

Workshop and Survey Focus on SPE Petroleum Resources Management System

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An SPE workshop titled “Application of the SPE Petroleum Resources Management System (Unconventional Resources),” was held 14 November, the day after the 2013 SPE Unconventional Resources Conference and Exhibition—Asia Pacific in Brisbane, Australia. The workshop attracted 83 participants from nine countries and speakers from the exploration and production sector, the finance sector, service companies, consultancies, and academia.

The goal of the workshop was to highlight the challenges faced by the industry in estimating unconventional resources. The SPE-PRMS, published in March 2007, endeavors to encompass the full life cycle of all types of petroleum resources. Since 2007, the industry has experienced remarkable growth in unconventional resources. Unconventional plays challenge the fundamental conventional definitions of reserves and resources estimation, including the definitions required to demonstrate a discovery and commerciality. Within the investment and regulatory community, the growth and importance of unconventional reserves and resources have fueled discussion on the credibility and dependability of oil and gas estimates. To assist in the application of the SPE-PRMS, a second document called *Guidelines for Application of the Petroleum Resources Management System* was published by SPE in 2011. Based on discussions I have noted in the industry, it seems there is a need for further clarification in the interpretation and application of the PRMS.

The workshop gave an opportunity to gauge participants’ perception of the SPE-PRMS. A survey was sent to the 83 participants; 37 responded. The results of this small survey are set out below. The

demographics and experience level of the respondents were not captured and, therefore, the results are conditional. The comments are the author’s interpretation of the survey results. As with all surveys, it is possible that how the respondents answered questions may apply to a broader population. The goal here, though, is to provoke discussion and debate that could contribute to future improvements in the SPE-PRMS.

The survey asked the participants to indicate agreement, disagreement, or neutrality to a series of statements. Respondents’ answers were intended to provide insight into how clear the SPE-PRMS is, how well understood it is, and respondents’ level of confidence in it.

Ideally, interpretation and implementation of the SPE-PRMS in estimating reserves/resources is independent of the reserve estimator. The first two survey statements endeavor to gauge the perception of consistency between reserve estimators in estimating conventional and unconventional reserves.

.....
It is expected that different reserve estimators estimating reserves for a conventional reservoir would have similar results (e.g., +/-10%).

Sample	Agree	Neutral	Disagree
37	70%	19%	11%

.....
It is expected that different reserve estimators estimating reserves for an unconventional reservoir would have similar results (e.g., +/-10%).

Sample	Agree	Neutral	Disagree
37	35%	32.5%	32.5%

There was a substantial reduction in confidence in relation to the similarity of results between estimators when evaluating unconventional

reservoir reserves compared with conventional reservoir reserves. Consistency among evaluators is essential if credibility in reserves and resource estimates is to be achieved; that is, it should be a basic principle that results should not significantly vary between different types of assessment methods. This is considered to highlight an issue of interpretation by the estimator of the SPE-PRMS when evaluating unconventional resources. As well, we should acknowledge that over recent years, significant technical interpretation methodologies have been published to advance unconventional evaluation methods and the confidence and uncertainty of an evaluation. This choice of technical methods used by participants was not polled here, but it has a contributing role in the confidence outcome between conventional and unconventional confidence.

The following statements endeavor to gauge the believability in the reporting of estimates in categories of reserves, contingent resources, and prospective resources.

.....
PRMS Reserve estimates presented by public companies are believable.

Sample	Agree	Neutral	Disagree
37	32%	57%	11%

.....
PRMS Contingent Resource estimates presented by public companies are believable.

Sample	Agree	Neutral	Disagree
37	19%	57%	24%

.....
PRMS Prospective Resource estimates presented by public companies are believable.

Sample	Agree	Neutral	Disagree
37	16%	46%	38%

TECHBITS

The main observation is that believability in the estimates declines with decreasing “chance of commerciality.” The result highlights that the reported estimates are less believable in increasingly less mature projects, as it decreased from a well-defined project with reserves and decreased in confidence to the discovered (contingent resources) projects and then to the undiscovered (prospective resources) projects of the SPE-PRMS. A way to make the basis of classifications more transparent to the stakeholder who utilizes these estimates is required. Two key issues emerge from the survey: reporting consistency and transparency, and reduced believability in contingent and prospective resource estimates. Reporting consistency and transparency are usually within the regulator’s domain. However, the regulator requires guidance in navigating the SPE-PRMS to improve consistency and transparency.

Central to this is the SPE-PRMS fundamental principle of the “project.” Each project is unique with boundaries, both technical and commercial, interpreted by the reserve estimator and this can make it difficult to make comparisons between recovery estimates from projects. Answers to the first two survey statements indicate a reduced confidence in estimating unconventional reserves compared with conventional reserves. The geological boundaries of a conventional field are set by the lowest known oil/gas contour or the oil/gas water contact. This boundary is usually well defined. Unconventional field geological boundaries are not well defined and can vary substantially between estimators. Boundaries are often defined by the lease or geology with an overprint of where the productive areas are; and therefore, varying the areal extent of the resource can generate significantly different resource estimates. It is suggested that it is timely to provide more guidance on defining unconventional reserve and resource boundaries and consider time limits for all project maturity subclasses.

.....
Only a portion of contingent resources are converted to reserves in the life of the project.

Sample	Agree	Neutral	Disagree
37	65%	27%	8%

This survey highlights the perception that as a project matures, only a portion of contingent resources is converted to reserves. This is consistent with previous survey statements that showed a declining confidence in contingent and prospective resources reported by public companies. It is very difficult to determine if the issue is with the SPE-PRMS or the regulatory authority’s reporting requirements and guidelines, though it is likely to be a combination of both. Unchecked, this issue will affect the SPE-PRMS’ long-term credibility.

.....
Definition of an unconventional resource discovery is clearly defined.

Sample	Agree	Neutral	Disagree
37	19%	38%	43%

This result indicates the requirement to revisit and provide clarity on what constitutes a discovery when evaluating unconventional resources. This needs to be linked to the challenge in commercializing unconventional resources, as the extraction technology—rather than identification of the resource—is key. The discovery definition requires the identification of “potentially moveable hydrocarbons.” Since the key to unlocking an unconventional resource is extraction technology, maybe the word “potential” requires clarification or actual production tests should be required.

.....
The PRMS does not require deterministic or probabilistic methods to equate. Do you believe this should be reconsidered?

Sample	Agree	Neutral	Disagree
37	41%	38%	21%

Having two different estimation methods can generate confusion and

disconnects. The probabilistic method generates estimates that are bounded in the “range of uncertainty,” that is, P90 to P10. The deterministic method can be scenario-based or incremental risk-based. There should be more clarity added to the SPE-PRMS by means of additional guidance for the use of deterministic methods to align with the probabilistic method.

Summary

The foundation of the SPE-PRMS is the result of more than 80 years’ evolution of international efforts devoted to defining petroleum resources. The SPE-PRMS is the most internationally recognized oil and gas resources classification document, which together with the standardized definitions, has gained acceptance throughout the world. The unprecedented growth of unconventional resources has introduced new challenges to resource estimators.

Integral to the SPE-PRMS’ integrity are the local regulators’ governance requirements for resource reporting, which vary between jurisdictions. As an industry, we cannot rely on the regulator to manage and maintain the integrity of the SPE-PRMS and, therefore, we need to create self-policing mechanisms to ensure consistency in estimating resources and receive valuable input from the industry that can be incorporated into future updates of the SPE-PRMS.

This small survey gives insight into how the industry is managing unconventional resource estimation. How we react to these challenges will determine the long-term reputation and credibility of the SPE-PRMS.

The SPE Oil and Gas Reserves Committee, the steward of the PRMS, has begun a review of the PRMS document that will incorporate the input of all stakeholders and its sponsors (the American Association of Petroleum Geologists, Society of Petroleum Evaluation Engineers, Society of Exploration Geophysicists, and World Petroleum Council) in the upcoming months. **JPT**

