An Overview of the Petroleum Resources Management System (PRMS) and its Relationship to UNFC

presented by Daniel DiLuzio

Snr. Resource Consultant
Shell International

Chairman - Oil and Gas Reserves Committee
Society of Petroleum Engineers

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Disclaimer

The material, views and opinions expressed in this presentation are solely those of presenter and do not reflect Shell International E&P or any other person at Royal Dutch Shell plc.

Readers are urged to obtain independent advice on any matter relating to the interpretation of resources definitions and guidance on classification.
Topics for Discussion

• Why are definitions needed?

• Brief history of PRMS and its Goals

• Overview of PRMS

• PRMS adoption

• Relationship of PRMS to UNFC

• Questions
What’s it all About?

*Its all about predicting potentially recoverable volumes under defined conditions!*

“The quantity of usable resources is not fixed but changes with progress in science, technology, and exploration and with shifts in economic conditions.” (V. McKelvey)

We need consistency in communicating petroleum resource volumes ..... with associated risk and uncertainty!

We need an international standard!
Understand all Stakeholders’ Requirements

- Government Agencies
- Securities Regulators
- Investors
- Oil & Gas Companies
- Financial Organizations
- Small Independents
- Large IOCs and NOCs

Create a Global Consensus Reference for the Industry – a “Standard”

All stakeholders require complete, consistent and reliable information on future production and associated cash flow estimates through full life recovery.
Petroleum Resources Management System

Published in April 2007; maintained by SPE OGRC; co-sponsored by:

Society of Petroleum Engineers (SPE)

World Petroleum Council (WPC)

American Association of Petroleum Geologists (AAPG)

Society of Petroleum Evaluation Engineers (SPEE)

Endorsed by Society of Exploration Geophysicists (SEG)

Free Download at www.spe.org
Brief History of PRMS

• SPE & partners recognized the need for common global standards for petroleum resource definitions to provide consistency, transparency and reliability

• Create and maintain an international standard petroleum reserves and resources classification system based on industry best practices

• Built on the past
• Incorporated current best practice
• Prepared for the future
Historic Milestones

- **1937**: API definitions created
- **1962**: SPE special committee on Definition of Proved Reserves for Property Evaluation
- **1981**: SPE minor update
- **1987**: SPE update with Unproved Categories
- **1997-2001**: SPE, WPC, AAPG joint effort to incorporate Resource classes
- **2007**: PRMS and Audit Standards published. SPEE becomes a sponsor
- **2011**: Guidelines for Application of PRMS sponsored/endorsed by SPE, SPEE, WPC, AAPG, SEG

- Simple risk and uncertainty model
- Principal-based
- Evolutionary shifts instead of revolutionary changes
PRMS Goals

• Provide a **common reference** for the international petroleum industry, including national reporting and regulatory disclosure agencies, and to support petroleum project and portfolio management requirements

• **Improve clarity** in global communications regarding petroleum resources

• **Supplement** with industry **education** programs and **application guides**
PRMS is Designed to Support Asset Management – “Cradle to Grave”

Align with the hydrocarbon finding, developing and producing business!
PRMS - Major Principles

0. **Understand the reservoir and “in place” resources**

1. The System is “**Project-Based**”

2. ▲ Classification is based on project’s **chance of commerciality**
   (technology, economic, legal, social environmental & regulatory)
   ▲ Categorization is based on **recoverable uncertainty**

3. Base case uses **forecast of future conditions**

4. Provides more **granularity for project management**

5. Estimates based on **deterministic and/or probabilistic** methods

6. Reserves/resources are estimated in terms of the **sales products**

7. Reserves allocation based on **contractual entitlement**

8. Applies to both conventional and **unconventional resources**
Its all about **Risk and Uncertainty**

- **Prospects**
- **Discoveries**
- **Development Projects**

**Uncertainty** and **Risk**
- **Discovery Risk**
- **In-Place Uncertainty**
- **Commercial Risk**
- **Recovery Uncertainty**
- **Commercial Uncertainties**

**Estimated Ultimate Recoverable**
- **Volume**
- **Value**
- **Net Present Value**
Resources Classification

- Reserves
- Contingent Resources
- Prospective Resources
- Unrecoverable

Categorization (risk)
PRMS is the Global Standard for Petroleum Reserves and Resource Reporting

Securities Regulators
SEC (US)
AIM (UK)
CSA (Canada)
HKEX (Hong Kong)
ASX (Australia)
(ESMA & FSA)

Oil & Gas Companies

Government Reporting
BOEM (ANP)
...UNFC

PRMS is explicitly or implicitly referenced
SPE Relationship with UNFC

• Long-standing agreement for the SPE to provide the commodity-specific specifications for petroleum
  • Petroleum Resources Management System of 2007 ("PRMS")

• Link provided by a Bridging Document in 2013

• PRMS Bridging Document, together with the UNFC Generic Specifications, provide operational application of UNFC-2009 for petroleum
  (see details at: http://www.unece.org/energy/se/unfc_2009_spfcfc.html)

• PRMS will be maintained “evergreen” by SPE OGRC
Bridging between PRMS to the UNFC...

Classification Framework & Category Definitions

Generic Specifications

Bridging Document

Petroleum Specifications

PRMS

Commodity Specific Guidelines
The United Nations Framework Classification (UNFC) system identifies the **PRMS as the reference standard for petroleum reserves and resources**.
## PRMS – UNFC Bridging Document

### Using Categories only

<table>
<thead>
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<th>PRMS Class</th>
<th>UNFC-2009 “minimum” Categories</th>
<th>UNFC-2009 Class</th>
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<td>E2, F2</td>
<td>G1, G2, G3, Potentially Commercial Projects</td>
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<td>G1, G2, G3, Non-Commercial Projects</td>
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Figure IV.2 UNFC-2009 published 2013
PRMS – UNFC Bridging Document

*Using Sub-Categories*

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**Facilitates transfer of quantities to correct class or sub-class**

*Figure IV.3 UNFC-2009 published 2013*
For other systems seeking alignment, a bridging document to UNFC-2009 is required which allows results considered to be comparable with no significant difference to those that would result from the application of the classification system for which the Bridging documents with the UNCF aligned Systems.
Concluding Remarks

• UNFC-2009 provides common language for classification and reporting of petroleum resources

• PRMS 2007 is the industry-standard classification for petroleum resources and reserves
Are We There Yet?

Have we achieved a global common code?

Not quite!... but …the building blocks are in place which will allow greater harmonization and consistency in the area of natural resources assessment and reporting…. …and valuation.

PRMS and UNFC will both be part of the solution!
Thank you!

Questions?