

RESERVOIR FLUIDS PROPRIETIES

RSE018

COURSE OVERVIEW

This course will present the methods for obtaining values of reservoir fluid properties from laboratory data and correlations using PVT modeling package (PVTSim / PVTp). Chemical properties of hydrocarbons, conventional laboratory PVT (Pressure-Volume-Temperature) tests and quality control will also be covered. Participants will learn about phase diagrams, mixing rules, EOS, EOS tuning, and fluid properties while attending this course. Each day participants will be given examples and problems to solve using (PVTSim / PVTp).

This course will help participants gain a better understanding of the relationship between the five reservoir fluids and how to manage problem concerning reservoir fluid properties with increased confidence.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand the importance of reservoir fluid properties and their impact on reservoir engineering and production operations.
- Learn the methods and techniques for obtaining reservoir fluid properties from laboratory data and correlations.
- Gain knowledge about the chemical properties of hydrocarbons and their relevance to reservoir fluids.
- Familiarize with the conventional laboratory PVT tests and quality control procedures.
- Understand phase diagrams, mixing rules, equations of state (EOS), and EOS tuning for reservoir fluid analysis.
- Develop skills in using the PVTSim/PVTp modeling package for fluid property calculations and analysis.
- Learn about black oil, volatile oil, retrograde gas condensate, and wet gas as the five reservoir fluids.
- Acquire proficiency in determining key fluid properties such as density, viscosity, specific gravity, GOR, saturation pressure, and FVF.
- Understand the procedures and techniques for PVT tests and reservoir fluid studies using PVTSim/PVTp.
- Gain hands-on experience in PVT modeling, including EoS selection, component composition, initialization, matching parameters, and regression analysis.
- Learn about flow assurance, sample contamination, and sample quality control through practical examples.
- Gain knowledge on how to prepare PVT data for numerical modeling.

WHO SHOULD ATTEND

Reservoir engineers, Petroleum engineers, Production engineers and geoscientists involved in operation activities and asset teams.

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Pre course evaluation
2. Introduction to Reservoir Fluids and Sampling
 - PVT Scope
 - Sampling
 - Five Reservoir Fluids
 - Black Oil
 - Volatile Oil
 - Retrograde Gas Condensate
 - Wet Gas
3. Introduction to Reservoir Fluids, Sampling and Dry Gas Properties
 - Basic Definition
 - Density
 - Viscosity
 - Specific Gravity
 - GOR
 - Saturation Pressure
 - FVF
 - Phase Diagram
 - BO Correlation
 - Exercises using PVTsim/PVTp
 - Ideal Gas EoS
 - Gas Compressibility and Deviation Factor
 - Kay's method and Heating Values
 - Exercises using PVTsim/PVTp

4. PVT Tests and Reservoir Fluid Studies Using PVTsim / PVTp

- Procedure of BO complete Study
- P-V relations
- Differential Liberation
- Separator Test
- How to calculate Fluid Properties?

5. PVT Modeling Using PVTsim / PVTp

- Selecting EoS & Volume Shift Options
- Selecting Components and Entering Composition
- Initializing Pseudo Component Properties
- Matching Surface Volumetric Properties using Automatic Feature
- Finding Pseudo Distribution and Split the Pseudo
- Using BI Coefficients to Improve match on sat. pressure
- Selecting Matching Parameters
- Using Regression to Match Fluid
- Checking and Refining the Fluid Characterization
- Calculating and Exporting Results

6. PVTsim / PVTp Exercises

- Example in Flow Assurance
- Example in Sample Contamination
- Example in Sample QC
- How to prepare PVT data for Numerical Modeling

7. Post course evaluation.

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