

Outcome of the Seminar on Application of the UNFC to OPEC Member Countries

By

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Introduction

The issue of classification and harmonization of definitions of reserves of energy resources has always been of high interest to the OPEC Secretariat and to its Member Countries.

In this regard, the current Seminar is, for the Secretariat, a continuation of a process in which OPEC has been involved for quite sometime and in which context the OPEC Secretariat had hosted a meeting with the representatives of the Society of Petroleum Engineers (SPE) and World Petroleum Congress (WPC) on Petroleum Reserves Definitions in August 1997.

The main point of discussion of the above-mentioned meeting was to seek the acceptability of OPEC Member Countries and to get their comments on the definitions, presented by the representatives of these organizations, which were grouped into three main categories, namely, “proved reserves”, “probable reserves” and “possible reserves”. Representatives of the OPEC Secretariat discussed the proposals and took note of the fact that most of the suggested definitions were in line with their definitions in spite of which some pertinent comments were made and conveyed to their respective countries for further consideration and comments. As a result of this cooperation, most of the OPEC Member Countries are currently reporting data on reserves based on these SPE/WEC definitions.

However, due to the constant evolution in our industry, the world economy and the market, we understand that the definitions provided during that time cannot be considered sufficient. We need to respond to the new challenges and update the relevant definitions and terminologies to describe the level of reserves more efficiently. In this regard, the current initiative of the UNECE on establishing an International United Nations Framework Classification (UNFC) of energy reserves/resources for more comprehensive explanation could be considered as a logical consequence in the upgrading of the old system of classification which is for all purposes considered to be outdated. The proposed system of classification is currently being implemented worldwide. For example China, India, Iran and Indonesia, among others, have adopted it earlier for their coal reserves. Therefore, we are of the opinion that special attention has to be paid to this new system. We are also of the opinion that more effort should be put in this matter, since the UNFC is more elaborate and comprehensive as it applies not only to petroleum but also to all energy commodities.

It is in this spirit that the OPEC Secretariat hosted a one day Seminar offered by the UNECE to extend the implementation of the UNFC to OPEC Member Countries. The purpose of the Seminar was to enhance OPEC Member Countries' awareness of the framework and to see how it could be of service to them. This is the second such Seminar organized by the UNECE aiming to gather a broad range of inputs, especially from producer nations, prior to its finalization.

The aim of this paper is to provide readers with the main outcome of this Seminar. In this regard, reference will be made to presentations which are listed at the end concerning topics tackled during the Seminar and to some other existing publications related to the subject. References are ordered alphabetically and each of them is given an order number put in square bracket. These presentations are available on UNECE website www.unece.org. Background papers of these presentations have been published partially in various energy reviews.

The Seminar included two main sessions structured as follows. During the first session, after the official opening addresses, an introduction to the Seminar reflecting OPEC views on the issue of Harmonization of reserves/resources terminology was given followed by an overview of the steps taken by UNECE on the matter in order to brief delegates from OPEC Member Countries and the Secretariat on the status of the initiative, an introduction to the UNFC and a presentation on its principles. As the UNFC is applicable to all energy commodities as well, this presentation was combined with its application to coal. Following this presentation, a proposal of the UNFC for petroleum was also presented. Since the UNFC was developed in parallel with SPE/WPC/AAPG systems which are basically compatible, complementary and have the same objectives, a presentation was given on the incorporation of this system to the UNFC followed by the presentation on the application of the UNFC to Uranium was also given.

The second session focused on presentations related to the objectives of the application of the UNFC as a tool for *strategic resource management* (governments), *business process management* (companies) and *financial reporting* (owners/investors). And finally, since the UNFC system had been initiated to provide the World Energy Council (WEC) a periodical survey with reliable data on reserves, a presentation on the reconciliation of the UNFC and WEC terminology was held.

The UNFC is at the end of its one-year trial program and the organizers, therefore, are seeking to get the maximum of views and remarks from major producers to be incorporated in the new system before its finalization. In this regard, the conclusion of the Seminar focused on discussions aiming to establish further steps and actions to be taken involving OPEC Member Countries.

Historical background and status of the initiative

Heiberg S. [6] presented the development of the UNFC on Energy Resources/Reserves and gave an update on its current status. The UNECE Committee on Sustainable Energy decided to establish the Ad Hoc Group in November 2001 after considering the output of the UN Task Force on the UNFC. The purpose of the UNFC was to translate existing commodity classifications and definitions to the UNFC and

thereby achieve a harmonization between the energy commodities coal, petroleum (oil and gas) and uranium, and between these commodities and other mineral commodities.

The Ad-Hoc Group was formed at its first session on the 12th and 13th of June last year. Its **bureau** was also elected. Subgroups were formed for coal, petroleum and uranium. The Petroleum Group was charged with harmonizing the petroleum classification issued jointly by the Society of Petroleum Engineers (SPE), World Petroleum Congress (WPC) and The American Association of Petroleum Geologists (AAPG) with other classifications by use of the UNFC.

A workshop was arranged in Tyumen, Siberia on the 9th and 10th of September to examine issues related to a possible reformation of the Russian petroleum classification. The Petroleum Group met in Stavanger, Norway on the 23rd and 24th of September immediately preceding an open meeting of the SPE in the same premises. A report on the UNFC was given in public and the relevant issues discussed. The Uranium Group met in Beijing, China on the 24th and 25th of September with representatives of all major uranium producing countries (with very few exceptions). The Task Force had completed the work of the coal group prior to the establishment of the Ad-Hoc Group. The role of the coal group has been to monitor the activities in the other groups.

The Ad-Hoc Group reviewed, at its meeting in November last year, the efforts made and reported them to the Committee on Sustainable Energy Development. The Committee adopted the report, strengthened the conclusions and requested the Ad-Hoc Group to proceed actively. Consequently, the necessary actions agreed upon have been taken, namely cooperation with WEC, organization of regional Seminars, presentations of the UNFC in international events and finally a third Ad-Hoc group meeting is planned on the 30-31st of October 2003. This meeting is to consider case studies and comments on the suitability of the UNFC for Energy Resources/Reserves, with a view to maximizing the effectiveness of the proposed framework classification and developing a consensus among all interested parties.

Introducing the UNFC, Slavov S. [9] explained the need for a UNFC for Energy Reserves/Resources. It was pointed out that there were more than 150 reserve/resource classifications worldwide using different terms and definitions and that harmonization was needed to provide a methodology for evaluating resources on a common basis. To meet this need, the Ad-Hoc Group designed an internationally acceptable, three-dimensional umbrella system that would provide an efficient link between classification systems used in market economy countries and those in countries in transition. One of the benefits of the UNFC for Energy Resources/Reserves is that it is easy to apply and allows for the retention of national terms, as most can be incorporated within the UNFC itself. The UNFC had already been fully or partially implemented to coal and mineral sectors in many European and Asian countries, including Indonesia and Iran. It was recommended to participating countries to set up a *national expert group* that represents all relevant bodies, with a view to elaborating an implementation program before commencing to implement a national system based on UNFC principles. **The latter should include the organization of a national seminar(s) to introduce UNFC principles, develop guidelines and circulate them to the related bodies, select a number of country**

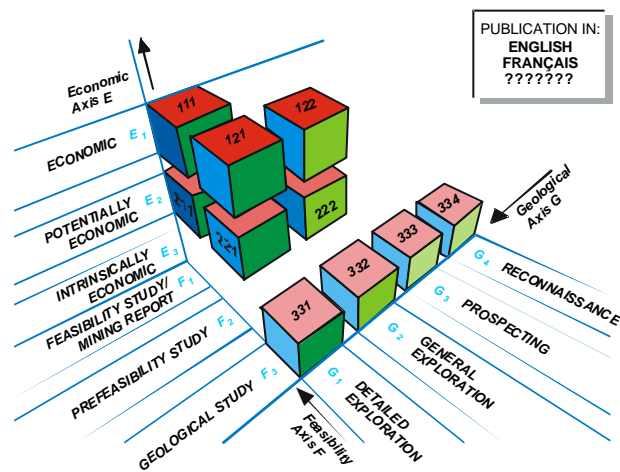
deposits for testing the classification, provide an extensive training program country-wide and introduce the UNFC for Energy Resources/Reserves to technical universities.

United Nations Framework Classification and its applications

Subelj A. [10] presented the principles of the UNFC in more detail, using the example of coal deposits (see also [11] for more details on UNFC). The UNFC for Reserves/Resources is a combination of the so-called ‘western’ and ‘eastern’ systems. The ‘western’ system has two components: an E-axis, which stands for *economic*, and an F-axis, which represents *feasibility*. In contrast, the ‘eastern’ system uses the F-axis but does not have E-axis. Instead, the eastern system has a G-axis, which represents *geological*. To combine these two systems, the UNFC for Energy Resources/Reserves uses a three-dimensional, or cube, model that contains all three axes: EFG as presented in the figure 1.

Figure 1

UNITED NATIONS INTERNATIONAL FRAMEWORK CLASSIFICATION FOR RESERVES/RESOURCES - Solid Fuels and Mineral Commodities -



Source: Presentation of Subelj A. [10]

The UNFC also adopted a numerical code system, in which every square within the cube has its own individual number, which overcomes semantic problems and allows every nation to use its own language.

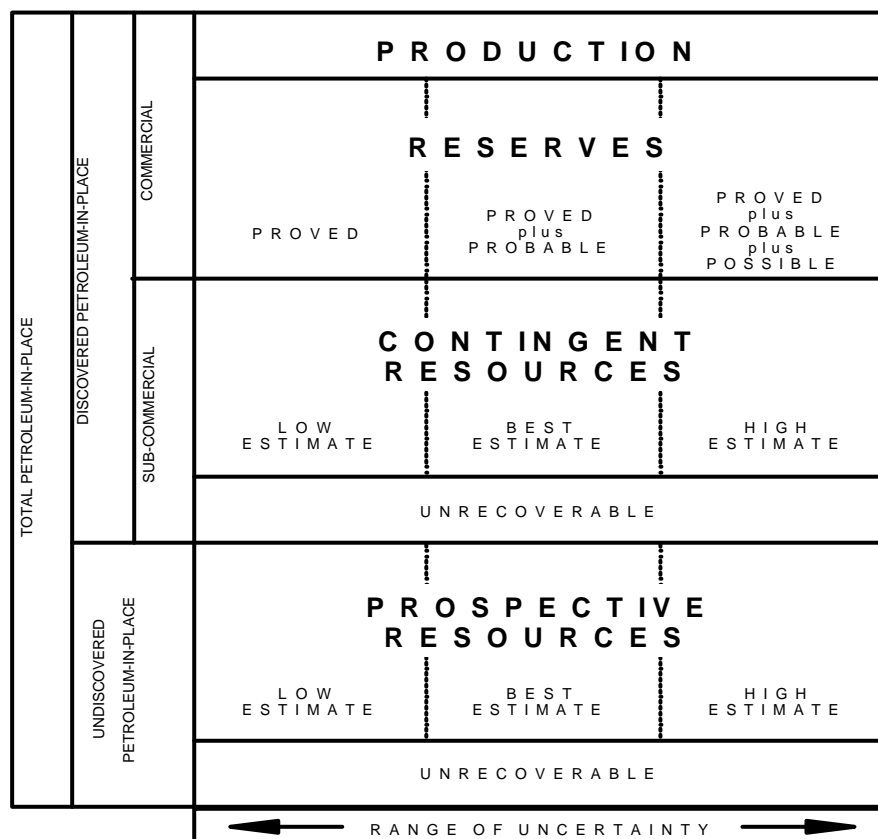
Therefore, the square on the E₁, F₁, G₁ position is numbered 111. Some squares are invalid while others are usually not relevant. The UNFC distinguished (or made distinction) between *total reserves* and *reserves* and *resource*. *Total reserves* are the combination of *reserves* and *remaining/additional resources*.

Relationships between UNFC and the SPE/WPC/AAPG classification

With regard to the existing system of classification, there is a need for incorporation of SPE/WPC/AAPG oil and gas resources classification in the UNFC for Energy Resources. It was demonstrated by Heiberg S. [5], how the SPE/WPC/AAPG classification of oil and gas resources could be fully incorporated into the UNFC. He indicated that adjustments in both systems are desirable in preparation for international financial reporting standards for extractive industries.

As it can be seen in the figure 2, the UNFC, as outlined above, conforms closely with the SPE/WPC/AAPG classification.

Figure 2 the SPE/WPC/AAPG classification



Source: Blystad P. [3] presentation.

Considering figure 2, we can make the following remarks related to the compatibility of the compared systems where the field project axis is in line with the project status approach of the SPE/WPC/AAPG classification.

- Production is found in both classifications
- Reserves conform to committed projects. Reserves will be commercial on the economic axis and have proven or explored and delineated geology on the geologic axis. Proved reserves will need to be commercial at standard commercial conditions on the economic axis (sub-set of Commercial) and have proven geology on the geology axis.

- Contingent resources will always be produced by contingent projects on the F axis. They may fall in any of the categories on the E axis and in any of the discovered categories on the G axis. This demonstrates the strength of the cubic nature of the UNFC.
- Prospective resources will always be under exploration projects on the F axis, and as undiscovered on the G axis. On the E axis they will normally be contingent (at least on confirming their presence) or non-commercial.

Proposed UNFC for Petroleum and case study for Norway

As the UNFC is applicable for various commodities, there are slight modifications to each of its application. In the proposed classification version for Petroleum presented by Blystad P. [3], the UNFC makes a clear distinction between *in-place and produced quantities*, on the one hand, and *recoverable quantities* on the other. In adapting the EFG system to petroleum, the E and G axes continue to stand for economic and geological, respectively. However, for the F axis, the term *feasibility* is replaced by the term *field project*. There is a sub-division within each axis as well as definitions for each term. The key numbers for *in-place quantities* (I₁₋₄), which are located outside the cube, as are *produced quantities*. Some combinations in the cube are invalid, while others are not normally used.

Results of the case study for Norway on the application of the UNFC for Petroleum, carried out by Blystad P. are presented in table 1 (for more details see [3]).

**Table 1 Total petroleum resources
on the Norwegian Continental Shelf (as of 31 December 2002)**

Resource Class	Category	Project status categories		Oil equivalents ¹⁾ mill Sm ³
Historic production	0	Fields	Sold and delivered as of 31.12.02	3517
Reserves	1		Remaining reserves in production	2695
	2-3		Reserves with approved / submitted PDO	1082
			Sum reserves	3776
Contingent resources	4		Planning phase	369
	5		May be developed in long term	133
	7F		New discoveries being evaluated	2
			Sum contingent resources in fields	504
			Sum reserves and contingent resources in fields	4281
	Discoveries		4	Planning phase
		5	May be developed in long term	433
7F		New discoveries being evaluated	6	
		Sum contingent resources in discoveries	1115	
	7A	Possible future measures to increase the recovery factor	900	
Undiscovered resources	8-9	Undiscovered resources		3930
	As of 31.12.02	Sum		13743
		Remaining resources		10226

Source: presentation Blystad P. [3]
1) 1 tone NGL = 1.9 Standard cu m NGL

IAEA/NEA Classification of Uranium Resources/Reserves Correlations with the UNF Classification

Blaise J. R [2] presented the Harmonization of the UNFC and IAEA/NEA classification for Uranium. Since the mid-1960s, the IAEA has strived to develop a comprehensive inventory of recoverable uranium resources to fuel the world nuclear electric programme. To achieve this objective it has carried out many activities, including co-operating with the Nuclear Energy Agency (NEA) of the OECD.

An important activity of this co-operation was the development of a classification system that would be used in preparing the inventory of uranium resources published in the world report on uranium “Uranium Resources, Production and Demand”, otherwise known as the Red Book.

Projection of future availability of uranium to meet present and future nuclear power requirements depends on the reliability of uranium resources estimates. Lack of harmony in the definition of the different classes of uranium resources and reserves between countries makes the compilation and analysis of such information difficult. The problem was accentuated in the early 1990s with the entry of uranium producing countries from the former Soviet Union, Eastern Europe and China into the world uranium supply market. The need for an internationally acceptable resources/reserves classification system and terminology using market-based criteria was therefore obvious.

For these reasons, the IAEA organized several meetings from 1992 to 1996, to harmonize the terms and definitions used in uranium resources and reserves classification. While the meetings did not achieve all of the objectives, it appeared that they helped to clarify some of the uncertainties associated with the uranium resources estimation and to contribute to the development of a more uniform uranium resources reporting by several countries

During these meetings, related activities on the subject of resource classification organized by the Economic Commission for Europe (ECE) of the United Nations were also taken into consideration. It was found out that the classification system used in the Red Book was generally consistent with the UN International Classification System, which in addition emphasizes the importance of the economical axis. A correlation between the UNFC and the IAEA/NEA classification was established, and proposed to be reported in the Red Book in parallel to other country classifications. Today, the UNF Classification is used for uranium resources reporting in Russia, Ukraine and Hungary.

UNFC as tool for strategic resource management, business process management and international financial reporting

Ross G. J [8] demonstrated the need for supporting a new international accounting and financial reporting standards. The Security and Exchange Commission (SEC) requirements dominate the industry, despite the fact that there are many other definitions to choose from. He said that this has led to an overemphasis of proved reserves, without consideration of probable reserves. The SPE/WPC/AAPG approach is an improvement as it allows for probable reserves to be included. It does this by using a classification system that is able to assess the *range of risk* and the *range of uncertainty* for all assets. Additionally, the SPE/WPC/AAPG approach also allows for price values to be determined according to *current economic conditions*, which might be an average over time, rather than the *existing economic conditions* required by the SEC, the oil price on the day the report is issued, usually 31 December.

The application of the UNFC on petroleum resources managed by international organizations, governments and industry was also demonstrated by Heiberg S. and Blystad P. [4]. This presentation focused on the industry perspective. It was stressed that efficient resource and industry management requires an accurate understanding of the natural petroleum endowment — the in-place quantities — and future production based on the three UNFC axes: economic potential, field project maturity, and geological definition. In doing so, the UNFC for Energy Resources/Reserves supports the efforts of resource managers to achieve maximum economic efficiency.

UNECE contribution to WEC Survey of Energy Resources

Dietmar K. [7] described how the UNFC had been reconciled with WEC terminology and discussed the specific experiences of Germany with regard to coal. During the recent years, considerable progress has been made in finalizing uniform classification systems for fossil fuel resources of coal, uranium and petroleum covering the specific aspects of each fuel resource and having thus differing terms and definitions.

The Ad Hoc Group of Experts endeavoured to harmonize these three energy resource classifications, which are: UN/CMMI for coal, SPE/WPC/AAPG for petroleum and IAEA/NEA for uranium in terms of the UN Framework Classification (UNFC), with the intention of assisting in the revision of the SER questionnaire to be used for the 2004 Survey of the World Energy Council (WEC). This allows for improvements in the coverage, clarity and usefulness of SER, while maintaining continuity with SER 2001.

The codification of the UNFC is applied to the individual classes of the fossil fuel resources. This allows direct comparison and harmonisation as can be seen in table 2.

Table 2 UNFC Codification

Joint class	Codes		
	Coal	Petroleum	Uranium
Reserves/Economically extractable quantities	111,121,122	111,112,	111,121,122
Contingent Resources /Potentially economically extractable quantities	211,222	121,122,123, 221,222,223	211,221,222, 311,321,322
Prospective quantities in place /intrinsicly economic in place quantities	331,332,333, 334	234,321,322, 323,334	331,332,333, 334

Source: Presentation Blaise J. R. [2]

The worldwide survey of WEC aims to provide an overall picture of energy resources availability. For this purpose, the individual classes are summarized in three main reserve/resource categories. A reconciliation of SER and UNFC resource terminology by means of codification is proposed in the attached table. This proposal slightly modifies the one given by WEC in its comment dated November 7, 2002. It appears that a reconciliation of both terminologies is achievable by means of codification. One issue of concern is the term “proved” which is used with differing content in the classifications. All details of terms and definitions as used in the classifications of uranium, coal and petroleum as well as a description of UNFC codification are specified. These details are of interest to WEC national committees.

Concluding remarks and recommendations

The need to test the UNFC on individual deposits in country before the Ad Hoc Group’s next meeting on October 30-31, 2003, was stressed. OPEC Member Countries were also encouraged to organize, in cooperation with the OPEC Secretariat, sub-regional and national seminars on the UNFC for Energy Resources.

The Seminar focused on demonstrating the main advantages of the UNFC as a uniform instrument for harmonizing the definitions of energy commodities (oil, natural gas, coal and uranium); making them internationally comparable and compatible; easing their assessment on a common basis and principles; supporting international accounting and financial reporting standards and enforcing regulations related to sustainable management of energy resources.

The OPEC representatives, both from the participating Member Countries (Algeria, Indonesia, Libya and Nigeria) and the OPEC Secretariat gave a very positive appraisal of the UNFC which resumed at recommending the following further steps:

1. A full set of UNFC-related documents will be circulated by the OPEC Secretariat to all its Member Countries asking their official position, by 15th September next, on the application of UNFC to their countries' oil/natural gas deposits;

2. Feedback from the OPEC Member Countries will be considered by the Economic Commission Board of OPEC at its next meeting end September 2003;
3. The OPEC Secretariat will explore the possibility of organizing a Regional Seminar for the Middle East OPEC Member Countries. This should be a joint OPEC/ECE Seminar. The OPEC Secretariat suggested the partnership of ESCWA, if accepted by them;
4. The ECE, through the OPEC Secretariat, to invite all OPEC Member Countries willing to take part in the forthcoming ECE Ad-Hoc Expert Group on the UNFC Implementation on Energy Commodities (Geneva, October 30-31, 2003).

In conclusion, the Seminar put a special emphasis encouraging OPEC Member Countries to adhere to the initiative and stressed the need for volunteers to test the UNFC on individual deposits in their country before the Ad-Hoc Group's next meeting in Geneva.

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