OPTIMIZING GAS-CONDENSATE RESERVOIRS: MAXIMIZING LIQUID HYDROCARBON RECOVERY BY CONDUCTING PVT AND COMPOSITIONAL RESERVOIR SIMULATION STUDIES

Workshop Description

Optimizing gas-condensate reservoirs means maximizing liquid hydrocarbon recovery from those reservoirs. The best way to do that is to conduct compositional reservoir simulation studies of those reservoirs, which first requires fine-tuning an equation-of-state (EOS) model to the laboratory measured reservoir fluid PVT data and then using that fine-tuned EOS model for conducting compositional reservoir simulation studies to investigate various reservoir exploitation scenarios, such as reservoir pressure depletion, gas-injection above the dew point of the reservoir fluid, etc, and then developing an optimum reservoir exploitation scheme for the gas-condensate reservoir under investigation. This practical hands-on training workshop has been developed at the request of our clients, around the world, to do just that, that is provide hands-on training to the workshop attendees in all steps necessary for developing optimum reservoir exploitation schemes for gas-condensate reservoirs.

WORKSHOP CONTENT

- Review of PVT Fundamentals and Retrograde Behavior
- QA/QC of Laboratory PVT Data
- Material Balance analysis using PVTi Software
- Basic Concepts of Equation-of-State (EOS)
  - EOS Modeling
  - The PREOS
- Data Generation for Flow Simulation in EOS Modeling
- Reservoir Modeling and History Matching Practices
- Gas- Condensate Reservoir Modeling
  - EOS Model Fine Tuning
  - Heavy End Splitting (SCT Model)
  - Regression Procedure for Gas-Condensate System
- Grouping
  - Drivers (Run Time, Gas Plant Modeling)
  - Grouping in PVTi
- Creating and Exporting PVT Input Deck to Simulators
- Case Studies
  - PI Reduction in Gas-Condensate Wells
  - Use of Pseudo-Black Oil and Pseudo Compositional Model
  - Grid Block Size Sensitivity in Compositional Model
  - Full Field versus Fine Sector Modeling
  - Sensitivity to Number of Components

This state-of-the-art hands-on training workshop focuses on the issues related to building reservoir fluid models in PVTi (PVT simulator) and constructing fit for purpose reservoir simulation models in Eclipse-300 (compositional reservoir simulator). Attending this workshop will enable the workshop attendees to acquire the required proficiency to independently quality check the laboratory PVT data, build appropriate reservoir fluid models (pseudo black oil and fully compositional) in PVTi, and use those to construct reservoir simulation models in Eclipse-300. These are essential skills required for management of gas-condensate reservoirs, right from planning to optimization of performance of developed reservoirs, and reserves booking.

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Duration and Scope

This high-level workshop is of five (5) days duration and it involves a discussion of the issues related to fine-tuning an EOS and conducting reservoir simulation studies for development of gas-condensate reservoirs. The discussions start with issues related to gas-condensate reservoir fluid sampling and laboratory analysis of the fluid samples to enable the attendees to appreciate the uncertainties in the data quality. After an introduction to equation-of-state (EOS) models, the techniques of analyzing laboratory data for consistency, using PVTi, are discussed. The discussions then move on to the general principles of building equation-of-state (EOS) models and fine-tuning them to the laboratory measured PVT data. Specific techniques that are handy in modeling gas-condensate systems, like semi-continuous thermodynamic splitting, special regression, and grouping of components, are discussed in detail.

The second part of the workshop discusses building fit for purpose reservoir simulation models in Eclipse-300 to study PI reduction in wells due to liquid drop out, and issues in the development of gas-condensate reservoirs in simple depletion, gas cycling above dew point, and gas cycling below dew point, to optimize liquid recovery.

Who Should Attend

This five (5) days workshop is custom-designed for reservoir engineering and simulation, and other, professionals, familiar with reservoir engineering principles, and interested in mastering the use of PVTi and Eclipse-300 for conducting state-of-the-art PVT and compositional reservoir simulation studies with the objective of maximizing liquid hydrocarbon recovery from gas-condensate reservoirs.

Workshop Requirements

Each workshop attendee should bring their own notebook computer to work on the class problems. Class rooms should be equipped with power strips for attendees to plug in their notebook computers and a projector for instructors to project their PowerPoint slides.

Workshop Manual

Each workshop attendee will be provided a workbook (in English) containing copies of the instructors' presentation slides and solutions to the class problem.

Workshop Instructors

This custom designed workshop will be conducted by our high-level and seasoned consultants, with extensive knowledge and experience in the subject matter as well as in conducting training programs around the world.

Language of Instructions

This workshop will be conducted in the English language. However, if desired by the client, one of our bi-lingual consultants can be present throughout the workshop for the benefit of those attendees who are not fluent in the English language. This workshop can be customized further to meet the needs of the client's professionals and managers.

Workshop Logistics

Since this hands-on training workshop will utilize PVTi (PVT Simulator) and Eclipse 300 (compositional reservoir simulator), this workshop should be held in the client's office, and it will be the client's responsibility to provide, during the duration of this workshop, PVTi and Eclipse 300 software license to each workshop attendee, and to workshop instructors, to work on the class problems. It will be ideal if each workshop attendee could be provided a license, if that is not possible then may be two attendees could be provided one license enabling them to work on the problems together.