Petrogenium. Academy

Upstream (Geophysics)

Structural Interpretation of Seismic Data

Consultant / Trainer

Tim Needham

The **Petrogenium (in collaboration with EPTS) Structural Interpretation of Seismic Data** will benefit geoscientists and petroleum professionals who interpret and apply seismic data in exploration, appraisal, and production. It is particularly relevant for geologists, geophysicists, reservoir engineers, and structural specialists seeking a comprehensive understanding of how tectonic structures are formed, imaged, and analyzed using seismic techniques. Participants involved in reservoir modeling, development planning, fault seal analysis, and fractured reservoir evaluation will gain valuable insights into building accurate structural frameworks and predicting reservoir distribution and quality.

Participants

This **Petrogenium.** course aims at geologists, geophysicists and petroleum and reservoir engineers.

Learning Objectives

Participants will gain understanding of the workflows required for successful structural analysis and be able to apply the necessary techniques, and the data requirements for such studies. Participants will in addition gain an appreciation of the uncertainties involved.

Programme

Day 1

Introduction

- Setting the scene

- The importance of structural geology in seismic interpretation for exploration and production

- Defining the structure

- Techniques of structural analysis

- Interpretation of seismic data: 2D, 3D & time-lapse

- Limitations of seismic

- Exercise: Alternative interpretations

Geomechanical analysis

- Mechanisms of fault and fracture formation

- Analysis of stress and strain and their applications

- How can geomechanical concepts be used in seismic interpretation?

- Exercise: Stress analysis and fault reactivation

Extensional tectonics 1

- Fault geometry, growth & linkage

- Interaction of faults

- Exercise: Fault mapping and use of displacement analysis

- Fault mapping and validation of interpretations

- Restoration in extensional settings: 2D & 3D

- Exercise: Fault geometry prediction

- Case study: Fault mapping from North Sea, Algeria & NW Shelf Australia

Why select Petrogenium.?

The above support will be provided by principal

consultants with 30+ years world-class experience

in the technology and hands-on know-how from

operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com
Website:https://www.petrogenium.com/training/

Because Experience Matters

Programme

Day 2

Extensional tectonics 2

- Basin-scale faulting and uplift/subsidence analysis

- Interpretation of basin-scale structure

- Extension at continental margins

- Case study: Restoration and forward modelling – North Sea & NW European margin

- Relationship between seismic and sub-seismic scale deformation.

- Case study: Fault population analysis from two oilfields

Folds and folding mechanisms

- Fault-related folding

- Mechanics of folding

- Seismic interpretation of folds.

- Analysis of curvature: applications and limitations.

- Case study: Curvature on fold structures at subseismc and seismic scales

Why select Petrogenium.?

The above support will be provided by principal

consultants with 30+ years world-class experience

in the technology and hands-on know-how from

operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com
Website:https://www.petrogenium.com/training/

Because Experience Matters

Programme

Contractional tectonics:

- Thrust geometries

- Thrust-related folding

- Interpretation techniques

- Exercise: Section construction and thrust restoration

- Structural restoration & forward modelling: testing the interpretation.

- Traps and fields in contractional settings

- Case studies: Foreland fold-thrust belts examples and histories - Moine thrust, Andean thrust belt & Zagros

- Case studies: Deep water fold belt examples and histories – Namibia, Niger delta

Inversion tectonics

- Recognition of inversion on seismic

- Reactivation of normal faults

- Extensional collapse on thrust faults

- Implications for trap and seal integrity

- Case study: Inversion in NW Europe & French Alps

- Exercise: Inversion interpretation, SE Asiary of day 3

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com
Website: https://www.petrogenium.com/training/

Because Experience Matters

Programme

Day 4

1. Teamc: Summary of day 3

2. Magnetics JDF IV

3. Exercise: Mag2dc Inv

4. Local Magnetics

5. Exercise: Magnetic Latitudes

6. Videos: Magnetic Dangers, PGK Machine learning

7. Exercise: Grav-Mag

8. ML Keras, TensorFlow

9. Exercise: Geomodel Inv

10. Supervised, Unsupervised and Semi-Supervised learning

11. Quiz 4

Why select Petrogenium.?

The above support will be provided by principal

consultants with 30+ years world-class experience

in the technology and hands-on know-how from

operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com
Website:https://www.petrogenium.com/training/

Because Experience Matters