

Introduction to Clastic Reservoirs: Stratigraphic and Structural Heterogeneities that Impact Performance (G047)



Tutor(s)

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Overview

This is a 5-day in-depth introduction to clastic reservoirs, with a focus on stratigraphic and structural heterogeneities that impact reservoir prediction and production. The course will benefit any subsurface team member that is concerned about how variations in the geology might impact reservoir performance. Taking this course will allow one to better interpret subsurface data sets and outcrop exposures, resulting in a better understanding of the impact of stratigraphic and structural heterogeneities on reservoir performance.

It is recommended that you take this class before taking [Clastic Reservoirs Field Seminar: Stratigraphic and Structural Heterogeneities That Impact Reservoir Performance, Colorado and Utah \(G012\)](#) in order to make better outcrop observations and understand the terminology used in field discussions. This will maximize the benefit of time spent in the field for G012 participants.

Duration and Logistics

Classroom version: 5 days; a mix of lectures (75%) and hands-on exercises (25%). The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: Five 4-hour interactive online sessions presented over 5 days. A digital manual and exercise materials will be distributed to participants before the course. Some reading and several exercises are to be completed by participants off-line.

Level and Audience

Fundamental. It is a background course for subsurface team members to teach geologic basics that are often missed when predicting/understanding reservoirs. These basics can be applied to better predict reservoir performance for estimating reservoir productivity in exploration projects. It also allows for better field development planning and provides understanding of conformance issues within an existing field.

Objectives

You will learn to:

1. Understand detailed facies analysis within deposits of wave dominated deltas, fluvial dominated deltas, fluvial systems, tidal/estuarine, eolian and turbidites.
2. Recognize key facies in cores and logs.
3. Use depositional models to make better reservoir geometry predictions.
4. Divide subsurface reservoirs into flow units that capture key reservoir flow characteristics and

heterogeneities at a variety of reservoir model scales.

5. Communicate and discuss flow unit properties with subsurface team disciplines.
6. Use key sequence stratigraphic concepts in a practical and predictive way.

Course Content

Course Details

The seminar emphasizes:

- Basic tools used in subsurface interpretation
 - Sedimentology
 - Stratigraphy
 - Sequence stratigraphy
- An overview of facies associated with:
 - Fluvial and wave dominated deltas
 - Fluvial systems
 - Eolian deposits
 - Tidally influenced shoreline deposits
 - Turbidites
 - Lacustrine
 - Incised valley fill
- Sequence stratigraphic concepts including:
 - Sequences and parasequences
 - Sequence boundaries
 - Flooding surfaces and transgressive surfaces of erosion
- Structural heterogeneities:
 - Fractures, deformation bands and fault seal