



# STRUCTURAL INTERPRETATION OF SEISMIC DATA & CHARACTERISATION AND MODELING OF FRACTURED RESERVOIR

## Overview

The application of structural geological concepts to the interpretation of seismic data is fundamental for correctly reconstructing sub-surface structures and for understanding their geometric and kinematic development. This has important impacts on the exploration and generation of drilling prospects.

The interpretation and identification of sub-surface structural targets should always be supported by a complete understanding the regional tectonic framework of the area being aware of structural variability through space and time. Principles and structural concepts from different tectonic settings (compression, extension, inversion, strike-slip, etc.) and their application in seismic interpretation will be presented through a diversity of worldwide case examples. The participants will learn theoretical and technical approaches in structural interpretation of seismic data with numerous examples and by hands-on exercises.

The course further offers the opportunity to review the workflow and best practice to characterize and model the fault and fracture network characteristics when exploring, appraising or developing fractured reservoirs. The course will focus on the main tools and approaches to use to understand the geometries and the properties of fault and fractures and their impact on reservoir performances.

During the course, a review of the main factors controlling the development and evolution of the structural framework will be analysed. Using examples and case studies the participants will follow the entire workflow for the characterization of fractured reservoirs starting from the regional picture, to the conceptual structural model and ending into the calculation of petrophysical properties of the fault and fracture network at different scales in the reservoir.

Particular emphasis will be given to the understanding of the uncertainties and impact of different data and input for the modelling of fault and fracture at reservoir scale.



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## Objectives and Key Outcomes

The course is delivered interactively through engaging class lectures, presentations, practical exercises and projects which help participants to understand of seismic data interpretation & characterisation and modelling of fractured reservoir.

By the end of the course, delegates will be able to learn the:

- ❖ Structural interpretation in extensional settings
  - Structural concepts
  - Examples and practical cases
- ❖ Structural interpretation in compressional settings
  - Structural concepts
  - Examples and practical cases
- ❖ Structural interpretation in strike-slip/oblique settings
  - Structural concepts
  - Examples and practical cases
- ❖ Balancing and structural restoration
  - Principles and techniques
- ❖ Definition and challenges of fractured carbonate reservoirs.
- ❖ Main concepts of fault and fractures generation and evolution.
- ❖ Fracture and fault analysis (tools) & Structural Conceptual Model.
- ❖ Fracture and fault prediction (strain analysis & forward modelling).
- ❖ Modelling Fault & Fracture Networks (DFN).

## Who Should Attend

Geophysicists, Geologists, Geoscientists, Geomodellers and Subsurface Engineers, Reservoir Engineers working for the exploration appraisal and development of fractured reservoirs

## Course Duration

5 days