Best Technology Solutions **BTS**

Advanced Well Log Interpretation & Formation

Evaluation Techniques Training Program

Introduction:

Well logs are detailed record of the geologic formations by a borehole. These are comprehensive and important data gathered in any phase of a well's history to identify petrophysical properties which in turn defines the economic value of a reservoir. The techniques in analysis and interpretation of well logs are therefore essential in identification of hydrocarbon recovery.

In the E&P business, integrated petroleum engineering studies and field development plans are management tools which are used to maximize economic recovery of hydrocarbons. Petrophysical engineers fulfill a key role in analyzing and interpreting subsurface reservoir data, which form the basis for reservoir models. E&P technical staff and team leaders involved in integrated studies require more than general skills in petrophysical and interpretation techniques to produce quality input to development plans.At the end of the course, participants will be able to quantitatively identify the reservoir quality, measure the storage capacity of the reservoir through integrating the reservoir and petrophysical data and to improve oil recovery

Who Should Attend?

Geologists, Geophysicists, Petrophysicists, Stratigraphers, Geochemists, Sedimentologists, Reservoir, Petroleum, Wellsite Geologists, Petroleum Engineers, Drilling Engineers, Reservoir Engineers, Production Engineers, Operations Engineers, Technologists, Log Analysts, E&P Personnel, Exploration & Development Personnel, Surveillance Engineers, Geologists, Reservoir Engineers, Seismic Interpreters, E&P Managers, Data Management and Oil & Gas Personnel

Course Objectives:

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

- Drive a consistent and effective Petrophysics inputs to improve oil recovery
- Understand rock properties and pore geometry
- Capitalize on integration reservoir and petrophysical data to maximize economic recovery of hydrocarbons
- Attain the knowledge and practical use of total and effective porosity calculation
- Understand new techniques and tools in well logging including imaging logging tools
- Acquire knowledge on permeability and rock quality interpretation
- Learn and practice integration of core analysis and open-hole logs
- Learn from practical experiences and case studies scenarios

Course Outline:

Petrophysics & Rock Properties

- Porosity Types
- Wettability and Connate Water
- Permeability
- Permeability and porosity relationship
- Resistivity
- Fluid Saturations

Open-Hole Logging Tools

- Definition, measurements, application, equations
- Lithology Tools: GR, NGT, SP, Porosity Tools: BHC, FDC, CNL
- Resistivity Tools: DLL, DIL, MSFL, Other Tools: EPT

Logging While Drilling (LWD)

- Lithology Tools
- Resistivity Tools
- Porosity Tools

Logging Operations and Quality Control

- Logging Tools Operations
- Log Quality Control

Quick Look Well Log Interpretation

- Lithology interpretation
- Porosity calculations
- Rw determination
- Petrophysical parameters (a, m, n)
- Vshale estimation
- Fluid Saturations
- Permeability

Cased-Hole Logging Tools

- Definition, measurements, application
- Thermal Decay Time (TDT, RST)
- Cement Bond (CBL-VDL)
- Production Logging (PLT)
- Flowmeters
- Gradiomanometer
- Manometer
- Thermometer
- Casing Collar
- Gamma Ray and Caliper

- Porosity tools in casing (Neutron & Sonic)
- Lithology tools in casing (GR & NGT)

Recent and Advanced Tools

- Definition, measurements, application, equations
- Geological Tools: Dipmeter, FMS, FMI, ECS
- Sedimentary sequence and depositional environment
- Resistivity Tools: HRLA, ARI, AIT, Porosity Tools: APS, LDT, DSI
- Hydrocarbon Evaluation Tools: NMR, CMR, MDT, RFT

Formation Evaluation

- Rock Physics
- Porosity Types
- Permeability
- Permeability and Porosity Relationships
- Fluid Saturation
- Lithology Interpretation Vsh Calculation
- Rw determination methods
- Petrophysical parameters (a, m, n)
- Archie's Relationship
- Core Analysis and Core-Log Relationships

Advanced Formation Evaluation

- Reservoir Petrophysical Model Evaluation
- Modern Approaches and Techniques in Petrophysics
- Multi-Well Bases Study
- Multi-Well Data-Base
- Key Well Study, Data Normalization
- Variable Petrophysical Parameter values
- Standardization of Petrophysical Parameters

- Lithology Determination
- Lithology Model
- Lithological Parameters
- Petrophysical Parameters Determination
- Archie's Parameters
- Most Problematic Parameters
- Old Methods (Constant Value)
- New Methods (Variable Values)

Computer Processed Interpretation (CPI)

- Hydrocarbon Quality
- Fluid Contacts (GOC-GWC-OWC-ODT-WUT-FWL)
- Reservoir Summations
- CPI examples
- CPI Results quality check