UNECE Comments to the draft 2007 Petroleum Reserves and Resources Classification, Definitions and Guidelines.

The Bureau of the UNECE Ad Hoc Group of Experts (AHGE) has carefully and with interest reviewed the proposed system, the 2007 SPE/WPC/AAPG/SPEE Resource Management System (RMS), from the perspective of alignment with the UNFC. This has been particularly important as the UNFC adopted the 2000 SPE/WPC/AAPG classification as an integrated part of the framework classification. The good alignment between the two systems should be continued, and even improved, for the system to become one system for global harmonization and use. In this respect we recognize that changes and adjustments may be appropriate for both systems. These comments focus upon the changes we see for the proposed SPE system. There are 250 members of the Group of Experts, and we, unfortunately, did not have time to seek their full concurrence. Thus, the comments reflect the views of the Bureau and not necessarily the views of the full Group of Experts. Additionally, we sought to achieve consensus within the Bureau on the full set of comments, but were unable to do so in every case. Therefore, our comments have been reviewed but not unanimously approved by the Bureau

Our goals are common: one globally accepted classification system that serves the needs in: Global energy studies, resource management at national and company level, and financial reporting. These different interests can be captured by one system that uses project status (project maturity) as the central element.

Project status.

The project-based approach is the alignment that occurs between recoverable quantities, industrial and financial resources required to recover them and the time distribution of recovery that is associated with project descriptions. Reserves estimation (the sum of forecasted production) will merge with project evaluation. Valuation will be facilitated, which is in the interest of financial reporting. This provides a link to the ongoing IASB project to prepare for an International Financial Reporting Standard for Extractive Industries, where SPE, CRIRSCO and AHGE are cooperating with the IASB.

Project maturity is not widely in use in resource classifications currently, but is known to be used by some government agencies (including, for example, the Norwegian Petroleum Directorate), some NOCs and also by several IOCs for internal use, excluding financial reporting, as a basis for classification, resources management and portfolio analysis. Recognizing that the recoverable quantities are the result of recovery projects, i.e. the sum of the quantities produced, it is observed that the project approach is used, nearly without exception, by industry and government in production forecasting. Adapting this approach in resource classification represents a significant simplification and recognition of a well-established management practice.

We have recognized project maturity (or project status) as being the most important agent for improved alignment. Project status forms the basis for the SPE Resource Management System (RMS) and it constitutes one of the principal axes in UNFC, the Field Project Axis, or Feasibility Axis as it is referenced in the Mineral Classification in UNFC. Alignment by projects was therefore seen as the best way to proceed. If we achieve alignment based on project maturity levels, the other topics will easily fit in.

SPE RMS treats Project Status and Commercial Risk in Chapter 2.1.3 and describes Operational-based project Status, Decision-based Project Status and Economic-based project Status as the main Project Status concepts.

In our view, the Decision-based Project Status is the over-riding Project Status principle as this is common to all classes, being Reserves, Contingent Resources and Prospective Resources. We therefore suggest that most emphasis should be given to this. The SPE RMS has a rather brief description of decision-based projects; basically the users are referred to the 2001 Guidelines for further information.

It should be noted that there are different views within the Bureau of the AHGE on the importance of project status for classification. There has not been enough time for developing a consensus on this, and therefore the comments are not unanimously approved by the members of the Bureau.

Given the great importance of the Decision-based project status, and the fact that the 2001 Guidelines do not cover these project categories in much detail, it is suggested that updated and more detailed definitions of Decision-based projects should be described in full in the SPE RMS. This will benefit the users of the SPE RMS, and it will help to emphasize the importance of the project approach to classification and resource management at large.

In addition to the need for alignment, we raise another important issue: the boundary criteria between contingent resources and reserves should be modified with appropriate guidelines for classifying large oil and natural gas reserves. In particular, the proposed five years should be modified and the guidelines should allow for a clearly appropriate and reasonable time frame on a case-by-case basis based upon clear documentation. This would provide more universality for the classification and would avoid downgrading oil and natural gas reserves of producers that have economic undeveloped accumulations, with commitment to develop these reserves only after the five years. Many examples exist for the companies with large oil and natural gas reserves bases where many clearly economic development projects may have been delayed due to realistic long-term commercial and strategic considerations. A downgrading of these large quantities may create the need for an otherwise unnecessary but also unmanageable communication with the general public

We have developed proposed texts for definitions and guidelines, looking at the SPE and UNFC definitions in combination, and suggested changes to the SPE text when appropriate. The Operational-based status and the Economic-based status are now regarded more as modifiers to Decision-based project sub-classification, and they do not necessarily align, particularly for large projects (see Item, Other Issues).

The suggested changes and amendments to the text are shown in the table at the end of this document. A brief description of the definitions and the rationale behind the proposal is given below.

1. Definitions in support of project definitions
2. Project definitions by class
   2.1. Reserves
   2.2. Contingent Resources
   2.3. Prospective Resources
3. Other issues

1. Definitions in support of project definitions

Several terms and definitions in support of project definitions have been considered. These are listed in Table 1. Most of them are defined in the SPE RMS. For some of these we suggest changes to the SPE text, shown in red, both for the terms, definition and guideline. Others are new and are all marked in red.

1.1 Resources

There are different meanings of the term "Resources", as mentioned in the SPE RMS. In Appendix B, The Glossary of Terms, Resources is described as "A generic term for in-place or recoverable petroleum quantities". We see a problem in supporting the definition of resources being recoverable quantities, as this will preclude the use of the term for quantities already produced and quantities in-place, which are all to be embraced in the context of a Resource Management System. The definition as proposed will be synonymous with "Total Petroleum Initially-in-Place". This also corresponds well with the term "Total Mineralization in Situ" used in the minerals code in UNFC.

1.2. Discovery

The definition marks the boundary between discovered and undiscovered petroleum quantities. The definition requires both existence of "significant" quantities and also that these are "potentially economic to recover under a technically feasible development plan". We have considered other definitions of Discovery that are widely used and which also require demonstration of moveable petroleum to fit the definition. It has further been important to arrive on a definition that covers unconventional resources, which are often in solid form and can not move on their own, but can be moved by some mechanical assistance. Our discussion has been of what "significant" means. There is a practice by some of recording quite small quantities, and even "technical discoveries", as discoveries, provided moveable petroleum has been demonstrated. In order for them to continue the practice and maintain the time-series, our suggestion is that "significant" should mean that there are sufficient quantities to justify estimation of the in-place and recoverable volume. A requirement for determining potentially economic recovery might be too harsh and difficult to maintain, and we suggest that this be removed. It should also be mentioned that we have considered the term "Discovered Unrecoverable" as a useful term particularly for unconventional resources, which today are not seen to be recoverable by implementation of current technology (e.g. gas hydrate).

1.3. Project

The project concept is well-defined. For the benefit for users new to the project approach in classification, it is suggested to expand the Guidelines pertaining to projects by providing more examples for use.

1.4. Project maturity

New term proposed in support of the project concept. The suggested definition is copied from the SPE RMS text, the suggested Guideline is referring to the "chance of commerciality" for the project, and it gives the connection to the term "decision gate".

2. Project definitions by class

This is the main agent for alignment and we have considered the definitions of project status related to Reserves, Contingent Resources and Prospective Resources.

2.1 Reserves
We suggest that Development project should be included in the definition of Reserves to connect to the basic element for the classification.

2.1.1 On Production
There is a good alignment here by adding "development" as project modifier. A guideline has been proposed.

2.1.2 Approved for Development
The definition is expanded to include commitment. A guideline has been proposed.

Reserves pertaining to Project On production and Project Approved for Development will meet the requirement for Committed Reserves in the UNFC.

2.1.3 Justified for Development
The name and definition is changed and expanded to capture that the development project is justified on the basis of a reasonable forecast of commercial conditions and that there are reasonable expectations that all approvals/contracts will be obtained. A reasonable time frame for initiation of development is assumed to be five years in general, but it is recognized that a longer time frame may be appropriate in certain circumstances. A longer time frame could be applied where, for example, a group of gas fields are committed to a long term contract (and are therefore clearly commercial), but some of them will not be developed until actually required to meet contractual obligations. In other cases development of economic projects may be deferred at the option of the producer for, amongst other things, market-related reasons, or to meet contractual or strategic objectives. In the context of project development, reasonable expectation implies that there is a high level of confidence that the event will occur within a reasonable time frame.

It is important that quantities related to projects in this category that meet the requirements for being classified as reserves, must be commercially viable at the time of reporting.

2.2 Contingent Resources.
The reference to "development project" is suggested for the definition.
The SPE definition and the UNFC definition are expressing the same reality and are essentially the same.

This is also the case for the term of the three project categories identified under Contingent Resources: (SPE) Development pending / (UNFC) Under Investigation; (SPE) Development Unclarified or On Hold / (UNFC) Unclarified or on Hold; and (SPE) Development not Viable / (UNFC) Not Viable. The definition of the terms is also regarded as so close that we do not consider it necessary to suggest changes to the SPE definitions. However, we have regarded it as necessary to suggest text for the Guidelines for each of the definitions. Identical terms are, however, highly desired in order to prevent later discussion of divergence between the SPE RMS and the SPE supported UNFC.

2.3 Prospective Resources
The SPE definition is excellent and covers the essential issue. We have suggested a guideline to expand on the description of the term.

The proposed terms for the subdivision of Prospective Resources; Prospect, Lead and Play, have been described in terms of projects. Guidelines have also been suggested but may well be developed further, for additional clarification.

In UNFC, Prospective Resources are found in the 334 position (E3F3G4). No subdivision of projects in F3 has been made, but we recognize the need for subdivision. The proposed projects for SPE RMS will provide a good basis for subdivision and definition of projects.

A way to proceed with the 334 UNFC, will be to subdivide F3 into three projects like the ones proposed for SPE RMS. The G-axis, G4, will be used to reflect the uncertainties to the Prospective Resources. To reflect the SPE practice of assessing a range of recoverable quantities, conditional on discovery and assuming a development scenario, the G4 may be subdivided into three to denote the increments between their low, best, and high estimates. This can be done in specifications and guidelines and will probably not require a high level ECOSOC resolution that a change in the UNFC demands.

4. Other issues

Production (Sales production and non-sale production):
UNFC is designed to accommodate the material balance of the commodities and provides a record of total production, sales production and non-sales production. The non-sales production is typically expressed in fuel (lease fuel) and flare. The importance of this from a material balance is obvious: an emerging importance is the environmental aspects and the need for registration of these quantities. We have with interest studied chapter 3.2.1 dealing with Production and Reference Point, but find only a reference to Lease Fuel. To capture flare and losses, we suggest that a small amendment to the text is made to the end of Section 2:

"Additional status modifiers may be applied to classes and sub-classes to further characterize recoverable quantities, for example non-sales (flare and losses) may be separately identified and documented in addition to sales quantities for both production and recoverable resource estimates (see also Reference Point, Section 3.2.1)

Operation Status Categories
Subdivision of reserves estimates into Developed (Producing and Non-producing) and Undeveloped is considered a valuable tool for project management in the petroleum industry and has ties to current accounting practices. When applied in combination with project maturity sub-classes, it more clearly characterizes evaluation results. Such subdivisions are not currently part of the UNFC, because of the high granularity and possible complexity introduced when it is combined with the classes of producing projects and projects that are not completed. Their application as an option in petroleum resource assessments may not prevent harmonization of the overall classification systems if defined so as not to create an over-determined classification with several classes for the same quantities. Of the operational status categories, the developed producing and non-producing categories remain well-founded. The undeveloped category may require consideration to ensure that it does not coincide with recovery from undeveloped projects.

Economic categories

Having implemented sub-classes based on project maturity, UNFC users can apply economic modifiers E1/2/3 within each sub-class. The SPE should carefully consider their proposed use of economic and commercial status modifiers to accommodate this alignment.

Economically marginal and sub marginal quantities are used for instance to identify fiscal inefficiencies and option values.

Table Definitions, Reserves and Resources

Proposed basis for discussion towards potential alignment (proposed changes/additions to SPE draft in red)		
Label	**Proposed Revised UNFC/SPE Definitions**	**Proposed Guidelines**
Resources	The unmodified term "Resources" as used herein is intended to encompass all quantities of petroleum, discovered and undiscovered, that are contained in, or have been produced from, naturally occurring accumulations on or within the earth's crust.	*As defined here, the term is synonymous with Total Petroleum Initially-in-Place. However, it is recognized that some users constrain "resources" to mean those quantities that are remaining and/or recoverable. It is recommended that the terms "remaining resources" or "recoverable resources" are used as appropriate. Further, "resources" includes all types of petroleum whether currently considered "conventional" or "unconventional".*
Discovery	A discovery is one petroleum accumulation, or several petroleum accumulations collectively, for which one or several exploratory wells have established through testing, sampling or logging the existence of a significant quantity of potentially moveable hydrocarbons.	*In this context, "significant" implies that there is evidence of a sufficient quantity of petroleum to justify estimating the in-place volume demonstrated by the well(s) and for evaluating the potential for economic recovery. Estimated recoverable quantities within such a discovered (known) accumulation(s) shall initially be classified as Contingent Resources pending definition of projects with sufficient chance of commercial development to reclassify all, or a portion, as Reserves. Where in-place hydrocarbons are identified but are not considered of sufficient quantity and/or technically recoverable, such quantities may be classified as Discovered Unrecoverable, if considered appropriate for resource management purposes. It is recognized that a portion of those quantities classified as Unrecoverable may become recoverable resource in the future as commercial circumstances change, technological developments occur, or additional data are acquired.*
Project	Represents the link between the petroleum accumulation and the decision-making process, including budget allocation. A project may, for example, constitute the development of a single reservoir or field, or an incremental development for a producing field, or the integrated development of a group of several fields and associated facilities. In general, an individual project will represent the level at which a decision is made on whether or not to proceed (i.e., spend money), and there should be an associated range of estimated recoverable volumes for that project. (See also Development Plan.)	*A project constitutes an "investment opportunity" and is defined at the level at which the decision is made to proceed with the capital investment that is designed to move the project to a higher level of maturity. At one level, this could be the decision to drill a single onshore exploration well which, if successful, could immediately move from a Prospect to a Project on Production. On the other hand, a large field may be subject to several phases of development. If each phase is subject to a separate approval process, each would constitute a separate project with its own estimate of a range of recoverable quantities. If, for example, phase 1 is already approved it would constitute a Project Approved for Development and would therefore have reserves associated with it. However, if phase 2 is planned but not yet formally approved, it would be classified as a Project Planned for Development and will have a different level of "chance of commerciality". If phase 2 is actually contingent on the results of phase 1 in some way, it would be classified as a less mature project, and would have contingent resources assigned rather than reserves.* *Segregation by project maturity is an absolutely fundamental requirement for portfolio management purposes as it directly reflects the decision-making process. Management must be able to compare investment opportunities, i.e. projects, as they must decide whether or not to invest in each individual project. In order to make rational decisions, they need to know what the potential outcome of that investment will be, in terms of a range of recoverable quantities and also values. Valuation of projects for such comparisons also needs to incorporate a measure of project risk, which is the "chance of commerciality" discussed in Section 2.1.3.*

Project maturity	As a project moves to a higher level of maturity, there will be an increasing chance that the accumulation will be commercially developed within a reasonable timeframe.	*Development projects (and their associated recoverable quantities) may be classified according to their "maturity", based on the actions required to move a project towards commercial production. As a project moves to higher levels of technical and commercial maturity, this will be reflected by a higher "chance of commerciality". For project management applications, the boundaries between different levels of project maturity are referred to as "decision gates".*

Reserves	RESERVES are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions.	*Reserves must satisfy four criteria: they must be discovered, recoverable, commercial, and remaining based on the development project(s) applied. Reserves are further subdivided in accordance with the level of certainty associated with the estimates and may also be subdivided by their development and production status.*
On Production	The development project is currently producing and selling petroleum to market.	*The key criterion is that the project is receiving income from sales, rather than the approved development project necessarily being complete. This is the point where the project "chance of commerciality" can be said to be 100%. The project "decision gate" is the decision to initiate commercial production from the project.*
Approved for Development	All necessary approvals have been obtained, capital funds have been committed, and implementation of the development project is underway.	*At this point, it must be certain that the development project is going ahead. The project must not be subject to any contingencies such as outstanding regulatory approvals or sales contracts. Forecast capital expenditures should be included in the reporting entity's current or following year's approved budget. The project "decision gate" is the decision to start investing capital in the construction of production facilities and/or drilling development wells.*
Justified for Development	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.	*In order to move to this level of project maturity, and hence have reserves associated with it, the development project must be commercially viable at the time of reporting, based on the reporting entity's assumptions of future prices, costs, etc. ("forecast case") and the specific circumstances of the project. Evidence of a firm intention to proceed with development within a reasonable time frame will be sufficient to demonstrate commerciality. There should be a development plan that is in sufficient detail to support the assessment of commerciality and a reasonable expectation that any regulatory approvals or sales contracts required prior to project implementation will be forthcoming. Other than such approvals/contracts, there should be no known contingencies that could preclude the development from proceeding within a reasonable timeframe.* *A reasonable time frame for the initiation of development depends on the specific circumstances. In general, a reasonable time frame would be five years. A longer time frame could be applied where, for example, a group of gas fields are committed to a long term contract (and are therefore clearly commercial), but some of them will not be developed until actually required to meet contractual obligations. In other cases development of economic projects may be deferred at the option of the producer for, amongst other things, market-related reasons, or to meet contractual or strategic objectives. In the context of project development, reasonable expectation implies that there is a high level of confidence that the event will occur within a reasonable time frame.* *The project "decision gate" is the decision by the reporting entity and its partners, if any, that the project has reached a level of technical and commercial maturity sufficient to justify proceeding with development at that point in time.*

SPE: Contingent Resources UNFC: Contingent Development Project	SPE: Those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects, but which are not currently considered to be commercially recoverable due to one or more contingencies. UNFC: Development and production of recoverable quantities has not been justified, due to conditions that may or may not be fulfilled.	
SPE: Development Pending UNFC: Under Investigation	SPE: A discovered accumulation where project activities are ongoing to justify commercial development in the foreseeable future. UNFC: Activities are ongoing to justify development and production in the foreseeable future.	*The project is seen to have reasonable potential for eventual commercial development, to the extent that further data acquisition (e.g. drilling, seismic data) and/or evaluations are currently ongoing with a view to confirming that the project is commercially viable and providing the basis for selection of an appropriate development plan. The critical contingencies have been identified and are reasonably expected to be resolved within a reasonable time frame. Note that disappointing appraisal/evaluation results could lead to a re-classification of the project to "On Hold" or "Not Viable" status.* *The project "decision gate" is the decision to undertake further data acquisition and/or studies designed to move the project to a level of technical and commercial maturity where a decision can be made to proceed with development and production.*
SPE: Development Unclarified or on Hold UNFC: Unclarified or On Hold	SPE: A discovered accumulation where project activities are on hold and/or where justification as a commercial development may be subject to significant delay. UNFC: Activities to justify development and production are unclarified or temporarily suspended	*The project is seen to have potential for eventual commercial development, but where further appraisal/evaluation activities are on hold pending the removal of significant contingencies external to the project, or where substantial further appraisal/evaluation activities are required to clarify the potential for eventual commercial development. Development may be subject to a significant time delay. Note that 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 a re-classification of the project to "Not Viable" status.* The project "decision gate" is the decision to either proceed with additional evaluation designed to clarify the potential for eventual commercial development or to temporarily suspend or delay further activities pending resolution of external contingencies.

SPE: Development not Viable UNFC: Not Viable	SPE: A discovered accumulation for which there are no current plans to develop or to acquire additional data at the time due to limited production potential. UNFC: Investigations have indicated that development and production will not be technically justified.	*The project is not seen to have potential for eventual commercial development at the time of reporting, but the theoretically recoverable quantities are recorded so that the potential opportunity will be recognised in the event of a major change in technology or commercial conditions.* *The project "decision gate" is the decision not to undertake any further data acquisition or studies on the project for the foreseeable future.*

Label	Proposed Revised UNFC/SPE Definitions	Proposed Guidelines
SPE: Prospective Resources	Those quantities of petroleum which are estimated, as of a given date, to be potentially recoverable from undiscovered accumulations.	*Potential accumulations are evaluated according to their chance of discovery and, assuming a discovery, the estimated quantities that would be recoverable under defined development projects. It is recognized that the development programs will be of significantly less detail and depend more heavily on analog developments in the earlier phases of exploration.*
SPE: Prospect	A project associated with a potential accumulation that is sufficiently well defined to represent a viable drilling target.	*Project activities are focused on assessing the chance of discovery and, assuming discovery, the range of potential recoverable quantities under a commercial development program.*
SPE: Lead	A project associated with a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation in order to be classified as a prospect.	*Project activities are focused on acquiring additional data and/or undertaking further evaluation designed to confirm whether or not the lead can be matured into a prospect. Such evaluation includes the assessment of the chance of discovery and, assuming discovery, the range of potential recovery under feasible development scenarios.*
SPE: Play	A project associated with a prospective trend of potential prospects, but which requires more data acquisition and/or evaluation in order to define specific leads or prospects.	*Project activities are focused on acquiring additional data and/or undertaking further evaluation designed to define specific leads or prospects for more detailed analysis of their chance of discovery and, assuming discovery, the range of potential recovery under hypothetical development scenarios.*