Best Technology Solutions **BTS**

Effective Integrated Reservoir Analysis Tools

Training Program

Introduction:

The goal of integrated reservoir analysis is for participants to understand the concepts and develop subsurface skills to integrated analysis of rock, pore, and fluids from various sources. Participants will gain an appreciation of working with various scales (micro to mega) to solve problems associated with identifying and exploiting reserves. Concepts gained will allow participants to apply tools for analysis of the underlying uncertainty and assumptions used in many reservoir analysis techniques. A subsurface integration process model is presented which provides a multidiscipline methodology for solving reservoir problems, from facies, Petrophysical rock typing, flow unit characterization and an introduction to capillary pressure saturation height modeling. Throughout the course the participants are encouraged to think about big picture volume in-place, static modelling and dynamic reservoir simulation.

Who Should Attend?

Geologists, Geophysicists, Reservoir Engineers, Production Engineers, Petrophysicists, Petroleum Engineers, Drilling Engineers, Field Development Engineers, Managers, Asset Managers, Oil & Gas Engineers, Reservoir Operators, Surveillance Engineers, Technicians, Engineering Trainees, Technical Managers, Technical Assistants, Technicians, Chemists, Physicists, Technical Supervisors, Service Company Personnel responsible for improving the performance of petroleum reservoirs, Engineers involved in the evaluation of 2D and 3D seismic data, Technical and business professionals such as Landmen, Administrators, Executive Assistants, and Finance and Planning Professionals working in the oil and gas industry who would like the basics of the "science" of oil business, Land and royalty owners, as well as recent geology and geophysics graduates who would like an overview of the petroleum geophysics

Course Objectives:

By the end of this course, delegates will be able to know about:

- Concept of total and effective porosity
- The basics of core-log integration
- Generic integrated workflow process
- Integration of geology, facies and Petrophysical rock types
- Applied capillary pressure, wettability and relative permeability
- Water saturation is not an accident
- Upscaling from pore throat radius to Petrophysical rock type to flow units
- Introduction applied capillary pressure and saturation height modeling
- Why Petrophysics is the key to success in a static or dynamic model
- The relationship between the free-water level, various contacts, pore throat radius, wettability and saturation distribution

Course Outline:

- Introduction, integration work and thought process
- Rock types, flow units and reservoir characterization
- Applied examples and deliverables
- Geologic framework
- Mineralogy
- Reservoir compartmentalization
- Formation evaluation
- Introduction to static and dynamic reservoir simulation
- Introduction to the conceptual 3-Line log analysis method
- Applied hands on workshops
- Introduction to reservoir and lithofacies
- Carbonate pore-geometry
- Thin-section and petrophysical description workshop and presentation
- Introduction to routine core analysis
- Core porosity

- Overview of well log porosity, total and effective porosity
- Overview of core permeability
- Basics of net mean stress
- Fundamentals of Petrophysical rock types
- Overview and the concept of practical capillary pressure and applications
- Saturation distributions from rock types
- Capillary pressure data
- What is Winland (Pittman) pore throat radius and why is it important
- Exercise: simple core analysis using Winland based method
- Clastic, facies and Petrophysical rock types case studies
- Carbonate, facies and Petrophysical rock type case studies
- Capillary pressure and pore geometry
- Stress and reservoir performance
- Petrophysical quick scan analysis
- Permeability
- Relative permeability and wettability
- Archie saturation, cementation, and saturation exponent
- Exercise: well evaluation with core and log data
- Introduction to saturation height methods (SHM)
- Wettability and why it is important
- SHM case studies both clastic and carbonate
- Introduce flow unit concept
- Analysis and workshop
- Final well analysis exercise: facies, core-log petrophysical rock types
- Flow units and saturation height model individual and presentations