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

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Presented on behalf of the
Oil and Gas Reserves Committee
of the Society of Petroleum Engineers (SPE)

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Disclaimer

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Topics for Discussion

• Why are definitions needed?

• Brief history of PRMS and its Goals

• Overview of PRMS

• PRMS adoption

• Relationship of PRMS to UNFC
What’s it all About?

Its all about predicting potentially recoverable volumes under defined conditions!

We need consistency in communicating future sales volumes ..... with associated risk and uncertainty!

We need an “The quantity of usable resources is not fixed but changes with progress in science international standard!
Understand all Stakeholders’ Requirements

Small Independents → Oil & Gas Companies → Large IOCs and NOCs

Securities Regulators

Investors

Financial Organizations

Government Agencies

Public

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.
Why do we need standard definitions?

• Internal business decisions
• Public reporting requirements
• Government reporting
• Project finance
• Mergers & Acquisitions
Internal - Business Decisions

- A full understanding of risks and uncertainty (Low/Best/High estimates)
- All classes of resources
- Input to portfolio management and decision making

allows for application of project maturity confidence criteria
Public Reporting Requirements

• Stock exchanges have reporting requirements
  • Own definitions (e.g. SEC) or use PRMS
  • Most require Proved or Proved plus Probable (2P)
  • Support market investors

• Government Agencies for energy policy-making
  • Discovered Commercial – production forecasts
  • Agencies also estimate
    • Discovered Not Commercial
    • Undiscovered Resource Potential
External - Project Finance

• Independent reserve statements for banks
  • Collateral for loans

• Focus usually on Proved reserves

Mergers & Acquisitions

• Focus usually on Proved reserves

• Unproved reserves and resources included but discounted
• SPE & partners recognized the need for common global standards for petroleum resource definitions to provide consistency, transparency, 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
### PRMS: Building on Success

**1997** SPE/WPC Petroleum Reserves Definitions

**2000** SPE/WPC/AAPG Petroleum Resources Classification and Definitions

**2005** SPE/WPC/AAPG Glossary of Terms

**2001** Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information

**2001** SPE/WPC/AAPG Guidelines for the Evaluation of Petroleum Reserves and Resources

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**2007**

- Petroleum Resources Management System
- Audit Standards Revised 2007
- PRMS Application Guidelines 2011

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Consolidate, build on, update, and replace prior guidance.
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 – Sharing the Vision Globally

- PRMS Presentations
- PRMS Training Sites
- SPE Reserves ATW’s
PRMS Strategy

• Allow **flexibility** and can be tailored to particular needs

• **Does not modify** the interpretation or application of any existing **regulatory reporting** requirements

• Consider both **technical and commercial factors** that impact the project’s economic feasibility, its productive life, and its related cash flow
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

- Consistent assessments
  - 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 (uncertainty)**

**Classification (risk)**
Absolute Range of Uncertainty Should Diminish as Project Proceeds (Arps, 1956)
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)

- Financial
  - IASB

- Oil & Gas Companies

- Government Reporting
  - BOEM (ANP)
  - ...UNFC

PRMS is explicitly or implicitly referenced
Relationship to Other Reporting Systems

- Chinese System
- Russian System
- ...........

SPE maintains "mappings" of PRMS to all major national/regulatory reporting systems
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_spcfc.html)

• PRMS will be maintained “evergreen” by SPE OGRC
## PRMS – UNFC Bridging Document

### Using Categories only

<table>
<thead>
<tr>
<th>PRMS Class</th>
<th>UNFC-2009 “minimum” Categories</th>
<th>UNFC-2009 Class</th>
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<td>E1, F1</td>
<td>G1, G2, G3</td>
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<td>Resources</td>
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<td>E3, F2</td>
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From EGRC 4\textsuperscript{th} Session Geneva April 2013
Facilitates transfer of quantities to correct class or sub-class

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### Reserves
- On Production
- Approved for Development
- Justified for Development

### Contingent Resources
- Development Pending
- Development Unclarified or On Hold
  - On Hold
  - Unclarified
- Development Not Viable
- Unrecoverable

### Undiscovered
- Prospect
- Lead
- Play
- Unrecoverable

### Special Cases
- Defined but not classified in PRMS
- Less Common Mappings

From EGRC 4th Session Geneva April 2013
# PRMS – UNFC Bridging Document

## G-axis, using Categories only

<table>
<thead>
<tr>
<th>PRMS Categories</th>
<th>UNFC-2009 Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves (Incremental)</td>
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<tr>
<td>Proved</td>
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<tr>
<td>Probable</td>
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<td>Possible</td>
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<td>Proved plus Probable (2P)</td>
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<tr>
<td>Proved plus Probable plus Possible (3P)</td>
<td>G1+G2+G3</td>
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<tr>
<td>Contingent Resources</td>
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<tr>
<td>Low Estimate (1C)</td>
<td>G1</td>
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<tr>
<td>Best Estimate (2C)</td>
<td>G1+G2</td>
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<tr>
<td>High Estimate (3C)</td>
<td>G1+G2+G3</td>
</tr>
<tr>
<td>Prospective Resources</td>
<td></td>
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<tr>
<td>Low Estimate</td>
<td>G4.1</td>
</tr>
<tr>
<td>Best Estimate</td>
<td>G4.1+G4.2 (=G4)</td>
</tr>
<tr>
<td>High Estimate</td>
<td>G4.1+G4.2+G4.3</td>
</tr>
</tbody>
</table>

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Beyond Mapping ➔ “Integration”

Classification Framework & Category Definitions

Generic Specifications

Bridging Document

Mineral Specifications
CRIRSCO

Commodity Specific Guidelines

Bridging Document

Petroleum Specifications
PRMS

Bridging Document

Other Aligned Systems

UNFC
Concluding Remarks

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

• PRMS 2007 is the dominant industry-standard classification for petroleum resources and reserves

• CRIRSCO is the dominant industry-standard classification for solid mineral reserves and mineral resources

• PRMS & CRIRSCO referenced by IASB Extractive Activities Project
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?