

RE4 ADVANCED PVT & EOS FLUID CHARACTERIZATION

PETRO-TEC

IN-HOUSE

COURSE OVERVIEW

To perform reservoir simulation studies, it is essential to have profound knowledge of PVT properties and PVT behavior of hydrocarbons. To give an insight into this area, this course covers the theoretical issues and the experimental processes applied in PVT laboratories. The practical application of the PVT data on reservoir simulation studies is also reviewed. The theoretical teachings are supported by carefully designed tutorials to be solved in workshop sessions. The course is also important for laboratory staff involved in PVT analysis.

WHO SHOULD ATTEND

Reservoir engineers, PVT laboratory staff, development geologists, and Scientists who are involved in PVT analysis, PVT modelling, or reservoir simulation studies.

COURSE CONTENT

Introduction:

- Definition of PVT properties.
- Importance of PVT in simulation Studies.
- Effect of reservoir fluid types on selection of the simulation tools.
- Effect of PVT properties on Field Development strategies.
- Difference between Black-Oil, Retrograde gases, and wet gases.
- Oil and Gas properties and classification.
- Oil and Gas Mixtures.

PVT Sampling:

- Well Conditioning.
- Surface and Subsurface sampling.

Volumetric and phase behavior of Hydrocarbons:

- Role of chemical composition in fluid behavior.
- Phase Diagrams.
- Difference between Black-Oil and Volatile-Oil.

Equation of State (EOS):

- Cubic EOS.
- Equilibrium.
- Phase Stability.
- Saturation pressure.
- EOS Generation & comparison of the results with Measured data.
- PVT Correlations.

PVT Analysis:

- Lab. Determination of PVT Parameters.

- Conversion of PVT Parameters to field conditions.
- Traditional and Modified Black-Oil Formulations.

Compositional Processes:

- Miscible and Immissible Displacements.
- Condensation and Vapourisation processes.
- Nitrogen and CO₂ Injection.
- Surface Tension effects on relative permeability.
- Hydrates.

PVT data for Reservoir Simulation:

- PVT requirement for reservoir simulators.
- PVT Models.

Phase Behavior of Asphalt, wax, and Diamondoids:

- The phase behavior of Asphalt, Supersaturation, and asphaltine inhibitors.
- Diamondoids.
- Wax precipitation, Miscible and Immissible Displacements.

Exercises and example problems.

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