N952: Resource Assessment and Assurance

Tutor(s): Pete Smith and Graeme Simpson

3 Days	Competence Level: Skilled Application
Classroom Course	

Summary

The course investigates the classification and categorisation of resources within both the SEC and the SPE-PRMS systems. By the use of particular case studies, the course rigorously studies the boundaries between class and category when assessing resources for management and financial disclosure. The methodology for assessing hydrocarbons-in-place and resources is explained and the significance of uncertainty is described. Both deterministic and probabilistic approaches to volumetric assessment are outlined. The engineering toolkit, using static, decline curve, material balance and reservoir simulation, is described. Practical exercises and illustrations of the pitfalls and issues in resource categorisation are illustrated by examples.

Learning Outcomes

Participants will learn to:

1. Evaluate the different categories of reserves and resources.
2. Propose the reasons for uncertainty and the need to address it.
3. Assess the volumetric derivation of resources, both deterministically and probabilistically.
4. Appraise the limitations of resource assessment methods.
5. To assure resource assessments by integrating the relationship between volumes, development plans and economics.

Duration and Training Method

This is a three-day classroom-based course with worked examples, case studies, exercises and discussions.Classroom lectures will be supported and illustrated by case studies, hands-on exercises and discussions.

Who Should Attend

The course is targeted at mid to senior level engineers and geoscientists needing to understand better the principles and practice of reserves and resource reporting.

Prerequisites and Linking Courses

This course assumes that participants have spent a period of time involved with the reserves booking process. An understanding of the mathematics of volumetric resource assessment, including the treatment of uncertainty, is useful but not essential. Familiarity with some reservoir engineering and economic concepts and terminology is assumed.

Course Content

1. Introduction

a. List of issues to be covered
b. Key concepts
c. Resource defi nitions and guidelines

2. Primary resource estimation methods

a. History and principles
b. The framework of reserves classifi cation
c. Petroleum resource management systems

3. SPE- PRMS Scheme
a. The Project - critical concept and basis for the system
b. Risk and uncertainty concepts
c. Classifi cation and categorisation
d. Contingent Resources Rankings
e. Commercial Considerations
f. Reserves Check list and “real-life” examples

4. What is the SEC Scheme?
a. SEC - Post 2010
b. Comparison between the SEC and SPE-PRMS systems

5. Resource Booking Approach
a. Booking of reserves and contingent resources

6. Other Reporting Systems
a. How do other systems map onto the SPE-PRMS system?

7. Estimation Tools – Analogues
a. What constitutes an acceptable analogue?

8. Estimation Tools - Volumetric derivation of hydrocarbons in-place
a. Simple exercise
b. Principles of Monte Carlo analysis
c. Reserves vs. Contingent Resources

9. Assessment of recovery factor (RF)
a. RF rules of thumb for various reservoir mechanisms

10. Risk and uncertainty in resource estimation
a. Understanding and assessing uncertainty
b. Deterministic methods vs. probabilistic methods
c. Correlations and dependencies
d. Undiscovered resources

11. Estimation Tools – Decline curves
a. Reserves category guidance
b. Unconventional gas

12. Estimation Tools – Material Balance and Numerical Simulation
a. Principles, application and limitations

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13. Commercial Considerations

a. Different contract types

14. Case Studies

a. Group Discussion