



3D Seismic Interpretation Techniques

Training Program

Introduction:

The main objective of this course is to provide to the professionals of exploration and production of the oil industry the necessary knowledge on visualization, integration and interpretation techniques recently developed for interpreting 3D seismic data. Participants will gain a solid foundation in the understanding of the applications and the role of the seismic interpreter on studies related to seismic attributes before and after stacking, AVO, sequence seismic stratigraphy, seismic monitoring (4D), well to well seismic and integrated multidisciplinary studies. We will guide participants through recent examples, case studies and relevant exercises to efficiently convey the concept that the integration of all available data adds value to the predictions that result from seismic interpretation models. The modular design of this course allows quickly adapt to full or reduced versions, meeting the requirements, profiles and interests of different groups of participants. The course will provide to the professionals of exploration and production of the oil industry the necessary knowledge on visualization, integration and interpretation techniques recently developed for interpreting 3D seismic data.

Who Should Attend?

Geologists, Geophysicists, Reservoir Engineers, Production Engineers, Petrophysicists, Petroleum Engineers, Drilling Engineers, Field Development Engineers, Managers, Asset Managers, Oil & Gas Engineers, Reservoir Operators, Surveillance Engineers, Technicians, Engineering Trainees, Technical Managers, Technical Assistants, Technicians, Chemists, Physicists, Technical Supervisors, Service Company Personnel responsible for improving the performance of petroleum reservoirs,

Course Objectives:

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

- Understand the role of interpreting seismic data for reservoir characterization and production projects or basin analysis in oil exploration projects
- Use the concepts and applications of rock physics, scaling, vertical and lateral resolution, attributes calculation and visualization techniques in conducting effective interpretation, coherent and integrated, to comply with the basic premises of geological models commonly accepted
- Recognize the importance of the participation of the seismic interpreter during the phases of acquisition and processing of seismic data, 2D or 3D
- Familiarize participants with the concepts of AVO and classification of AVO anomalies types for identifying fluids contained in the studied seismic reflectors
- Understand the concepts and applications of seismic monitoring of reservoirs and their relation to reservoir simulation
- Provide the participants with knowledge on the latest applications of seismic, involving interpretation: seismic well to well, multicomponent seismic and shallow seismic among others

Course Outline:

Introduction

- Role of geophysical interpreter in the value chain of the oil industry
- Brief history of the use of 2D and 3D seismic for oil exploration and production
- Fundamental concepts of geology: sedimentology and structure
- Seismic data acquisition
- Seismic data processing
- Seismic interpretation: data validation, calibration wells, mapping, incorporating faults, key factors for effective visualization

Sequence Seismic Stratigraphy and Seismic Attributes

- Basic concepts and applications to siliciclastic and carbonate environments
- Scaling problems
- Theory and Application of calculating attributes before and after stacking
- AVO as a key factor in determining the fluid content of the rocks

Rock Physics and Visualization Techniques

- Theory of rock physics measurements, relevant results
- Rock physics applications to modeling of the seismic response
- Seismic interpretation exercises

Interpretation of Seismic Data

- General processes of interpretation of seismic data
- Description of seismic interpretation case studies which highlights the integration of geoscience and production data
- Seismic reservoir characterization
- Multicomponent seismic
- Potential flaws in the interpretation and how to prevent them

Special Seismic Techniques

- Seismic monitoring (4D seismic)
- Well to well seismic