

Economic Commission for Europe

Committee on Sustainable Energy

Expert Group on Resource Classification

Fourth session

Geneva, 23-26 April 2013

Item 8 of the provisional agenda

Specifications for the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009

Specifications for the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009

Comments submitted during Public Consultation on Draft Specifications for UNFC-2009

I. Introduction

1. This document provides a summary of the comments submitted during the public consultation on the draft UNFC specifications documents. All interested parties were invited to review and comment on the draft Specifications for the Application of UNFC-2009 (EGRC/2012/INF.1/PC, 19 October 2012). The draft Specifications Document was accompanied by a draft Explanatory Report outlining the basis for establishing the Specifications (EGRC/2012/INF.2/PC, 19 October 2012), to which comments were also invited. The comment period opened on 22 October 2012 and closed on 22 December 2012.

2. The text of the fifteen comments submitted is provided verbatim below and in the order in which they were received.

- (a) **Commenter:** Fivos Spathopoulos
Date of Submission: 22 October 2012
Comments:

“Dear Colleagues,

Many thanks for sending me the draft document.

The draft is a very good piece of work. No doubt about it. It still, however, tries to align the UNFC with the PRMS scheme, without explaining how a 3-D scheme can be aligned to a 2-D scheme. Since the last time I communicated my thoughts, several important things happened in the mining/energy sector. The most important is that in Europe (at least) for every mining/energy project, a E.I.A. (Environmental Impact Assessment) has to be compiled and submitted to the authorities. This document must include now both strictly environmental issues, as well as "Public Acceptance" issues. This means that, even if a company has a fully developed project (i.e. Geology and Finance OK), if it fails in the E.I.A., the project dies or it is severely delayed. The E axis in UNFC caters for this eventuality, but not the PRMS. Examples abound: (i) the Cuadrilla shale-gas discovery in NW England, which cannot be developed; (ii) the shale-oil exploration in Paris Basin, which is prematurely stopped, although the geological and financial evidence is positive; (iii) the decision of the Bulgarian government a year ago to stop unconventional exploration and take back all related permits.

The draft document, in the E axis description, fails to deal with the "non-technical factors", although such issues are mandated in the original document. How are the "non-technical factors" defined and dealt

with? For the E axis, the original reads: "Socio-Economic Viability: Economic plus other relevant "market conditions", also considering commodity prices, costs, legal/fiscal framework, environmental, social and all other non-technical factors that could directly impact the viability of the project". As I have frequently said in this forum, this definition is a great addition to the process of estimating volumes globally. That is why, I expected more discussion about it.

It is over 2 years now that no procedure has been developed for "unconventional" resources, although more and more countries are "selling" them (including the EU, Australia, South Africa, Indonesia, Ukraine, Argentina, Brazil, Canada etc). The standard justification is "awaiting for CRIRSCO's input", which is very delayed. Without downplaying CRIRSCO's importance, would it be advisable to, at least, start a conversation on this matter?

I hope my comments are useful."

(b) Commenter: Rolando Y Reyes, Nuclear Research Institute, the Philippines

Date of Submission: 5 November 2012

Comments:

"Due to the sins of the past of the mining industry (environmental damage and poor concern towards host mining communities), there has been a huge leap in the anti-mining sentiments of local stakeholders, not only in the Philippines but worldwide. And while the UNFC 2009 takes into consideration as one of its fundamental criteria the economic and social viability (E), only the economic viability(ies) and nothing about the social viability(ies) is/are mentioned in the definition and supporting explanation within the categories E1, E2 and E3. What if a deposit can be codified as F1, G1 and all the market conditions are very favourable as to its economic viability but because of the strong resistance of the host community, including the surrounding communities that hampers/blocks the development of this resource, in what criteria under E (E1 or E2 or E3) will it be codified.

Perhaps, the E fundamental criteria should be economic, political and social viability. In my country, the local government can create laws that affect their communities. A classic example is a considered world class huge porphyry Cu-Au discovery whose development has been stopped due to a law passed by the local government banning open pit/block caving mining within their area. Porphyry deposits are known to be economically mined via the open pit or block caving mining methods. This is a very promising economic venture stalled by politics.

Because of scientific advancement and world market dictates allow for the economic extraction of trace amount of mineral resources as by-products, which country will report as their mineral resource(s), the buyer or the seller country of raw ore in which only the primary mineral(s) was/were bought/sold? As an example is the extraction of uranium, REE and other valuable resources (vanadium, cadmium, etc.) from phosphoric acid in the production of fertilizers. My country has very minor and poor quality of phosphate deposits, hence almost all the phosphate raw ores are imported by our fertilizer industry in the production of fertilizers. Will my country be the one to report these by-products, particularly uranium in the Red Book, in case the Red Book adopts the UNFC 2009? And what if the Red Book will not adopt the UNFC 2009?"

(c) Commenter: Rafael Sandrea, President, IPC Petroleum Consultants, Inc.

Date of Submission: 13 November 2012

Comments:

"Thanks for the opportunity to review the Draft of the EGRC Specifications Report. The document is very complete. My only suggestion is that it would be very convenient that Reserves be also broken down by Onshore, Offshore, and what is now the hottest game-changing categories of Shale Gas and Tight Oil."

(d) **Commenter:** Radoslav Vukas, Ministry of Natural Resources, Mining and Spatial Planning, Serbia

Date of Submission: 7 December 2012

Comments:

“Page 9

M. Evaluator qualifications

May be this definition:

33. Evaluators must have the appropriate level of expertise and experience in the profession.

Page 9

¹⁰ Note that "competent person" may be defined by regulation.

In my opinion, in this case, "competent person" remains at the local level, and probably cannot be recognized and accepted in the regional or the other - a higher level, which basically reduces the communication and recognition.

Page 17

May be used term

¹⁴*qualified* prepared.....

Page 19

In Serbia, a proposal to harmonize with the existing classification PERC (part of the CRIRSCO family), but has not shown a relationship and position category in the geological axis (this is a possible suggestion):

Figure III.2: Mapping of CRIRSCO Template to G Axis of UNFC-2009

13. Mineral and *Possible classification in Serbia*

			This is a possible suggestion in Serbia - in my opinion, it is very important	
Mineral reserves	Proved	G1	A	A+B
	Probable	G2	B+C ₁	C ₁
Mineral resources	Measured	G1	A	A+B
	Indicated	G2	B+C ₁	C ₁
	Inferred	G3	C ₂	C ₂
Exploration results		G4	D ₁ +D ₂	D ₁ +D ₂

(e) **Commenter:** Ivan Sandrea, Advisor to the President and CEO, Petra Energia

Date of Submission: 11 December 2012

Comments:

“Comments to Document EGRC/2012/INF.1/PC

P 13, definition of exploration project seems too vague. I think a more technical term is needed, perhaps “a project that remains in study phase and has not seen testing”.

In general, I am constantly thinking how this is going to work with the new unconventional deposits which are now a very large part of the pie but appears that we are still learning, that every company has its own classification system and is essentially a statistical play which only moves to prove when it is

drilled. Their development also changes so fast with price that it is hard to keep up. I am wondering if this requires a special section!

(f) **Commenter:** PERC
Date of Submission: 14 December 2012
Comments:

“1. Introduction

PERC is one of the national reporting organisations (NROs) which together form CRIRSCO. Whilst its contents have been discussed with other members of CRIRSCO, this submission is prepared by PERC and should not be seen as representing the views of CRIRSCO as a whole.

Within the context of solid minerals in Europe, although in general we see no problems in the specifications, there are some specific issues which in our opinion require to be addressed by appropriate editing. The area of concern is paragraphs 15 - 16 of the main text, and corresponding elements of the CRIRSCO bridging document included as Annex III.

2. Main text

(1) Paragraph 15

This currently reads:

15. UNFC-2009 offers greater granularity than is available in the CRIRSCO Template or SPE-PRMS, and the application of commodity-specific specifications of mapped systems shall not limit in any way the use of the additional granularity of UNFC-2009 (refer to the Bridging Documents in Annexes III and IV).

Proposed replacement (amendments highlighted):

15. UNFC-2009 offers greater granularity than is available in the CRIRSCO Template or SPE-PRMS and, when UNFC-2009 is used, the application of commodity-specific specifications of mapped systems shall not limit in any way the use of the additional granularity of UNFC-2009 (refer to the Bridging Documents in Annexes III and IV). However, this additional granularity must not be used in situations where it would conflict with public reporting requirements and constraints of CRIRSCO-aligned reporting standards or SPE-PRMS.

The reason for this change is to make it explicit that when the CRIRSCO standards are used for public reporting for investors, they do not allow the use of this greater granularity. In other words, the two classifications must not be 'mixed' to produce hybrid reports where these would put the report in breach of relevant disclosure rules.

(2) Paragraph 16

This currently reads:

16. The CRIRSCO Template (and the codes/standards based on it) and SPE-PRMS are independent from UNFC-2009 and may be mandatory for reporting purposes in some jurisdictions or in particular circumstances. This UNFC-2009 specifications document has no bearing whatsoever on such mandatory reporting requirements or on the independent application of these other systems/codes/standards.

Proposed replacement:

16. The CRIRSCO Template (and the codes/standards based on it) and SPE-PRMS are independent from UNFC-2009 and are designed for public reporting by companies and for financial processes. It is recognised that CRIRSCO and SPE-PRMS are, in general, the appropriate reporting systems to use for these purposes, not only in jurisdictions and circumstances where their use is already mandatory. This UNFC-2009 specifications document has no bearing whatsoever on reporting requirements for these purposes or on the independent development and application of these other systems/codes/standards.

This makes it completely clear that UNFC-2009 is inappropriate for public reporting by companies and that the appropriate standards for this purpose are those defined by CRIRSCO and SPE-PRMS. This is true even in jurisdictions or circumstances where it may not yet be mandatory to use CRIRSCO or SPE-PRMS reporting standards.

(3) Additional paragraph

We consider that there is a need for an additional paragraph to be inserted either after paragraph 16 or (more appropriately perhaps) in the Disclosure section after paragraph 19.

There is a significant potential problem which is not addressed by the Specifications document. We cannot comment on the SPE-PRMS requirements, but if a company's public reporting is done using any of the CRIRSCO codes, then under the terms of these codes, and in particular jurisdictions the financial market regulations, it is forbidden for them to produce public reports using any other reporting system or terminology.

The purpose of this prohibition is to protect the investor from publishing misleading or confusing disclosures. It does not mean that a company cannot, in confidence, supply UNFC-classified data to government agencies, of course - just that these data must not be attributable to the company in any publicly accessible reporting that may be based on the data received.

From the CRIRSCO template:

11 Public Reports dealing with Exploration Results, Mineral Resources and/or Mineral Reserves must only use the terms set out in Figure 1. [this is Figure III.1 of the EGRC document]

This does not include the extra UNFC categories, or indeed any other classification that might be invented in the development of the UNFC. If a company is required to issue public reports under a CRIRSCO standard, then they may use ONLY the CRIRSCO standard terms in ANY public reports.

Proposed wording for an additional paragraph would be:

If a company is required to disclose its exploration results, mineral resources, and mineral reserves using any of the CRIRSCO codes, then under the terms of these codes, and for the protection of investors and potential investors, it is forbidden to produce public reports using any other reporting system or terminology including UNFC-2009. This does not prevent the company from supplying UNFC-2009 classified data to government or other agencies under conditions of utmost confidentiality that would need to ensure that the public authority concerned would not deliberately or inadvertently make that data or its derivatives attributable to the company or its assets.

Such strength of wording is essential, in our opinion, to emphasise the need to avoid deliberate or inadvertent breaches of financial reporting regulations and possible confusion for investors.

3. Bridging Document (Annex III)

While we are more than happy with the text of the bridging document in general, there are two amendments which would probably be necessary, consequential upon the changes we propose in the main text:

Paragraph 3 should be amended to match paragraph 16 of the main text. Paragraph 4 should be amended to match paragraph 15 of the main text.

Dr Stephen Henley
Acting Chairman
PERC"

(g) **Commenter:** European Industrial Minerals Association (IMA-Europe)

Date of Submission: 15 December 2012

Comments:

“The Industrial Minerals Association-Europe (IMA-Europe - a short description of IMA-Europe is provided in paragraph 3) is grateful to the UNECE to open to comments the draft document "Specifications for Application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009)" and the accompanying draft Explanatory Report. On behalf of its industrial minerals (IM) producing member companies, IMA-Europe wishes to introduce the following comments:

1. General comments

There is actually no conflict of principle between CRIRSCO codes (including PERC) and the UNFC.

Not only are the two classifications compatible, but the Expert Group on Resource Classification (EGRC) have specified that CRIRSCO provides the commodity-specific definitions for solid minerals within UNFC (and similarly the SPE PRMS classification provides the commodity specific definitions for oil and gas).

PERC is the code within the CRIRSCO family of codes with the most elaborate section on the reporting on Industrial Minerals, Dimension Stone and Aggregates. The PERC Code (part of the CRIRSCO family of codes which includes JORC, NI 43 101, SAMREC and others) is the reference code for quoted mineral based companies in the European sector reporting publically its Mineral Reserves and Resources.

In addition the NEAN Code, which is the official bridge between the old Russian system and the CRIRSCO codes, has been established further strengthening the use of the CRIRSCO codes for quoted and non-quoted companies. There is also a CRIRSCO working group, led by Australians, working on establishing a similar link between the Chinese Reporting Code and the JORC Code.

The UNFC may be suited for fundamental resource mapping by geological surveys and aligned governmental institutions. However the UNFC is ONLY a classification and not a reporting system. Therefore, it does not comply with the requirements of the mining/minerals industry.

In its principle UNFC is not complicated, but there is no such concept as the 'Competent Person' signing off on the estimates published, nor underlying principles (materiality, transparency, competence) that are the basis of the CRIRSCO family of reporting standards. Therefore for corporate projects, UNFC is not an alternative to CRIRSCO. Companies use CRISCO Template such as PERC, and possibly correlate it with UNFC. In the current status, a coherent correlation with UNFC-2009 is difficult. Full alignment between CRISCO and UNFC remains a challenge and solutions for improvement should be looked at and implemented (see below recommendations, notably in 2.2).

2. Specific Comments

2.1 G-axis

On the G axis, bridging between CRIRSCO Template and UNFC-2009 is clear. One of member companies has tried to specify better the geological classes for applying the CRIRSCO Template (see attached document). UNFC is just saying that the level of confidence for G1, G2 and G3 is “high”, “middle” and “low” respectively. It is not detailed enough and gives possibilities for too much interpretation. Although the doc EGRC/2012/INF.1/PC on page 19, Figure III.2 provides some clarifications, it was better defined in the 2004 version.

2.2 E-axis

Bridging with CRISCO Template is unclear. The distinction between E1, E2 and E3 is left to “relevant commodity specific systems aligned with UNFC-2009”. This (economic) axis includes the non-technical factors: economic, but also legal, social and environmental (see p.4 of the draft of October 19).

UNFC-2009 is putting much more weight to lower categories market conditions than CRIRSCO template. It makes sense for national resource reporting, but not for IM corporate projects which are always decided after analysis of market conditions. The IM companies interest is limited to E1 and (to only a limited extend) E2 categories. The pure categorisation of the economic/marketable aspect is so important to industry that a better approach would be NOT to mix economic topics with the legal/ environmental ones.

The legal content of the E axis is critical for IM corporate projects. This is particularly true for the issue of permitting. In the case UNFC-2009 be used in country reporting, by mixing economic related factors with permitting related issues in one E-axis, will not allow the government level to distinguish between the permitted part of economic reserves, the non- permitted/non-feasible part of economic resources and the non-permitted non-economic resources. Therefore everything outside Reserves categories 1.1.1 and 1.1.2 will blur the essential economic assessment.

Regarding the environmental factor which was added in the draft of October 19, it is more a technical factor and it should be included on the F axis. As an example, improvement in blasting methods and control of the vibration (respect of the norms) can make possible to recover resources closer to neighbouring houses. It is a technical feasibility. The same is true with the mitigation of the impact of dewatering on water resources. Technical solutions exist also to reduce the impact of mining activities on the landscape.

It must be noted that for some of our member companies already all legal, environmental and permitting related factors are included within "Feasibility" (F-axis).

We strongly recommend that **all factors related to environment/legal be included in the F-axis**, this will facilitate the bridge with CRIRSCO.

In addition, E 1.2 category needs to be moved to E 2: "Extraction/sale is not economic based on market conditions unless subsidised". In summary the classification will look like:

Reserves Proved: 1;1.1;1 + 1;1.2;1 excluding 1;1.3;1* Reserves Probable : 1;1.1;2 + 1;1.2;2 excluding 1;1.3;2

Resources Measured: 1;2.1;1 + 1;2.2;1 + 1;1.3;1 + 2;1.3;1** Reserves Probable : 1;2.1;2 + 1;2.2;2 + 1;1.3;2 + 2;1.3;2

Reserves Inferred: 1;2.1;3 + 1;2.2;3

* 1;1.3;1 permits expected but not granted

** 2;1.3;1 industry assessment necessary to assess short-term potential economic status. We realise that some companies may consider 1;1.3;1 within Reserves.

2.3 F-axis

The F 2.3 definitions are unclear. Resources with "limited potential" should be moved to F3.

2.4 Competent person

With the JORC classification (followed by the CRIRSCO Template), a single competent person can evaluate the resources/reserves according to the template.

Within UNFC the concept of an evaluator is missing, therefore to fulfil market conditions an additional evaluator should be added.

It is recommended to ask for validation of the reserves/resources reports by company CEO or area production managers.

2.5 Reference point

Page 7 (19 October draft): The meaning of this reference point, which is a geographical location for the resource estimate, is unclear. There is a need to improve the text clarity.

2.6 Reserves/resources estimate

Probably in relation with the general problem that UNFC is not a “reporting system” with obliged competent person accountability, there is nothing regarding the technical constraints used for the estimate (slope of the benches, final quarry floor...), the “calculation” method and software used, etc. This information should be given with the estimated figures.

2.7 Correlation reserves/resources of the CRIRSCO Template and UNFC-2009 classes

Reserves and Resources are corresponding to classes 1.1.1, 1.1.2, 1.2.1, 1.2.2. In the CRIRSCO Template one may sometimes consider as Reserves/Resources 2.1.1, 2.2.1, 2.1.2 and 2.2.2. We suggest including in these categories a not yet permitted deposit (meeting G and F criteria) which already received the proper land allocation.

3. IMA-Europe in brief

Industrial Minerals Association - Europe (IMA-Europe) is the umbrella association which represents the European producers/importers of industrial minerals, notably: andalusite, bentonite, borates, calcium carbonate, dolomite, diatomite, feldspar, kaolin, lime, mica, plastic clays, sepiolite, silica, talc and vermiculite. IMA-Europe companies are located in 28 European countries (i.e. 23 EU Member States + Croatia, Norway, Switzerland, Turkey and Ukraine), representing 500 companies (685 mines & quarries, 750 plants) and more than 42.500 employees in processing sites and headquarters. IMA-Europe is one of the industry stakeholders of DG Enterprise Raw Materials Supply Group, candidate to the European Innovation Partnership on Raw Materials and a founding member of SPIRE the Sustainable Process Industries through Resource & Energy Efficiency.”

(h) **Commenter:** Norwegian Petroleum Directorate (NPD)

Date of Submission: 20 December 2012

Comments:

“The NPD welcomes the specifications for application of UNFC-2009. We appreciate that the document allows for other classification systems to be mapped to and aligned with UNFC-2009 in the future, so that these can be used as a basis for UNFC-2009, when the Bridging Document has been endorsed by the Expert Group.

The NPD has the ambition to harmonize (align) the NPD classification system by preparing a mapping document (comparing definitions and specifications) for investigating which adjustments to our definitions and specifications we will need to do, in order to get the UNFC-Expert Group's endorsement of our proposed Bridging Document.

One reason for not mapping our Norwegian resources to the UNFC by first mapping it to SPE-PRMS, is that this will result in a loss of the fine granularity of both the Norwegian system and the UNFC.

The NPD has separate categories for increased oil recovery projects (where investments are planned to increase the recovery factor for a field). In the resource management activities that the NPD carries out, the portfolio of such projects must be traced over time. This should also be communicated to others by defining subclasses in UNFC.

Comments to the SPE-PRMS Bridging Document (Annex IV)

The PRMS-Bridging Document (Fig IV.2) indicates that the "On Production" recoverable reserves may also include extractable quantities that will not be available for sale E 3.1, F1.1. It is our understanding that this is incorrect according to the SPE-PRMS Specification (3.2.1, third section) and this also applies to "Approved for Development" and "Justified for Development".

The SPE-PRMS maturity classes shown in the Bridging Document Fig IV.2 show that projects categorized as contingent resources are split into 4 categories. This is not in accordance with the SPE-PRMS document of the approved system, but a sub-classification which is not mandatory but may be chosen (Application document page 20). As splitting into 4 categories is not required, the mapping to

either the numeric key 11 or 5 cannot always be done. This will then make the alignment to E2 or E3.2 impossible without any further guidance being given, which should be provided in the bridging document. Projects in the class "Development unqualified or on hold" might be aligned to either E2 or E3.2.

Other comments to the bridging document:

The detail (or lack of detail) in already approved Bridging Documents indicates the level of accuracy in future mapping documents and future bridging documents to be endorsed for alternative direct applications to UNFC.

As commented to the STF in June 2012, the NPD expected that the Bridging Document for the SPE-PRMS clarified which are the mandatory (minimum) requirements of SPE-PRMS that a project classification has to comply with in order to be accepted as UNFC. The current SPE-PRMS Application document, which is sometimes referred to, is not suited for such clarification, as it is a mixture of requirements, guidelines and a tutorial for estimation techniques and classification. The consequence of the fact that the proposed bridging document does not clarify which requirements are mandatory, is that it makes it unclear which minimum requirements there are to classify a project in a SPE-PRMS class for thereafter to align it to a UNFC class by using the Fig IV.2 matrix. A consequence of this is that it also means that other bridging documents may not always have to be very specific when it comes to which requirements are mandatory.

The Norwegian pilot study presentation in Geneva in May 2012 showed that we are fully able both to map the aggregated Norwegian Resource Accounts from our NPD-system into the UNFC, and that we are able to classify all individual projects directly into the UNFC based on the approved Definitions, Supporting Explanations and relevant SPE-PRMS specifications that we consider mandatory.

Mapping the aggregated volumes to UNFC, however, will only be meaningful to us if we map it to UNFC sub-classes that we established to serve this purpose (which is fully acceptable according to the Official approved text of the UNFC-2009, chapter 5), without restricting the mapping to the "example classes" in fig 2 and fig 3 in the official approved text. We definitely appreciate that the specification document does not reduce the ability to utilize other UNFC-classes than the ones in fig 2 and 3 (which is similar to the SPE-PRMS).

Our effort in testing a direct classification of all individual Norwegian resource projects tells us that the UNFC may be very useful for government purposes, both in international comparison with other nations' resource bases but even more so in performing resource management functions. This potential, however, is significantly reduced, if the utilization of the system requires to first classify the projects to SPE-PRMS. SPE-PRMS lacks the possibility of considering the socio-economic status of project maturation, as the UNFC so eminently allows, as described in the official UNFC-2009."

(i) **Commenter:** Michael FORREST FIMMM, FAusIMM, C Geol, Mining Research

Date of Submission: 20 December 2012

Comments:

"Comments on the draft document: EGRC/2012/INF.1/PC

I have little to add and regard the present draft as a much improved version over the previous draft in bringing together the resource / reserve into the CRIRSCO family of codes. There will always be differences between the views of the Stock Exchanges around the world to prevent a single code eg NI43-101 from becoming the international reporting standard. I also appreciate although it is difficult to combine oil / gas resources with solid minerals especially in the amount that is recoverable, the wide ranging low high estimates goes some way to accommodate the differences.

The mining industry has gone a long way to meet international environmental standards. Investors will not be interested in a project without environmental approvals in place. However, most companies go further with social programmes that give them the 'licence to operate' locally and nationally. Part of this

will be employing nationals and ensuring that a skilled work force and infrastructure is left behind after mine closure. These programmes to support 'licence to operate' (as opposed to government licences) can be comprehensive in developing countries with clean water supply, accommodation blocks, support for schools etc. Even junior companies provide these for locals.

Reserves and Resources

CRIRSCO makes a clear distinction between reserves and resources define what makes the difference. It is easier to define a solid resource, oil and gas estimates are more difficult to quantify. Although the solid hydrocarbon resources are definable using mineral terms such as CRIRSCO, I don't think it will be possible to merge the two without qualification, which is achievable.

The other point mentioned is the instance of a date for resource estimates. It is essential for resource estimates have a component of time for price to be built into them (the F factors in the draft). The measured, indicated and inferred resources indicate varying degrees of geological certainty. Reserves add an economic component, as in Figure 111 p 17, it is an important distinction. Metal and hydrocarbon demand price escalation has been responsible for falling mined grades in precious and base metal mines (oil and gas don't have this problem, but they are reflected in oil shales, coal grades). Without this differentiation it is difficult for investors to make an informed choice.

This price component also reflects on what is a company or national resource/reserve. Taking it to the extreme all elemental values within the earth's crust could be considered as a resource but cost of production would prohibit mining for recycling / recovery may be cheaper. Although we may pass peak oil or peak copper production (ie the maximum annual global amount produced) it is unlikely that we will run out of commodities, just the price will be too much and alternatives will be found. This makes a 'national resource' a time related value. Furthermore estimating a national resource, as the draft rightly says, depends upon the data from company exploration results. Most companies only develop resources as they need them. It would be economically pointless to convert say 20 years of inferred resources with an extensive and expensive drilling programme to measured reserves if you already have 10 years of measured reserves at current production rates. Company values are always going to understate what is in the ground at any one time.

The USGS is one of the few institutions that attempts to put a value of resources. Below is the one from the 2012 copper mineral commodity summary "A 1998 USGS assessment estimated 550 million tons of copper contained in identified and undiscovered resources in the United States. Subsequent USGS reports estimated 1.3 billion tons and 196 million tons of copper in the Andes Mountains of South America and in Mexico, respectively, contained in identified, mined, and undiscovered resources. A preliminary assessment indicates that global land-based resources exceed 3 billion tons. Deep-sea nodules and submarine massive sulfides are unconventional copper resources."

As you will see national resources will always be an estimate, and a changing one at that."

(j) **Commenter:** Luis Lopez, National Atomic Energy Commission, Argentina

Date of Submission: 21 December 2012

Comments:

"In spite of the fact that our experience in the use of the UNFC is very recent, we find several advantages and expediciencies of implementing this system to classify nuclear raw materials in the same manner as other energy resources like oil and gas.

In Argentina, UNFC approaches on thorium and uranium resources have been made since October 2012 and results have been disseminated in different presentations and papers prepared for IAEA, UNECE and CYTED technical meetings, lecturing at Buenos Aires University, and conferences at the Argentinean Association of Nuclear Technology.

Over the course of many years, we have been using the Red Book classification, where geological knowledge, economic aspects and, in some way, technical feasibility, are considered. The contribution of

the assessment of social aspects, considered in the UNFC, is highly relevant taking into account that the main limitations to come back to the domestic uranium production in Argentina are related to those issues. To this respect, it can be considered that approximately 50 % of the uranium identified resources are located in a province (Mendoza), where a local law prohibits both open pit mining and the use of sulfuric acid.

As a general consideration, taking into account that the cost of raw material is subordinated to the total cost of nuclear energy, the dimension of social aspects acquire an even greater importance regarding the economy of a uranium mining project. Therefore, factor “E” should be seen rather as “S”.”

(k) Commenter: Geoscience Australia
Date of Submission: 21 December 2012
Comments:

“Paragraphs 15, 16 of the main text and paragraph 1 of Annex V:

- The main objective of Geoscience Australia’s interest in UNFC-2009 is its potential as a communication tool (a ‘Rosetta stone’) for national scale comparison of resources as reported by different countries under their individual classification schemes provided that such resource categories are mapped to a common international base such as the UNFC-2009. However, the full use of UNFC-2009’s enhanced granularity in regard to extra resource categories will ultimately be limited by the amount of detail contained in reports published by company.

- From Geoscience Australia’s experience:

Companies are only permitted to report resources which are reasonably expected to be viable in the foreseeable future so that effectively excludes ‘Non-commercial projects’ as defined under UNFC-2009. In regard to resource sub-categories within ‘Commercial Projects’ and ‘Potentially Commercial Projects’ – a lot of the relevant criteria needed to assign mineral resources to different sub-categories are commercial-inconfidence or not published for other reasons, so effectively the companies who own and operate the deposits/mines in question are the only ones with the required information to place the mineral resources in the relevant categories.

Paragraph 30 of the main text:

- The description of in situ appears confusing since F2 quantities are generally reported as in situ under the CRIRSCO/JORC codes. One example of recoverable resources being reported are the uranium resources published in the ‘Red Book’ as per NEA/IAEA classification.

Paragraph 38 of the main text:

- Sub-categories F3.1, F3.2 and F3.3 would prove to be very useful but are not shown in Figure 3 of UNFC-2009.

Annex III, Paragraph 16, bottom part of Figure III.3:

- ‘On production’ sub-class is confined to E1.1:F1.1 and E1.2:F1.2 which are correlated with ‘Mineral Reserve’. There are a few uranium in situ leach operations and a few gold mines for which it is considered not possible to establish a JORC/CRIRSCO compliant ‘Mineral Reserve’ ie the operations are based on ‘Measured and Indicated Resources’. Should some additional guidance be provided for such cases?

Leesa Carson
 Yanis Mieztis
 21 December 2012”

(I) **Commenter:** Harikrishnan Tulsidas, Nuclear Technology Specialist, International Atomic Energy Agency

Date of submission: 21 December 2012

Comments:

“UNFC-2009 specifications and guidelines (Annex V) will greatly help in leveraging its application by various stakeholders. Specification Task Force (Phase One and Two) are complimented for the excellent drafts made available for public comments.

My comments below are specifically in reference to solid minerals.

I. Introduction

Four areas of applications mentioned in the UNFC-2009 [ECE/ENERGY/85] are:

1. International Energy and Mineral Studies
2. Government Resource Management
3. Industry Business Process
4. Financial Reporting

Generic and commodity specifications should be compatible will all the applications above and should aid stakeholders in each of the four specific areas, without any conflict of interests. Commodity specifications indented for use for a particular application should not constrain other applications in any manner.

CRIRSCO specifications for solid minerals are in alignment with the requirements of Industry Business Process and perhaps also for Financial Reporting. The other two application areas - International Energy and Mineral Studies and Government Resource Management - may require consideration of material not included in the CRIRSCO template. CRIRSCO specifications are therefore commodity and application oriented.

While, there should be alignment of UNFC-2009 and CRIRSCO to the specific portion of the materials that are included in the CRIRSCO template, solid mineral specifications are required in UNFC-2009 for the material outside the scope of CRIRSCO. Apart from International Energy and Mineral Studies and Government Resource Management applications, commodity specifications for material outside the scope of CRIRSCO will be useful for companies in internal resources management. Such solid mineral specifications will ensure clear and consistent application of UNFC-2009 by all stakeholders.

II. Environmental and social considerations

Category 'E' is defined as economic and social viability. UNFC-2009 descriptions can be apparently viewed as relegating lesser importance to social issues, especially 'social licensing'. Social licensing is based on beliefs, perceptions and opinions held by local community and other stakeholders. Social license is intangible as efforts to measure beliefs and perceptions are still in its infancy.

Description of the E axis could be attempted with the following preliminary mapping to social license progression:

E1 - Social approval and trust

E2 - Social acceptance and tolerance

E3 - Rejection or No Social License

III Commodity-specific specifications and the relationship with other resource classification system

UNFC-2009 has applications in four specific areas as mentioned above in Section I. Same commodities could be treated differently in the four applications. Hence, CRIRSCO specifications should not be

commodity specific, but commodity and application specific. This will ensure that specification of an aligned system is for one or more specific application(s) and will not in any manner prejudice the use of UNFC-2009 for that particular commodity in other applications. It should be made clear in specifications that while using CRIRSCO, it is basically intended for Corporate business process.

Specification for solid minerals for reporting "Exploration Results" vary significantly for different applications. Resource estimates of "Undiscovered Resources" are usually made in applications involving International Energy and Mineral Studies and Government Resource Management. Such estimates are also possible for internal company resources management. It should be clarified in the UNFC-2009 generic specifications that CRIRSCO specifications are not applicable for applications other than for Company Public Reporting.

IV National resource reporting

For International Energy and Mineral Studies and Government Resource Management, 'Mineral Reserves and 'Mineral Resources' may be aggregated for a development project. A Commercial Project - On Production may have 'Mineral Reserves and 'Mineral Resources'. For International Energy and Mineral Studies and Government Resource Management the project will be classified as Commercial Project - On Production if guidelines of Annex V of the UNFC-2009 Specifications are preferably satisfied.

In addition to aggregation of reported or published corporate estimates, national reporting can in some cases include current and historical non-CRIRSCO compliant resources. In this case the reporting organization can convert all the CRIRSCO and non-CRIRSCO resources to UNFC-2009 using an appropriate methodology and aggregate them.

VI Generic specifications

B. Bridging document

Bridging document in some cases may be relevant only for specific commodity and application(s) as commented in Sec III. If for example UNFC-2009 is used directly for national reporting, an appropriate methodology can be used confirming to UNFC-2009 description, specifications and guidelines.

C. Effective date

Effective date is important for all the four applications of UNFC-2009. Use of effective date will be useful to discriminate current and historical estimates, which are sometimes considered in national reporting and International Energy Studies.

E. Reference point

Reference point may be different for some commodities in current and historical reports. Some difference can also crop up when conventional and unconventional resources of the same commodity are reported. For consistency of application of UNFC-2009, Reference Point has to be provided.

M. Evaluator qualifications

For certain applications, for example National resource reporting, the evaluation is attributed to the organization, which may have deferent criteria for evaluator qualifications, hence the requirement of a 'Competent person' as in CRIRSCO may not applicable.

R. Classification of quantities associated with Exploration Projects

Labels are suggested for the three sub-classes:

F3.1 - Prospective resources

F3.2 - Exploration resources

F3.3 - Potential regional resources

Annex III - Bridging document between the CRIRSCO Template and UNFC-2009

Suggestion to include:

6. Use of CRIRSCO specifications is primarily intended for corporate business process, and this will not limit in any way the use of UNFC-2009 for other applications.

Suggestion to add:

7. Specifications may not be applicable as such for material beyond the classes explicitly defined in the Template.

10. In UNFC-2009 all mineral resources are potentially recoverable. Hence while transferring CRIRSCO "Mineral Resources", which are in situ, to "Potentially Commercial Projects" appropriate deductions of mining and processing/recovery losses should be applied.

Annex V - Guidelines on the use of project maturity to sub-classify projects

6. On Production - This sub-class can also include mining projects which are closed down (for example due to market conditions), but satisfy all conditions to be readily brought back into operation. “

(m) Commenter: Repsol S.A.

Date of submission: 21 December 2012

Comments:

“Repsol, SA, is pleased to provide comments to the Commission on the draft document "Specifications for Application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009)" and the accompanying draft Explanatory Report as are both available on the [UNECE website](#) for public comment.

As we all know in our industry, the classification and reporting of oil and gas reserves and resources in conjunction with financial information, is of paramount importance to our companies, investor community and other users of such information acting in the global economic. Repsol, SA, acknowledges the Commission for their effort and initiative in bringing this proposal. We trust this proposal is a major step toward a unified set of standards guidelines for the classification of main sources of fossil energy and other commodities so much needed in our today's world. The work carried out by the group of expert is very comprehensive and represents a fine piece of work.

In response to the proposal, our comments and remarks encompass general aspects related with the overall philosophy of consistency and comparability of the classification requirement as indicated by the proposal; other more related with specific key technical aspect.

"Extraction Suspended" or "Stop Being Economic"

It has been observed that both the UNFC-2009 and SPE-PRMS 2007 provide for the classification and categorization of resources on increasing chronological basis, i.e., from exploration to production commissioning, passing through different development stages, all contingent to a number of successful geologic events and business investment decisions. In any case these two resources classification systems include the status of a resource whose production should be suspended for a long time, or even indefinitely, due to various contingencies, or where production is no longer economic, to the point that all these cases compel downgrade resources associated with this production. Resources for an asset that comes into this situation should go to a sub-class of contingent resources whose definition is not clearly defined in today SPE-PRMS 2007 or UNFC-2009 systems.

This observation might call for a new, name like (Contingent Resources) "Extraction Suspended or Stop being Economic" (in reverse direction of commerciality) as opposite to the current definitions of sub-classes Development On-hold, Development Unclassified, or Development Not Viable that may not apply because, although part of the asset can be still pending to develop, the difference with other cases is that an asset like this had already reached and been in the "On Production" status.

Contingencies that could give rise to such situation would be for example:

- Extraction stops for legal and or regulatory provisions
- Extraction is stopped by force majeure
- Operation is no longer economic (OPEX > Revenues)

In this regard, it has been noted that under the current classification framework UNFC-2009 these cases could be categorized by using and expanding the current sub-categories boxes. Indeed, it is believed that G1, G2, and G3 (geological knowledge) can be combined with E and F axis as follows:

E2.2 (currently inexistent) can be created and combined with F2.2 to classify "Extraction Suspended"

E2.3 (currently inexistent) can be created and combined with F2.1 to classify "Stop Being Economic"

Therefore, we propose to create E2 sub-categories E2.1, E2.2 y E2.3 as follows:

Proposed new E2 Sub-categories:

E2.1: Extraction and sale is expected to become economically viable in the foreseeable future; further appraisal/evaluation activities are on hold pending the removal of significant contingencies external to the project. Development may be subject to a significant time delay.

E2.2 (suitable for former commercial on-production projects): Extraction and sale have been suspended due to legal or regulatory actions, "force majeure", or economic reasons and there are no evidences that extraction and sale will be resumed in a reasonable period of time. Moreover, a change in circumstances, such that there is no longer a reasonable expectation that a critical contingency can be removed in the foreseeable future, for example, could lead to downgrade the classification of the project

E2.3 (suitable for former commercial on-production projects): Extraction and sale have stop being economic but the entity continues the extraction despite economic constraints. Extracted volumes shall be booked in such a way that remaining quantities as of the effective date shall state 0, i.e., production minus on production quantities of the period equals 0.

References

Established E2 category (social and economic conditions)

Definition: Extraction and sale is expected to become economically viable in the foreseeable future.^d

Supporting Explanation: Extraction and sale has not yet been confirmed to be economic but, on the basis of realistic assumptions of future market conditions, there are reasonable prospects for economic extraction and sale in the foreseeable future.

d The phrase "economically viable" encompasses economic (in the narrow sense) plus other relevant "market conditions", and includes consideration of prices, costs, legal/fiscal framework, environmental, social and all other non-technical factors that could directly impact the viability of a development project.

Established F2 category (maturity of studies and commitments)

Definition Feasibility of extraction by a defined development project or mining operation is subject to further evaluation.

Supporting Explanation: Preliminary studies demonstrate the existence of a deposit in such form, quality and quantity that the feasibility of extraction by a defined (at least in broad terms) development project or mining operation can be evaluated. Further data acquisition and/or studies may be required to confirm the feasibility of extraction.

Sub-categories

F2.1: Project activities are ongoing to justify development in the foreseeable future.

F2.2: Project activities are on hold and/or where justification as a commercial development may be subject to significant delay.

F2.3: There are no current plans to develop or to acquire additional data at the time due to limited potential.

Economic limit

The UN Framework as well as other classification framework for reserves and resources, define the term "Economically Viable" too wide open, which might undermine the base oriented philosophy of the UN framework. It is a concept very often stated to define reserves and resources categories. However, the UN and, as mentioned, other regulators or classifications frameworks, do not clearly define its meaning and scope. We believe this is a pending issue regulators must come across in order to clarify and set market standards. The SPE has defined "Economic Limit", which is commonly stated and used across the Oil and Gas industry. However, its definition lacks of detailed instructions and leaves aspects to interpretation. We believe that a more narrow base definition would enhance the usefulness of the UN Framework.

CiO - Consumed in Operations issues

In Annex IV of "Specification for Applications of the UN Framework", "bridging document between SPE-PRMS and UNFC-2009", paragraph 21 and 22 "lease fuel" is mentioned. However, even though a requirement to report those volumes separately is suggested we believe the framework should also require that in those cases fuel is considered as reserves, that situations must be clearly represented in operating expenditures figures.

Finally, Repsol, S.A., appreciate the Commission's effort to revise the current disclosed framework and for providing us with this opportunity for comments. We remain open to provide further details at your convenience.

Respectfully submitted

Aquiles Rattia Regalado.”

(n) **Commenter:** State Commission of Ukraine on Mineral Resources

Date of submission: 21 December 2012

Comments:

“The State Commission of Ukraine on Mineral Resources has thoughtfully studied the Specifications for the application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources, which were prepared by the Specifications Task Force and considers them as the next significant step in harmonization between UNFC-2009, the CRIRSCO Template and SPE-PRMS classification.

Development of Bridging documents between SPE-PRMS and UNFC-2009 on the one hand and between the CRIRSCO Template UNFC-2009 on the other hand creates the basis for these classifications alignment with all other national classification systems that have similar principles and include the classification of mineral reserves and resources.

The State Commission of Ukraine on Mineral Resources approves all the elaborated Specifications for the application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources without remarks.

G.I. Rudko, Chairman of State Commission of Ukraine on Mineral Resources

V.I. Lovyniukov, Head of the Department of Ore & Combustible Mineral Resources”

(o) **Commenter:** Society of Petroleum Engineers

Date of submission: 22 December 2012

Comments:

“The Society of Petroleum Engineers (SPE) is pleased to see the progress of the UNFC-2009 over the past several years. The SPE has been formally involved since 2006, when a Memorandum of Understanding (MOU) was put in place between the SPE and the United Nations Economic Commission for Europe (UNECE). The UNECE and SPE, via the MOU, mutually agreed that the SPE would be responsible for the development of Specifications and Guidelines for petroleum. The recognized goal of the SPE in entering into the MOU with the UNECE is to promote and facilitate in-depth understanding of its reserves and resource definitions and their universal adoption by the oil, gas, and related industries; international financial organizations; governments; regulatory agencies and reporting bodies.

The SPE, via the SPE Oil and Gas Reserves Committee (OGRC), has delivered its Specification and Guidelines for the application of the UNFC, including reserves and resources definitions, via the issuance of the “Petroleum Resources Management System” (PRMS) in 2007. The PRMS is also sponsored by the World Petroleum Council (WPC), the American Association of Petroleum Geologists (AAPG) and the Society of Petroleum Evaluation Engineers (SPEE) and subsequently endorsed by the Society of Exploration Geophysicists (SEG). The SPE and these other organizations subsequently issued additional guidance in 2011 via the “Guidelines for Application of the Petroleum Resources Management System”. Both of these documents are provided to the UNECE to be the technical specifications for petroleum that underpin the generic specifications that are contained in the UNFC-2009.

The SPE OGRC currently contributes two of its members to the Bureau and the Specifications Task Force of the UNECE Expert Group on Resource Classification (EGRC).

The SPE is providing the following comments on the draft document entitled “Draft Specifications for Application of UNFC-2009” (EGRC/2012/INF.1/PC) during this public comment period to allow transparency regarding the areas of concern that the SPE recommends for consideration.

The Specifications Task Force-2 (STF-2) has reached general consensus on the majority of points, which is a reflection of the similarity of the needs of each of the stakeholders and various commodity groups. However, as noted in the “Cover Letter from Chairman of Expert Group and Director, UNECE Sustainable Energy Division”, there is presently a lack of consensus on certain key areas. The synergistic relationship between the generic specifications of the UNFC-2009 and the commodity specific specifications provided by the PRMS for petroleum must be clearly understood. Without a full appreciation of this linkage, the general commenter may recommend that several key elements that are addressed within the PRMS to be brought forward into the generic specifications.

The areas on which the SPE is providing comment below are all contained within the document EGRC/2012/INF.1/PC:

1. Annex V: Of primary concern is the inclusion of Annex V within the document. The SPE believes that the inclusion of this section dealing with project maturity classes is a significant duplication of definitions that are contained within the PRMS, but with selective revisions that in some cases change the intent of the original PRMS Table 1.

Additionally, any other system that is mapped to the UNFC-2009 in the future may have different sub-classification that will further complicate applicability.

While the SPE is not responding with regard to solid minerals, it is noted that the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) does not use such classes and thus is only applicable to petroleum.

The UNFC-2009 is intended to provide a set of generic specification with the PRMS and CRIRSCO Template providing the detailed specifications under the UNFC-2009 (that is the reason why there have been agreements in place between the UN and the SPE and CRIRSCO for several years). To avoid confusion for the users of UNFC-2009 a bridging document to the underlying system (PRMS) is required.

Such a bridging document to the PRMS is being prepared, but has yet to be approved, therefore any use of the UNFC-2009 for petroleum is presently questionable.

In summary, the SPE recommends the deletion of the Annex V. This recommendation supports the principles of the UNFC-2009 providing the general specifications together with the underlying technical specification of the PRMS to effectively allow for the UNFC-2009 to operate for petroleum.

The more elements from the detailed specifications (PRMS) that are selectively brought into the UNFC-2009 will confuse users on the application of the UNFC-2009. It must be clear that the UNFC-2009 cannot be used as stand alone classification system for either petroleum or minerals, but must be linked via the bridging document with an underlying technical specification system i.e., PRMS or the CRIRSCO Template for use.

2. Section IV: National resource reporting – SPE has concern with the following statement: “regional or national inventory estimates based on UNFC-2009 shall be derived using an appropriate methodology whereby the estimates can be considered to be reasonably comparable, at an aggregate reporting level, to estimates that would have been derived through a detailed project-by-project evaluation had such information been available”. The SPE supports a comparative outcome basis, but has concern that such evaluations can lead to significantly differing results based on the data available and methodology applied. Stating that the results of the approach will be “reasonably comparable” to a detailed project assessment is not a conclusion that is supported by the SPE.

The SPE recommends that for national resource evaluation the appropriate classifications are derived without providing such statement that the outcome will be “reasonably comparable”.

3. Section VI: Generic specifications: Duplication with the underlying technical specifications in the PRMS is noted in select areas that will cause confusion on the applicability of the UNFC-2009 and also the understanding of the true nature of the link with the underlying technical specification.

The duplication is found in the following:

C. Effective date

F. Reference Point

The SPE recommends the removal of both generic specifications proposed for the application of the UNFC-2009 to avoid duplication with PRMS.

The SPE appreciates the opportunity to provide public comment on the draft specifications and looks forward to a achieving a consensus agreement on the above text proposals.

Sincerely,

Daniel DiLuzio
SPE OGRC Member
Member of Strategic Task Force-2 of EGRC

Rawdon Seager
SPE OGRC Chairman
Member of Bureau of EGRC”
