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COURSE BROCHURE

2D and 3D Seismic Interpretation and Structural Mapping Training Course

5 – 9 September 2027
Muscat

2D and 3D Seismic Interpretation and Structural Mapping Training Course

Ref: 1746_64054 **Date:** 5 – 9 September 2027 **Location:** Muscat **Fees:** 6500 GBP

2D and 3D Seismic Interpretation is a 1-week training course for geoscientists and exploration geologists who turn reflection data into an interpreted structure map that drilling and appraisal decisions can rest on. Exploration portfolios now depend on fewer, better-placed wells, so every pick, tie and velocity choice carries weight. Jupiter Prime Training delivers this core edition of 2D and 3D Seismic Interpretation.

Why 2D and 3D Seismic Interpretation Matters Now

Two forces shape seismic work today. Reprocessed legacy 2D lines and new broadband 3D surveys now sit side by side in the same project, and interpreters must reconcile their resolution and positioning. Asset teams want depth maps they can trust for well planning and volume estimates. An organisation that reads its seismic well places wells on robust closures; one that reads it poorly drills dry structures or misses spill points. The course follows established principles of seismic stratigraphy and structural geology rather than any single software package.

Who Gains Most from 2D and 3D Seismic Interpretation

- Geoscientists responsible for picking horizons and faults on exploration and appraisal surveys
- Exploration geologists who integrate well tops and seismic markers into regional maps
- Development geologists preparing structural frameworks for static models
- Petrophysicists who supply logs and checkshots for synthetic seismograms
- Junior geophysicists moving from processing support into interpretation duties

Subsurface teams gain most when a geologist, a geophysicist and a petrophysicist from the same asset attend together and agree one interpretation workflow.

2D and 3D Seismic Interpretation Capabilities

Participants move from reading a single reflection line to defending a mapped closure, with each step tied to a choice an asset team must make.

- Assess seismic polarity, phase and vertical resolution — before committing to horizon picks
- Build a synthetic seismogram and well tie — for the geophysicist and petrophysicist
- Apply consistent horizon and fault picking across 2D grids and 3D volumes — for the mapping lead
- Calculate time-to-depth conversion with a defensible velocity model — for well planners
- Design structure maps with fault polygons and spill points — for prospect reviewers
- Communicate interpretation confidence and map uncertainty — to exploration managers

Key 2D and 3D Seismic Interpretation Terms

- Reflection coefficient — the contrast in acoustic impedance across a boundary that controls the strength and sign of a seismic reflection.
- Synthetic seismogram — a modelled trace built from sonic and density logs, used to match well geology to seismic events.
- Mis-tie — a mismatch in time or phase where two seismic lines cross, which must be resolved before mapping.
- Fault polygon — the outline where a mapped horizon is cut by a fault, defining gaps and throws on the structure map.
- Interval velocity — the average speed of sound within one layer, used to convert seismic time into depth.
- Spill point — the lowest closing contour of a structure, beyond which hydrocarbons would escape.

2D and 3D Seismic Interpretation Day by Day

Day 1: Reading the Seismic Record

- Acquisition Geometry and Fold — What Data Quality Allows
- Polarity, Phase and Wavelet Conventions — Picking Peaks or Troughs
- Vertical and Lateral Resolution Limits — Thin-Bed Detectability Decisions
- 2D Grids Versus 3D Volumes — Choosing the Right Dataset
- Processing Artefacts and Multiples — Avoiding False Reflectors

Day 2: Tying Wells to Seismic

- Sonic and Density Log Conditioning — Reliable Impedance Input
- Synthetic Seismogram Construction — Matching Geology to Events
- Checkshot and VSP Calibration — Fixing the Time-Depth Anchor
- Mis-Tie Analysis Across Line Intersections — Consistent Phase and Timing
- Seismic Stratigraphic Surfaces — Selecting Key Mapping Horizons

Day 3: Horizons and Faults

- Loop Tying on 2D Grids — Closing the Interpretation Network
- Seed Picking and Autotracking in 3D — Speed Versus Control
- Fault Recognition on Sections and Time Slices — Structural Style Choices
- Fault Sticks and Fault Surfaces — Building a Consistent Framework
- Extensional, Compressional and Salt Settings — Analogue-Led Interpretation

Day 4: From Time to Depth

- Gridding and Contouring Time Horizons — Honest Map Surfaces
- Velocity Sources and Their Pitfalls — Selecting a Conversion Method
- Layer-Cake Depth Conversion — Well-Corrected Depth Surfaces
- Fault Polygons and Throw Mapping — Closure Integrity Decisions
- Depth Uncertainty Ranges — Low, Mid and High Case Maps

Day 5: Practising the Interpreted Structure Map

- Applying Well Ties to a New Survey — Day Two Methods Revisited
- Re-Picking a Faulted Horizon Set — Framework Consistency Check
- Depth Converting the Key Reservoir Top — Velocity Model Choice
- Closure, Spill Point and Crest Mapping — Prospect Description
- Interpreted Structure Map With Uncertainty Notes — Peer Review Ready

Applying 2D and 3D Seismic Interpretation After the Course

- Lead a mis-tie and well tie audit on one active survey, recording phase, timing and checkshot corrections for the asset database.
- Rebuild the depth conversion for a current prospect with a layer-cake velocity model and issue low, mid and high case structure maps.

2D and 3D Seismic Interpretation Questions FAQ

What is 2D and 3D seismic interpretation and why does it matter now?

It is the practice of turning seismic reflections into horizons, faults and depth maps of the subsurface. It matters now because mixed legacy and modern surveys must support fewer, costlier wells, so mapping errors cost more than before.

Which roles gain most from 2D and 3D seismic interpretation training?

Geoscientists, exploration geologists and junior geophysicists who pick and map seismic gain most. Petrophysicists also benefit because their logs feed the well ties.

How does this 2D and 3D seismic interpretation course differ from an advanced seismic course?

It is a one-week core course focused on well ties, picking, depth conversion and mapping. A longer advanced course adds attributes, rock physics, amplitude analysis and prospect risking on top of these foundations.

What will you bring back from 2D and 3D seismic interpretation training?

You bring back an interpreted structure map of a reservoir top with fault polygons, spill point and depth uncertainty notes, plus a repeatable workflow for well ties and mis-tie checks on your own surveys.

2D and 3D Seismic Interpretation: The Way Forward

The interpreted structure map is the first input to any decision on whether a closure deserves a well. Exploration managers, well planners and reservoir modellers all draw on it. After its first use, the velocity model and fault framework deserve a second look, because new well results usually shift depth more than picking does.