PE Limited

Engineering & Geological Software Development

PVTp Workshop

Target Audience:

This course is targeted to those engineers that have (i) attended the ***Standard* IPM** course previously, and (ii) have consolidated their familiarity of **MBAL**, **PROSPER** and **GAP** through consistent use over time in a real field context, with working knowledge with fluid PVT and lab reports. This course will assume a base level of familiarity of the tools, and is intended promote the analytical features available in creating physics based fluid behaviours in the **IPM** tools.

Overall Objectives:

1. **Understand the fundamentals of PVT**
2. **Discuss and review PVT modelling approaches: Equation of State (EOS) and Black Oil (BO)**
3. **Understand how to validate lab reports and characterise a fluid EOS that reproduces them**
4. **Understand how to obtain a BO PVT definition from the EOS**
5. **Apply the above in addressing common and practical problems using case studies**

Course Agenda

Day 1

- **Introduction**
  - *Review the importance of PVT in integrated modelling*
  - *Review the assumptions of the Black Oil model and dependency on the path to surface*
  - *Review the fundamentals of Equation of State model (EOS)*
- **Procedure for Creating an EOS for use in an Integrated Model - Fluid Characterization (Oil)**
  - *Hands-on exercise and technical discussions covering the following subjects:*
    - *Validating a PVT Report*
    - *Characterizing an EOS in PVTP*
- **Creating an Equivalent Black Oil Model**
  - *Hands-on exercises and technical discussions covering the following subjects:*
    - *Comparing and validating different PVT models in a well model (PROSPER)*
    - *Comparing and validating different PVT models in a reservoir model (MBAL)*

Day 2

- **Fluid Characterization (Oil) - Revision Workshop**
  - *Hands-on exercises and technical discussions reviewing the PVTP core modelling techniques*
    - *Validating a PVT Report*
    - *Characterizing an EOS in PVTP*
- **Creating an Equivalent Black Oil Model - Revision Workshop**
  - *Hands-on exercises and technical discussions covering the following subjects:*
    - *Comparing and validating different PVT models in a well model (PROSPER)*
    - *Comparing and validating different PVT models in a reservoir model (MBAL)*
- ***Procedure for Creating an EOS for use in an Integrated Model - Fluid Characterization (Condensate)***
  - *Hands-on exercise and technical discussions covering the following subjects:*
    - *Validating a PVT Report*
    - *Characterizing an EOS in PVT*
    - *Flow Assurance Analysis (Hydrates)*

Petex House, 10 Logie Mill, Edinburgh, Scotland, EH7 4HG, UK

Tel: +44 131 474 7030 **Fax:** +44 131 474 7031 **Email:** edinburgh@petex.com **Website:** www.petex.com

Registered Office: 2 New Bailey Square, 6 Stanley Street, Salford, England, M3 5GS, UK *Registered in England & Wales: 6429211*

Day 3

- **Managing an Inconsistent Fluid Sample - Case Study 1**
  - *Hands-on exercise and technical discussions reviewing the following subjects:*
    - *Creating a representative fluid model from an inconsistent fluid sample*
- **Correcting a Well Test Measurement in the Field - Case Study 2**
  - *Hands-on exercise and technical discussions reviewing the following subjects:*
    - *Correcting well test record for use in IPM using Data Objects (RESOLVE)*
- **Using an EOS to Challenge MPFM Readings - Case Study 3**
  - *Hands-on exercise and technical discussions reviewing the following subjects:*
    - *Converting in situ multi-phase flow meter (MPFM) measurements to standard conditions*
    - *Validating the MPFM measurements*
- **The importance of PVT in Material Balance - Case Study 4**
  - *Hands-on exercise and technical discussions reviewing the following subjects:*
    - *History matching a reservoir using the material balance technique (MBAL)*

Day 4

- **Compositional Modelling in an Integrated Model - Case Study 5**
  - *Hands-on exercises and technical discussions regarding Integrated Modelling*
    - *Field Development Example*

Day 5

- **Compositional Modelling in an Integrated Model - Case Study 6**
  - *Hands-on exercises and technical discussions regarding Integrated Modelling*
    - *Handling PVT requirements in an integrated model*
    - *Lumping/delumping*