



ELEMENTS OF RESERVOIR PETROPHYSICAL EVALUATION

INTRODUCTION

- Subsurface Environment and Rock Properties
- Subsurface Pressure
- Subsurface Temperature
- Applied examples and deliverables

RESERVOIR DESCRIPTION

- Core characterization
- Scanning Electron Microscopy (SEM)
- X-ray diffraction
- Microprobe and Cathodoluminescence
- Fluid inclusion microthermometry

RESERVOIR HETEROGENEITY AND COMPARTMENTALIZATION

- Reservoir heterogeneity and compartmentalization
- Heterogeneity (Siliciclastic Reservoir Types)
- Heterogeneity (Carbonate Reservoir Types)
- The impact of different heterogeneity types on oil recovery

TEXTURAL AND DIAGENETIC CONTROLS ON RESERVOIR QUALITY

- Rock compositional properties
- Rock Textural Properties
- Diagenesis and diagenetic processes
- Clastic Diagenesis
- Carbonate Diagenesis

CORE ANALYSIS

- Coring methods
- Core Processing
- Core Plugging
- Spectral Gamma Surface Log
- Core Photography
- Grain Density measurement
- Fluid Saturation measurement methods
- Core Porosity measurement methods
- Porosity Calculations and Sensitivity to Measurement Error
- Stress Sensitivity of Porosity
- Core permeability measurement
- Stress Sensitivity of permeability
- Relative permeability
- Applied examples and deliverables

FLUID ANALYSIS

- Liquid density
- Viscosity definition and measuring methods
- Interfacial tension definition and measuring methods
- Wettability definition and measuring methods
- Applied examples and deliverables



FUNDAMENTALS OF CAPILLARY PRESSURE AND APPLICATIONS

Laboratory methods for measuring capillary pressure
Capillary Pressure Data Conversion
Permeability from capillary pressure data
Pore geometry and pore size distribution
Height above Free Water Level
Reservoir Recovery Efficiency
Reservoir vs. Non-Reservoir
Seal Capacity Evaluation
The Leverett J-Function
Applied examples and deliverables

ROCK TYPING METHODS

Pore Throat size method such as Winland's R_{35}
Flow zone indicator (FZI)
Cluster analysis method
The discrete rock type (DRT)
Rock fabrics number (RFN)
Mercury Injection Capillary Pressure curves
Leverett's J-function
Nuclear magnetic resonance (NMR)
Intelligent systems such as artificial neural
Applied examples and deliverables