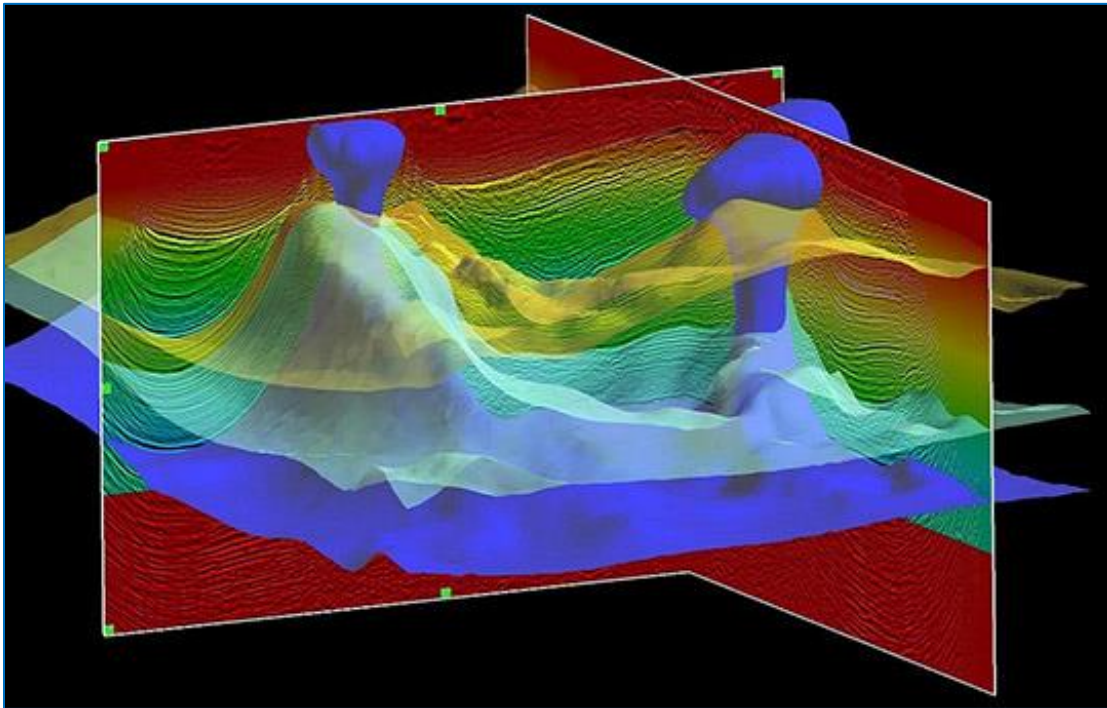




DE393: 2D and 3D Seismic Interpretation

Training Description:

This training course will focus on reflection seismic, one of the fundamental ways of imaging the subsurface from a geological perspective. 2D and 3D seismic data is a major source of information in the oil industry for both onshore and offshore activities.

Recently this type of data has also been used in geothermal energy activities, carbon sequestration in geological reservoirs and wind energy, especially offshore. Other uses include mapping salt structures for use as natural gas reservoirs (gas caverns), delimiting mineral deposits among other activities involving imaging of the subsurface.

This intensive training course will cover the main concepts underlying the interpretation of 2D and 3D seismic data, from its History, the methods of data acquisition, processing, visualization and software. Several mapping exercises will be done using seismic data - faults and horizons - and how they can be used to understand the structure, stratigraphy and geodynamics of a basin. The perspective of hydrocarbon resources will be addressed through reserve and associated risk calculation exercises.

This training course will highlight:

- Seismic acquisition and processing
- 2D and 3D data visualization
- Fault interpretation and structural models
- Horizon and stratigraphic interpretation
- Petroleum systems, volumetrics and risking

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand seismic data acquisition and processing
- ✓ Visualize seismic data and develop interpretation capacity
- ✓ Interpret and map faults and seismic horizons
- ✓ Identify hydrocarbon accumulations using seismic data
- ✓ Quantify and risk hydrocarbon accumulations

Training Designed for:

This course is intended for subsurface professionals who are interested in using seismic interpretation for their work or interact with seismic interpreters in their companies. This course is suitable for Petroleum Geologists, Sedimentologists and stratigraphers, Petrophysicists, Basin modellers, Geophysicists and Reservoir and drilling engineers.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.” (This hands-on, highly-interactive training includes simulator, real-life case studies and exercises).

Content can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

❖ Introduction to Seismic Data

- History of seismic studies
- The seismic method
 - Rock properties
 - Wave propagation, reflection, and refraction of seismic waves, reflectivity, impedance
 - Data acquisition – Land and Marine
 - Other geophysical methods
 - Gravimetry
 - Magnetism
 - Electro magnetism
- Seismic data processing overview
 - Conventional pre-stack processing and CMP gathers
 - Post-stack processing
 - Seismic migration, velocity models
- Calibration methods (well-tie)
 - Velocity surveys
 - Sonic logs
 - Synthetic seismograms
 - Vertical Seismic Profiles

DAY TWO:

❖ 2D and 3D Seismic Data Basics

- 2D and 3D Seismic Data
 - Parameters, visualization, polarity
 - Seismic Data Libraries, public, private and licenses
 - Software
- 2D and 3D interpretation techniques
 - Hard and soft events
 - Vertical exaggeration
 - Horizontal and Vertical slicing in 3D data
 - Seismic horizons – stratal interface, fluid contacts and non-geological horizons
- Quantitative interpretation geophysics
 - Acoustic impedance and inversion
 - AVO and pseudo-gradient
 - RMS amplitude
 - Spectral decomposition
 - Other methods

DAY THREE:

❖ Faults and Structure Interpretation

- Fault interpretation
 - Introduction to fault interpretation
- Structural styles
 - Rift basins
 - Compressional domains
 - Salt tectonics
 - Strike-slip faults
- Mapping faults in 2D data
 - Faults in each seismic line
 - Connecting faults from different seismic lines
 - Building fault planes
- Mapping faults in 3D data
 - Mapping faults in vertical and horizontal slices
 - Building fault planes
- Structural models
 - Building a structural model
 - Visualization
 - Geometry, kinetics, geodynamics
 - Palinspastic Reconstructions

DAY FOUR:

❖ Horizons and Stratigraphic Interpretation

- Stratigraphic interpretation
 - Horizon interpretation techniques
 - Horizon attributes
 - Continuity and lateral variations
 - Unconformities and stratal terminations
- Seismic facies
 - Carbonate systems seismic facies
 - Siliciclastic systems seismic facies
 - Gross depositional environments
- Advanced stratigraphic interpretation
 - Wheeler diagrams
 - Seismic sequence stratigraphy

DAY FIVE:

❖ Petroleum Systems, Volumetrics and Risking

- The petroleum system elements and processes
 - Reservoir
 - Seal
 - Source rock
 - Trap
 - Timing and migration

- Mapping hydrocarbon accumulations
 - Structural traps
 - Stratigraphic traps
 - Mixed traps
- Volumetrics
 - Leads, prospects, reserves, resources
 - Volumetric calculation methods
 - P10, P50, P90 and mean
- Risking
 - Risking methods and software
 - Evaluation of CoS, PoS
 - Incorporation of Geological risk into economic evaluations

❖ Course Conclusion

❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

Aisha Relativo - Training & Career Development Manager

aisha@cmc-me.com / training@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615