Course: Formation Evaluation

INSTRUCTOR: Dr. Roberto Aguilera, Ph.D., P.Eng. (Servipetrol Ltd., Canada and University of Calgary)

Duration:

2 days

Price:
Member:U$S 1500
Non members: U$S 1800

Who should attend:

The course is designed for production geoscientists working on quantitative aspects of formation evaluation, petrophysicists, production engineers and reservoir engineers. The course is practical and as such is directed primarily to professionals working or interested in formation evaluation of conventional and unconventional petroleum reservoirs. The word petroleum as used in this course is used to designate natural gas and hydrocarbon liquids.

Contents:

1. Introduction. Continuum between conventional and unconventional (tight gas, tight oil, shale gas and shale oil) petroleum reservoirs. Their integration under the umbrella of a 'Total Petroleum System'. Common thread of unconventional petroleum reservoirs and naturally fractured reservoirs. United States and Canadian experiences. Conventional and unconventional global petroleum endowment.
2. Determination of Flow Units in conventional and unconventional petroleum reservoirs.
3. Basic formation evaluation equations. Importance of the porosity exponent (m) and water saturation exponent (n) in formation evaluation. Mixed wettability effects.
4. How to use the basic formation evaluation equations for pattern recognition and construction of Picket plots that include porosity, water saturation, permeability, process speed (permeability over porosity), capillary pressure, height above free water table, pore throat aperture, grain size, Kozeni's constant and range of initial flow rates.
5. Extension of Pickett plots for evaluation of shaly formations, NMR logs, and shale petroleum reservoirs. Inclusion of water saturation, total organic carbon (TOC), level of organic metamorphism (LOM), distinction between diffusion and viscous flow in Pickett plots for complete pattern recognition in shale petroleum reservoirs.
6. The use of the P1/2 statistical analysis for evaluation of water saturation in conventional and unconventional petroleum reservoirs.
7. Use of drill cuttings for complete quantitative formation evaluation and geomechanical analysis in the absence of core data and well logs.

8. Use of electromagnetic mixing rules for construction of dual and triple porosity models.
9. Use of single, dual, triple, quadruple porosity and quintuple porosity models in formation evaluation.