



Iran section

## **SPE-Iran Section Technical Workshop**

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# **ELEMENTS OF RESERVOIR PETROPHYSICAL EVALUATION**

### **Course Content**

#### **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 R35  
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