

E- 331

▲ Who should attend the course?

Senior geoscientists who need to acquire theoretical and practical know-how on seismic inversion, (acoustic and elastic), using a 2D-3D inversion software (InterWell™) during workshops.

▲ Duration

5 days

▲ Dates & Location

April 07 to 11, 2008

September 29 to  
October 03, 2008

Rueil-Malmaison (Paris)

▲ Tuition Fees

€ 2,090

▲ Course Coordinator

Eric FAGOT

Ref. RES / SEISINV

# SEISMIC INVERSION: THEORY AND PRACTICE

## OBJECTIVES

To present concepts, methodologies and techniques (illustrated by examples and case studies) on seismic inversion methods (acoustic and elastic) used for field study and reservoir characterization.

On completion of the course, participants will be able to:

- List workflows and objectives of seismic inversion for Reservoir Characterization
- List and understand the feasibility study steps
- Organize, plan and supervise 2D and 3D seismic inversion

## COURSE CONTENT

### PETRO-ELASTIC ANALYSIS AND MODELING

0.5 day

What is Seismic Reservoir Characterization? - Method used - Scale Issues  
What is Rock-Physics? - Why do we need Rock-Physics? - Key Parameters  
Workshop

### ELASTIC PARAMETERS AND AVO

0.5 day

What is AVO? - Direct AVO Anomaly Detection on Post-Stack Data - Usual Workflow of AVO Studies  
Wave Propagation - Reflectivity with Offset - Practical Simplification - AVO Attributes  
Workshop

### DATA PRE-REQUISITES

0.25 day

Introduction - Generation of Angle Stacks - Rigorous NMO Corrections  
Preserved Amplitudes - Frequency Harmonization - Zero-Phase Seismic  
Workshop

### WELL TO SEISMIC CALIBRATION

0.5 day

Objectives and Workflow - Quality Control and Preconditioning - Signal to Noise Estimation  
Wavelet Extraction Techniques - Wavelet Deconvolution - Calibrage - Multi-Well Calibrage  
Zero Phasing and Deconvolution  
Workshop

### AVO INTERPRETATION

0.25 day

Introduction - AVO Seismofacies  
AVO class - AVO Facies Volume  
Workshop

### ACOUSTIC INVERSION

0.75 day

What is Seismic Inversion, - What are the advantage? - Required Input Data - Inversion Techniques  
Post-Stack Inversion - Initial Impedance Modeling - Practical Examples  
Model Based Inversion - Bayesian Approach - Practical Examples

### ELASTIC INVERSION

0.75 day

Pre-Stack Inversion - What Elastic Inversion? - Required Input Data - Practical Examples  
Pitfalls and Solution - Limitations - Real Case Examples  
Validating Inversion Results - Direct Use of Inversion Results  
Workshop

### ATTRIBUTE CLASSIFICATION

0.5 day

Introduction - Overview of Reservoir Probability Prediction - Statistical Approach for Mapping  
Neural Network Approach - Supervised versus Non-Supervised - Seismic Facies Analysis  
Workshop

### PREDICTION TECHNIQUES

0.5 day

Introduction to Reservoir Properties Prediction - Linear Transform - Geostatistical approaches  
Petro-Elastic Prediction from Classification - Prediction of Dominant Lithology Volume  
Practical Recommendation and Validating Steps  
Workshop

### FRACTURED RESERVOIR CHARACTERIZATION

0.5 day

General Context - Fracture Scales and Objectives  
Post-Stack Approach - Use of Azimuthal data  
Seminar Wrap-Up and Conclusions

Maximum 12 attendees. May be organized for a single company in French or in English