CONCEPT

Reservoir Characterisation and Static Geological Modelling: Facies, Volumetrics and Uncertainty

1 – 5 November 2027
Dubai - Five-star CBD venue



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Ref: 661_18514 **Date:** 1 – 5 November 2027 **Location:** Dubai - Five-star CBD venue **Fees:** 19500 SAR

Introduction:

Reservoir characterisation and static geological modelling work often breaks down when seismic horizons, well tops, core descriptions and pressure data are loaded into a 3D grid without reconciliation. Faults cut layers inconsistently, facies bodies ignore depositional geometry, water saturation disagrees with capillary data and STOIIP or GIIP is quoted as one number. This Core Concept course trains subsurface teams to build a defensible 3D geomodel from structural framework to property grids and in-place volumes. Participants produce a Static Model Workflow and Volumetric Uncertainty Report for a case field.

Course Objectives:

- Audit seismic interpretation, well tops, logs, core and test data for consistency before they enter a geocellular model
- Construct a structural framework with fault surfaces, horizon depth conversion and a stratigraphic zonation that honours well picks
- Design layering schemes and blocked well logs that retain thin barriers, baffles and flow units at model resolution
- Distribute facies with object-based and pixel-based methods conditioned to depositional concepts, trends and seismic attributes
- Populate porosity, permeability and saturation height functions by facies and calculate STOIIP and GIIP with gross rock volume and net-to-gross logic
- Quantify in-place uncertainty with multiple realisations, rank and QC them, and hand over a coarsened property grid to flow modelling teams

Target Audience:

- Development and production geologists who interpret well correlations and depositional settings for field models
- Geomodellers who build structural frameworks, geocellular grids and facies and property realisations
- Petrophysicists who supply log-derived porosity, net pay and water saturation to subsurface models
- Reservoir engineers who rely on static models for in-place volumes, well planning and simulation input
- Geophysicists who deliver depth-converted horizons, fault sticks and seismic attributes to modelling teams

Course Outline:

Day 1: Integrated Subsurface Data Review and Model Purpose

- Geomodel Purpose Statement: Appraisal, Development or Infill Decision Questions
- Seismic Horizon, Fault Stick and Velocity Model Data Audit
- Well Top Reconciliation and Deviation Survey Checks
- Core-to-Log Depth Shift and Petrophysical Interpretation Handover
- Pressure, Fluid Contact and Well Test Evidence Integration Table

Day 2: Structural Framework, Faults and Stratigraphic Grid

- Fault Network Construction: Truncation Rules, Throw Profiles and Fault Polygons
- Time-to-Depth Conversion and Horizon Tie to Well Markers
- Stratigraphic Zonation From Sequence Boundaries and Flooding Surfaces
- Layering Schemes: Proportional, Follow-Top and Follow-Base Cell Geometry
- Pillar Gridding, Cell Orientation and Grid Quality Diagnostics

Day 3: Well Log Blocking, Facies and Petrophysical Property Distribution

- Well Log Blocking Methods for Discrete Facies and Continuous Properties
- Object-Based Facies Modelling of Channels, Bars and Lobes
- Pixel-Based Facies Modelling With Indicator and Truncated Gaussian Approaches
- Facies Proportion Curves, Trend Maps and Seismic Attribute Conditioning
- Porosity and Permeability Population by Facies With Cloud Transforms

Day 4: Saturation Height, Volumetrics and In-Place Uncertainty

- Saturation Height Functions From Capillary Pressure and Log Saturation
- Free Water Level, Transition Zone and Contact Uncertainty
- Gross Rock Volume, Net-to-Gross and STOIIP and GIIP Calculation
- Uncertainty Parameter Screening: Structure, Contacts, Facies and Petrophysics
- Multiple Realisation Workflow, Volume Distribution and Realisation Ranking

Day 5: Modelling Build: Static Model Workflow and Volumetric Uncertainty Report

- Case Field Geomodel Assembly From Framework to Property Grids
- Static Model QC Checklist: Well Honouring, Histograms and Visual Cross-Sections
- Grid Coarsening and Property Averaging for Dynamic Model Handover
- Low, Mid and High In-Place Case Selection for Development Planning
- Volumetric Uncertainty Report Presentation and Peer Challenge

Skills You Will Gain:

- Subsurface Data Reconciliation
- Structural Framework Building
- Stratigraphic Grid Design
- Facies Modelling
- Petrophysical Property Population
- Saturation Height Modelling
- In-Place Volume Estimation
- Geomodel Quality Control

Why Attend This Course:

- Take back a Static Model Workflow and Volumetric Uncertainty Report built on a case field and challenged by peers
- Explain to asset teams how each structural, facies and saturation choice moves STOIIP and GIIP
- Replace a single deterministic in-place number with low, mid and high cases backed by ranked realisations
- Compare geomodelling practice with geologists, petrophysicists and engineers working on clastic and carbonate fields

Conclusion:

A static geological model is only as credible as the data reconciliation, framework and property logic behind it. The week moves from integrated data review and model purpose to fault networks, depth conversion and stratigraphic gridding, then to log blocking, object-based and pixel-based facies and property population, and on to saturation height functions, volumetrics and multiple realisations. The final day assembles a case field geomodel and a Static Model Workflow and Volumetric Uncertainty Report ready for the next development review.