

# Sedimentology: From Introduction to Application



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## Description:

Participants of this 5-day Sedimentology from Introduction to Application training course are those who are familiar with exploration and geology and needs a new depth to their interpretation by knowing the sedimentary setting from data and tools in hand, work on mapping/correlations, understand the different litho-facies with picking detailed zonation from cores and logs in order to prepare for modeling.

Knowing the environment of deposition and related sedimentary structures are vital for the sake of evaluating basins and trace the possible involved depositional model.

This will have a direct impact on studying reasons of well failure critique and/or delineated more success pay stories. A direct outcome of the course is to ensure maximizing usage of acquired data after drilling for exploration, appraisal and development success. By choosing this BTS training course for the company exploration and development team, we are closing the gap between interpretation geologists, petrophysicists, well site geologist, geophysicists, and reservoir engineers.

### **This training course will highlight:**

- Sedimentary environment of deposition
- Rock units and sedimentary structures
- Form core to log and vice versa
- All possible involved facies
- From sedimentary to Static modeling

**By the end of this training course, participants will learn to:**

- Develop possible sedimentary analysis of the data in hand
  - Understand the sedimentary depth to the work done
  - Build an estimated environment/facies scheme to the working area
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- Analyze the sedimentary structure impact onto exploration
  - Apply related sedimentary deposition and facies to build /create the model

## Objectives:

**The main goals of this BTS training course** are to stimulate the participants with knowledge of the sedimentology and its importance in the oil industry, understand and apply this knowledge to evaluate related environment of deposition, rock unit description (from texture and diagenesis to facies), analyze and evaluate the zonation from both core to log and vice versa to create model that fit, as best as we can, geological, geophysical and petrophysical setting versus reservoir and production performance.

## Course Outline


### Day One: Sedimentology Concept and Introduction

Competency Description: During day one, attendees should get familiar with sedimentology, know why care in studying it and where it fit with each respected discipline. Once feeling that, all attendees will share discussions on their expectations and how they can merit of that in the coming days

#### Key behaviors

- Know What is sedimentology
- Learn Why care / per discipline
- Learn different advantages if knowledge is enriched with sedimentology
- Apply diagenesis and rock types to current reservoirs
- Link core interpretations and views to other data
- Determine What is petrography and photomicrographs

#### Topics to be covered


- Basic concept of sedimentology
  - Rock types
  - Clastics Vs non Clastics
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- Litho-stratigraphic units vs Bio and Ichno-facies
- Erosion, deposition and diagenesis
- Sedimentology from field, core to petrography

### **Day Two: Sedimentary Environment of Deposition and related Structures**

Competency Description: During this second day, attendees will have their hand on the most important application of sedimentology: environment of deposition and related structures. Cases will be discussed with some projection onto oil and gas industry

#### **Key behaviours**

- Knowing what is axioms on depositions
  - Related specific environment to rock types
  - Differentiate between several environment of deposition
  - Differentiate between tectonic and sedimentary related structures
  - Relate environment of deposition and related structures onto oil and gas industry
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### Topics to be covered

- Impact of petrography onto reservoir behavior
- Clastic environment of deposition
- Clastic related sedimentary structures
- Carbonate environment of deposition
- Carbonate related sedimentary structures

### **Day Three: Projection of Sedimentology onto Oil and Gas Industry**

Competency Description: During this third day, attendees will be able to learn more about facies from both core and logs. Mapping and fault sealing will be tackled from a sedimentological point of view.

### Key behaviors

- Recognize core sedimentological facies and facies associations
  - Perform correlations from core to log and vice versa
  - Analyze maps with a sedimentological perspective
  - Link analyzed facies to reservoir types
  - Related sedimentology onto petroleum system and plays
  - Evaluate fault sealing analysis for leaking points, spill and detect thief zones
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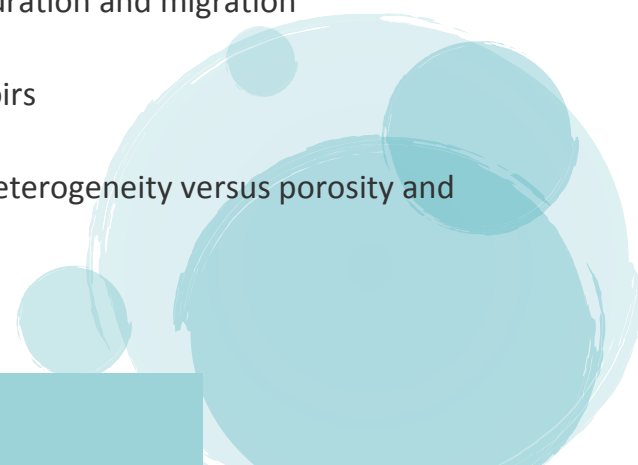
### Topics to be covered

- Core sedimentological facies and facies associations
- From core to log and vice versa
- Logs, correlations and mapping in sedimentology
- From facies to reservoir types
- Related sedimentology onto petroleum system and plays
- Fault sealing, thief zones Vs sedimentology

### **Day Four: Oil Generation from Sedimentary Basins to Reservoir I**

Competency Description: During the fourth day, attendees will be on voyage from the generation of the first oil drop in the sedimentary basin through a full journey of maturation and migration until it meets its final trapped reservoir destination.

### Key behaviours

- Identify and differentiate basins types
  - Learn the role of basins in ranking the source rock
  - Estimate the impact of sedimentology in oil/gas maturation and migration
  - Understand the sedimentological controls on reservoirs
  - Determine the link between the general fabric and heterogeneity versus porosity and permeability
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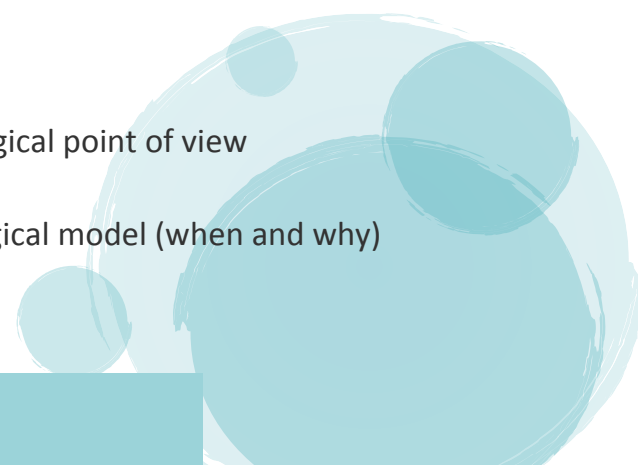
#### Topics to be covered

- Basins types
- From basins concept to source rock and kitchening
- Sedimentological role in maturation and migration
- Sedimentological controls on reservoirs
- Fabric, anisotropy and packing versus porosity and permeability

#### **Day Five: Oil Generation from Sedimentary Basins to Reservoir II**

Competency Description: During the last day, attendees will put the last brick in a sedimentological journey that started with sedimentary rock deposition and diagenesis to oil generation and entrapment and how we can simulate that in a model.

#### **Key behaviours**

- Differentiate between Trap and seal
  - Analyze What facies and depositional environment that will be involved in modeling
  - Learn the role of sedimentology in modeling?
  - Develop a model in a team work from a sediment logical point of view
  - Determine the need of the up scaling of sediment logical model (when and why)
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### Topics to be covered

- Trap and seal is it the same?
- What facies and depositional environment have to do with modeling?
- Do we need sedimentology in modeling? (a 2 real case with and without sedimentology)
- How to build a model in a team work , a sediment logical point of view
- Up scaling of sediment logical facies and zonation when and why