

**2018 Update to PRMS - Where are we?
What is coming?
What is the SPEE RDC role in developing this
update?**

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Chair of SPEE Reserves Definition Committee
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SPEE Dallas

Notice and Disclaimer

- All factual statements about PRMS come from public data previously released/published/presented
- Hopefully audience members have attended prior presentations or read the “Public Comment” draft of 2018 PRMS to form their own impressions
- Opinions expressed are the speaker’s alone and do not necessarily represent the views of SPEE, SPE or any other organization
- All topics/issues noted in this presentation are still under discussion. Final outcome of what changes are in or out will not be known until the final approved 2018 PRMS document is published.

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- Value Navigator
- petroLook

Outline

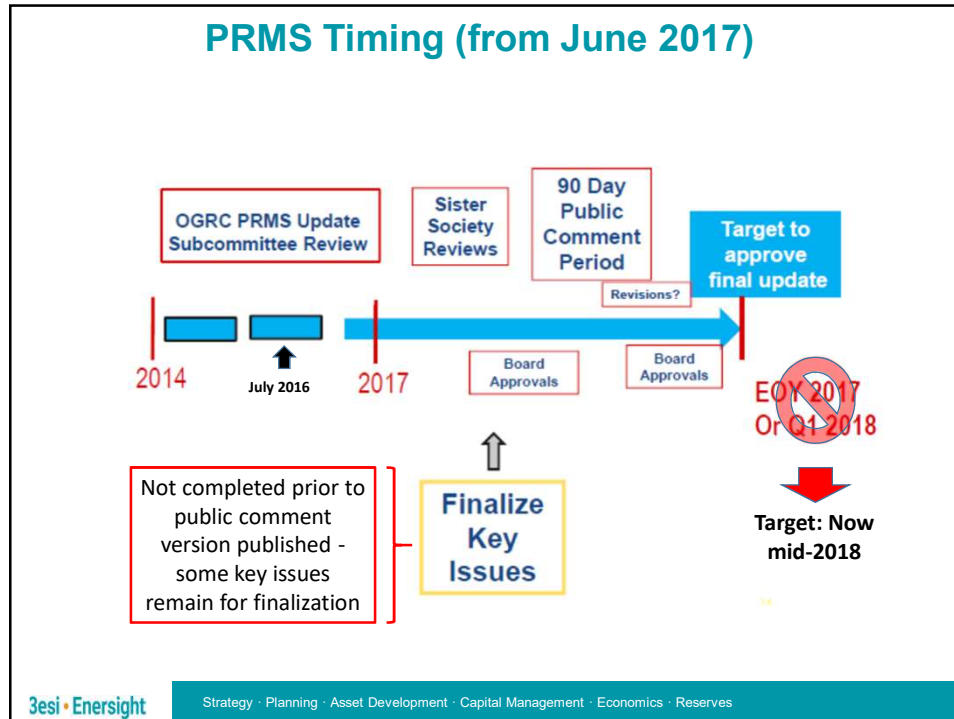
- PRMS History
- PRMS Update timing & Role of RDC
- PRMS Update topics
 - *Interactive: Please speak up!!*
- Present and Future challenges for PRMS

Why this topic now?

- Input to SPEE RDC as final changes are made to 2018 PRMS
- Alert to what's coming later this year
- Call for action to become engaged in future PRMS update discussions

Background and History of Oil & Gas Reserves Definitions (thanks to Ron Harrell)

Time Period	Organization
1936-1964	API
1946	AGA
1965	SPE
1978	U.S. SEC
1981	SPE
1983	WPC
1987	SPE
1987	WPC
1997	SPE/WPC
2007 - PRMS	SPE/WPC/SPEE/AAPG + SEG
2018 - PRMS	SPE/WPC/SPEE/AAPG/SEG/SPWLA/EAGE



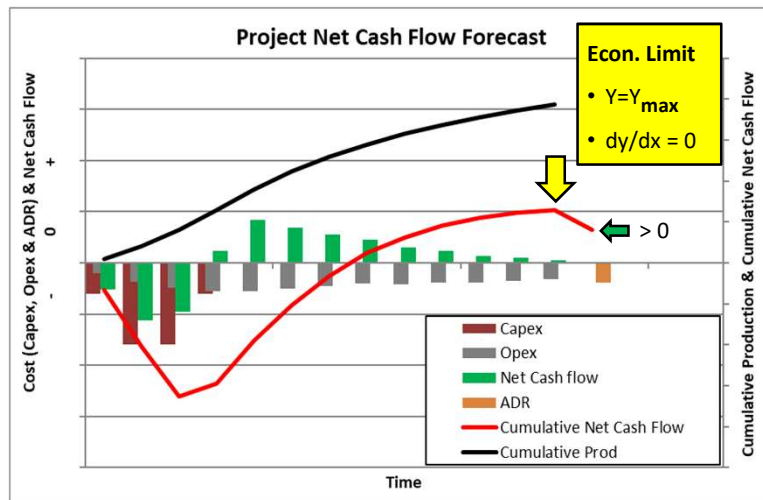
SPEE RDC Role

- SPEE is one of the “Sister Societies” that, with the primary author SPE, jointly develop the PRMS documents.
- SPEE delegates to RDC the working actions of joint development and seeks their recommendation before SPEE Board approval.
- SPEE RDC acts to bring clarity to the document and ensure the interests of all stakeholders are considered when changes are proposed.
- What’s left? Review, discussion and agreement on the “post-public comment” draft ~~to be~~ **now** provided to the Sisters by SPE OGRC.

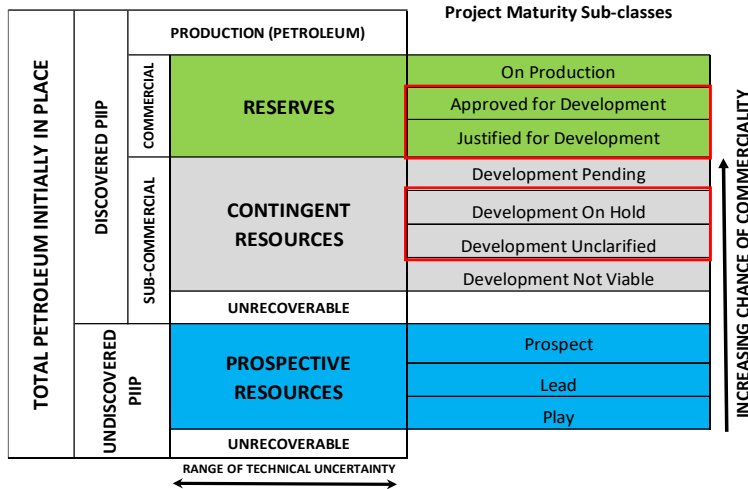
Clarify topics - Economic/Commercial elements

- Economic v. Economic Limit definitions
- *Economic Limit defined by current v. cumulative cash flows*
- Handling of ADR costs for PUD (new development) v. PDP (existing wells)
- Basis for economic project - 1P or 2P (and the concept of “Proved Uneconomic” reserves)
- Split Conditions (e.g., different \$/B for P1, P2, P3)
- Commercial is more than economic (i.e., PV0% v. hurdle rate)
- Project Maturity Sub-Classifications
 - *Definition of threshold for reserves - “Justified for Development”*

Proposed: Economics definitions using Cum Cash Flow



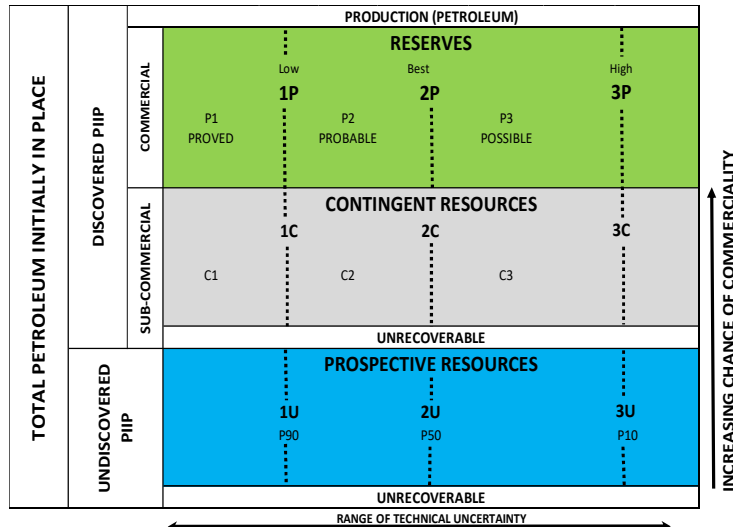
Proposed PRMS Project Maturity Sub-classes Figure 2-1



Clarify topics - Terminology

- Split Project Maturity sub-classes: Develop Unclarified from On Hold
- “Code names” - P1/2/3; C1/2/3 for incremental Reserve; Contingent Resource categories; added 1U/2U/3U for Prospective Resource Categories
- Discovery for Unconventional - “reservoir presence beyond control point” - based on reasonable confidence distances

Proposed updated PRMS Figure 1-1 “Framework”



Newly added topics

- Learning curve (repeated activity costs)
- Split Classifications (single project volumes)

Clarify topics - What's in reserves

- Lease fuel - "CiO"
- "Stand-alone" Possible Reserves

Proposed: Incremental Deterministic redone

- Situation: Common use of this method takes a "best estimate" well recovery and proposed well location distance from established commercial production to determine reserve categorization.
- Consider this perspective:
 - Distance from production is the only variable used to distinguish Proved/Probable/Possible; rename to High/Moderate/Low confidence areas
 - A single estimate of recovery is used; A range of 3 values should be required
 - Projects are defined as economic based on 2P volumes so "stand-alone" Possible locations can never be "reserves"; they are locations awaiting nearby drilling to enable them to be at least 2P - until then they are Contingent Resources

Challenges of the “One Size Fits All” PRMS

- Certain of the potential changes considered may seem odd to you...
 - “why change what has worked well for years?”
- Some of these potential changes may even disrupt your normal practices:
 - What if bank loans (“RBL”) included “Proved Uneconomic” reserves but could not consider 2P value?
- Some may add possibly useless work:
 - All reserve estimates must include 3 values (even if you only use one)

SPE explains worldwide systems are different

“North American practice has been based largely on risk as the determinant for classifying reserves...In contrast, in many other parts of the world uncertainty-based systems have been used...The reasons for this parallel development can be traced back to the way the industry itself developed, reflecting differences in onshore and offshore environments, **the size of properties/leases** and discoveries, the reporting regulations and many other factors.”

- From SPE Guidelines for the Evaluation of Petroleum Reserves and Resources

End-member examples of O&G Business

Separate, Independent Entities

- Private resource owner
- Gov't Regulators - operations
- Operating company
- Funding from stock or banks (RBL) - empowers security regulators; 3rd party auditors

One entity, integrated actions

- Owner = National Gov't
- Regulator = National Gov't
- Operating Co = NOC (w partners)
- Funding = National Gov't (may use partners for carry)

Other circumstances

- Smaller leases, often much less than full reservoir
- Commerciality goes beyond operator intent as separate entities must approve; execution expected shortly after all approvals
- Proved must be economic

Other circumstances

- Larger concessions, often full reservoir or very large part
- Commerciality is a single decision by National Gov't; execution may come later if volumes not needed by national supply plan
- Economics tested on 2P only; 1P need not be economic

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Drives Incremental Deterministic Method

Drives Scenario Method

Key points

Good news:

- Increased interest in understanding and compliance
- Thus, more and new worldwide engagement
- And more outspoken comments when rules seem unclear in new and different settings/situations

“Related” news:

- New users need detailed rules, not comfortable with principles-based guidance (lack experience needed to turn principles into practices)
- Everyone wants the “mother” document to have details specific to their situation (rather than local builds on high-level guidance)

THUS:

- Long-time experts need to carefully watch for changes to satisfy need for clarity that may abandon currently accepted practices

Mission Accomplished?

- ✓ Input to SPEE RDC as final changes are made to 2018 PRMS *Thanks!!*
- ✓ Alert to what’s coming later this year
- ? Call for action to become engaged in future PRMS update discussions

That's all folks!

*Thanks for your interest and
attention.....*