability due to changes in prices and costs, development of relevant technology, newly imposed environmental or other regulations, and data on exploration conducted concurrently with mining. It presents the current status of the deposit, providing a detailed and accurate, up-to-date statement on the reserves and the remaining resources.	Not explicitly defined in the Template; referring to project status rather than the classification of reserves. The project is currently producing and selling minerals to market.	The project is currently extracting products.	Not defined.

F1.2	Not defined.	Not explicitly defined in the Template; referring to project status rather than the classification of reserves. All necessary approvals have been obtained, capital funds have been committed, and implementation of the development project is under way.	All necessary approvals have been obtained, capital funds have been committed, and implementation of the development project is under way.	Not defined.
F1.3	A Feasibility Study assesses in detail the technical soundness and economic viability of a mining project, and serves as the basis for the investment decision and as a bankable document for project financing. The study constitutes an audit of all geological, engineering, environmental, legal and economic information accumulated on the project. Generally, a separate environmental impact study is required.	Implementation of the project has been demonstrated to be justified by detailed pre-feasibility or feasibility studies based on reasonable forecast commercial conditions at the time of reporting, and there are reasonable expectations that all necessary approvals/contracts	Implementation of the development project is justified on the basis of reasonable forecast commercial conditions at the time of reporting, and there are reasonable expectations that all necessary approvals/contracts will be obtained.	Not defined.

F2	A Pre-feasibility Study provides a preliminary assessment of the economic viability of a deposit and forms the basis for justifying further investigations (detailed exploration and feasibility study). It usually follows a successful exploration campaign, and summarizes all geological, engineering, environmental, legal and economic information accumulated to date on the project. The pre-feasibility study addresses the items listed under the feasibility study, although not in as much detail.	F2 without a sub-category refers to a Mineral Resource. Geological studies have been completed that identify a concentration or occurrence of material of 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, continuity and other geological characteristics are known, estimated or interpreted from specific geological evidence and knowledge	A development project that has not yet been demonstrated to be technically and commercially feasible.	A **'Pre-feasibility study'** refers to a preliminary assessment of the economic viability of a deposit. The result serves as a basis for decisions on whether exploration or feasibility study of the deposit shall proceed. For pre-feasibility study, mineral resources and reserves calculated in view of industrial indicators after general exploration or detailed exploration, test materials of processing and refining on laboratory scale and costs estimated by quotations table or data from comparable mining are necessary. The contents of pre-feasibility study are the same with that of feasibility study (See Appendix C) but attended with less thoroughness. When investors carried out pre-feasibility study for the selection of planned projects, price indicators and other parameters compatible with the real time market shall be presented and proved projects shall be as complete as possible.
F2.1	Not defined.	NA	Project activities are ongoing to justify development in the foreseeable future.	Not defined.
F2.2	Not defined.	NA	Project activities are on hold and/or where justification as a commercial development may be subject to significant delay.	Not defined.
F2.3	Not defined.	NA	There are no current plans to develop or to acquire additional data at the time due to limited potential.	Not defined.

F3	A Geological Study is an initial evaluation of economic viability. This is obtained by applying meaningful cut-off values for grade, thickness, depth, and costs estimated from comparable mining operations. Economic viability categories, however, cannot in general be defined from the Geological Study because of the lack of detail necessary for an Economic viability evaluation. The resource quantities estimated may indicate that the deposit is of intrinsic economic interest, i.e. in the range of economic to potentially economic. A Geological Study is generally carried out in the following four main stages: reconnaissance, prospecting, general exploration and detailed exploration (as defined below). The purpose of the geological study is to identify mineralization, to establish continuity, quantity, and quality of a mineral deposit, and thereby define an investment opportunity.	F3 without a sub-category refer to Exploration Results which comprise data and information generated by exploration programmes and early stage geological assessments. The quantity of data available is generally not sufficient to allow any reasonable estimates of tonnage and grade to be made. Examples include discovery outcrops, single drill hole intercepts or the results of geophysical surveys.	Project evaluation is incomplete or lacks sufficient definition to establish technical and commercial feasibility.	A **'Geological study'** is an initial evaluation of economic viability. Indictors for grade, thickness and depth of the mineral deposit are usually referred to the data acquired from decades experience of mining in China. Mining costs are estimated from comparable mines so that investment opportunities can be defined. Because geological study lacks precise parameters and detailed data necessary for assessment, resources thus estimated are only of intrinsic economic interest.
G1	Detailed exploration involves the detailed three-dimensional delineation of a known deposit achieved through sampling, such as from outcrops, trenches, boreholes, shafts and tunnels. Sampling grids are closely spaced such that size, shape, structure, grade, and other relevant characteristics of the deposit are established with a high degree of accuracy. Processing tests involving bulk sampling may be required. A decision on whether to conduct a feasibility study can be made from the information provided by detailed exploration.	**Measured Mineral Resource:** 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 at both a global (deposit) and local (bench or mine production period) scale.	Quantities associated with a known deposit that can be estimated with a high level of confidence.	**Measured Mineral Resource:** involves the fact that the geological features, shape, occurrence, scale, ore quality or grade, mining technology and the continuation of the ore body are detailedly identified in the detailed exploration area on the basis of the accuracy of detailed exploration. It is of high credibility due to the sufficient data by which the quantity of the mineral resources is estimated.

G2	General Exploration involves the initial delineation of an identified deposit. Methods used include surface mapping, widely spaced sampling, trenching and drilling for preliminary evaluation of mineral quantity and quality (including mineralogical tests on laboratory scale if required), and limited interpolation based on indirect methods of investigation. The objective is to establish the main geological features of a deposit, giving a reasonable indication of continuity and providing an initial estimate of size, shape, structure and grade. The degree of accuracy should be sufficient for deciding whether a Pre-feasibility Study and detailed exploration are warranted.	**Indicated Mineral Resource** Detailed geological studies have been carried out such that a reasonable confidence exists in the resource estimate at a local (bench or mine period) scale and high confidence exists in the resource estimate at a global (deposit) scale.	Quantities associated with a known deposit that can be estimated with a reasonable level of confidence	**Indicated Mineral Resource** involves the fact that the geological features, shape, occurrence, scale, ore quality or grade, mining technology and the continuation of the ore body are generally identified in the prospecting area on the basis of the accuracy of general exploration. It is of high credibility due to the sufficient data by which the quantity of the mineral resources is estimated.
G3	Prospecting is the systematic process of searching for a mineral deposit by narrowing down areas of promising enhanced mineral potential. The methods utilized are outcrop identification, geological mapping, and indirect methods such as geophysical and geochemical studies. Limited trenching, drilling, and sampling may be carried out. The objective is to identify a deposit that will be the target for further exploration. Estimates of quantities are inferred, based on interpretation of geological, geophysical and geochemical results.	**Inferred Mineral Resource:** That part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, 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. G3 requires sufficient general geological information to provide a reasonable confidence in the resource estimate at a global (whole of mine or deposit	Quantities associated with a known deposit that can be estimated with a low level of confidence.	**Inferred Mineral Resource:** involves the geological features and distributions characteristics, grade and quality of the ore body (mine point) classified by degrees of prospecting accuracy in the prospecting area, and also includes the inferred part dependent on the basic reserves and resources of greater geological assurance. Its credibility is comparatively low due to limited information, uncertain elements, insufficient data according to which mineral resources are estimated and the fact that the continuation of the ore body (mine point) is also inferred.

G4	A Reconnaissance study identifies areas of enhanced mineral potential on a regional scale based primarily on results of regional geological studies, regional geological mapping, airborne and indirect methods, preliminary field inspection, as well as geological inference and extrapolation. The objective is to identify mineralized areas worthy of further investigation towards deposit identification. Estimates of quantities should only be made if sufficient data are available and when an analogy with known deposits of similar geological character is possible, and then only within an order of magnitude. In the case of uranium, reconnaissance studies identify speculative resources, defined as in-situ resources. This is uranium that is thought to exist, mostly on the basis of indirect evidence and geological extrapolations, in deposits discoverable with existing exploration techniques. The location of deposits envisaged in this category could generally be specified only as being somewhere within a given region or geological trend.	Based on preliminary reconnaissance to identify areas of enhanced mineral potential on a regional scale based primarily on results of regional geological studies, regional geological mapping, airborne and indirect methods, preliminary field inspection, as well as geological inference	Estimated quantities associated with a potential, but not yet confirmed deposit.	**Reconnaissance** is the result of Reconnaissance to areas with great potential of mineralization. Such reconnaissance quantity can only be estimated with sufficient data and under comparison with similar discovered deposit.

2. Short form for comparing between Chinese Standard and UNFC

	UNFC	Chinese Standard	Remark
Economic viability	Normal economic	economic	No sub-categories for economic, in Chinese standard
	Exceptional economic		
	Marginal economic	Marginal economic	
	Sub-marginal economic	Sub-marginal economic	
	Intrinsic economic	Intrinsic economic	
Feasibility study	Mining report		Formal resources and reserves report doesn't include Mining report in Chinese Standard
	Feasibility study	Feasibility study	
	Pre-feasibility study	Pre-feasibility study	
	Geological study	Geological study	
Geological assurence	Chinese Standard has the same meaning and same requirements with UNFC on every stage of exploration actives.		

3. The use of Extractable reserves

At the beginning of performing 1999 Chinese Standard, people use recovery rate as a parameter to get extractable reserves, (111), (121) and (122), from the basic reserves, (111b), (121b) and (122b). Recent years, in reserves reporting, only the basic reserves should be reported. Extractable reserves should be estimated according to the mining designs, would not be listed in the reporting.

4. The use of Marginal reserves and Sub-marginal resources

At starting, resources estimators classify the jiamb to the code begin with 2M and 2S. If the inventories can be extracted before mine closing, the code should begin with 2M; otherwise, the code should begin with 2S. In fact, all the jiamb should be considered as design lost and mining lost. In design scope, the code of jiamb would begin with 1, economic.

2M and 2S refer to the economic viability of the whole project, according to the feasibility study or prefeasibility study. 2M and 2S would not appear accompany with (111b), (121b) and (122b).

5. Codes comparing between Chinese Standard and JORC

If we combine (121b) and (122b) into probable reserves, and remove categories of 2M and 2S, Chinese Standards is similar with JORC Code and CRIRSCO Template. The difference is that Chinese Standards has numeric codes.
(111b)=proved reserves
(121b)+(122b)=probable reserves
(331)=measured resources
(332)=indicated resources
(333)=inferred resources
(334)?=reconnaissance