

## Fractured & Unconventional Reservoir Modeling

| Date                             | (\$)Fees |
|----------------------------------|----------|
| 17 March -21 March 2024 Istanbul | 3500     |

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### Why Choose this Training Course?

Participants of this course will be able to determine the major data requirements and modeling issues associated with various types of fractured and unconventional reservoirs as well as how to set up rational exploration and development programs for these reservoirs

This course provides a unique opportunity to learn all the aspects related to the understanding and modeling of fractured and unconventional reservoirs. Participants will gain knowledge of how fractured reservoirs differ from conventional reservoirs, and how to approach their fractured reservoir projects in a systematic manner. The workshop covers all the aspects of modeling fractured reservoirs. Using actual data from Teapot Dome, (WY, USA), the geoscientist will be able to construct fracture models that integrate geology, geophysics and reservoir engineering. Emphasis will be given to the critical use of seismic attributes derived from inversion, volumetric curvature and spectral imaging. Using actual Teapot Dome field data from the Tensleep and Niobrara Shale formations and a hands-on approach, the workshop allows the geoscientist to identify fractures and to construct predictive 3D fracture models that can be used to identify productive zones, plan wells and to create fracture porosity and permeability models for reservoir simulation. A multidisciplinary approach to the study of these reservoirs will be stressed. Participants will learn what controls the performance of fractured reservoirs and the type of data which are required to manage them.

### What are the Goals?

#### Participants attending the course will:

- Understand all geological and seismic aspects related to modeling fractured reservoirs
- Generate actual reservoir models from a real case study data set
- Integrate geology, geophysics, and reservoir engineering concepts in application to a sound reservoir model
- Overcome the challenges in modeling fractured and unconventional reservoirs through the use of post stack narrow azimuth seismic
- Identify fractures and model their density, and orientation
- Recognize productive zones, plan wells, and create fracture porosity and permeability models for reservoir simulation

### Who is this Training Course for?

**This course is suitable to a wide range of professionals but will greatly benefit:**

Professionals who deal with fractured reservoirs and who need to develop them using all types of available data. Further, the course will be very useful to all Geoscientists involved in clastics, carbonates and shale plays where fractures play a major role.

## **How will this Training Course be Presented?**

The course will include presentations with exercises using the course notes and Excel. A software will be provided to the Delegates to work on actual and very complex fractured reservoirs. Using the Teapot Dome, WY, USA actual data, delegates will be divided in teams to predict the fracture density at different blind wells. The resulting good and poor predictions at blind wells will be explained to demystify the popular believe that fractured reservoirs are too complex to be predictable.

## **The Course Content**

### **Day One: Fractures and their Effects**

- Introduction: Fracture Types
- Fractures in Cores
- Fractures in Outcrops
- Geomechanics and fractures
- Production from fractured reservoirs

### **Day Two: Modeling Fractured Reservoirs**

- Introduction
- Factors Affecting Fracturing
- Methodologies to Characterize Fractured Reservoirs
- The Use of Seismic to Improve Fracture Modeling

### **Day Three: Seismic Attributes for Fracture Modeling**

- Post stack seismic attributes
- Pre stack seismic attributes
- Azimuthal anisotropy

### **Day Four: Integrated Workflow for Modeling Fractured Reservoirs**

- Integrated Workflow Applied to Fractured Reservoirs
- Hands-on Application: 2 Different Data sets from the Teapot Dome (WY)

### **Day Five: Development and Production Preparation**

- Predicting and Imaging Production sweet spots
- Determining Optimum Well Paths
- Preparation for Simulation

- Predicting Production and Development Problems by Reservoir Types
- Critical consideration in designing depletion scenarios in fractured reservoirs
- Discussion of Delegates' own fractured reservoir challenges. Delegates are encouraged to bring their software and their data to build on the spot improved fractured models using the lessons learned during the course.



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