Production Geology

Instructor
Mr. Pete Webb / Esanda Engineering

Objectives
A series of work about building the Geological model and reservoir simulation model based on the case study of the oil and gas field, and testing and updating the Geological model and reservoir simulation model according to additional new data after drilling of a development well.

Course Outline
The course demonstrates the sequence of events that leads from defining and drilling the exploration prospect, into appraisal and then through the producing life of the field. It outlines the calculation of prospect volumetrics and introduces concepts of risk, uncertainty and economic indicators. Following declaration of a discovery, it covers geological modeling during the appraisal period, and emphasizes the multi-disciplinary nature of the decision-making processes. Treatment of the producing period includes concepts of reservoir modeling, simulation, history matching and reserves determination.

Course Contents
Exploration Phase (approx. 3 days)
Petroleum system, Geological Chance of Success, Recoverable reserves, Deciding of wildcat well location, NPV

Appraisal Phase (approx. 3 days)
  • How to use the carbonate knowledge for oil and gas development or exploration (e.g. Log analysis, geological modeling, reserves evaluation, etc.)
  • Result of Wildcat (Logging/Core analysis · well correlation, PVT analysis · test analysis) - Building the Geological model and reservoir simulation model with Case study of oil and gas field, Assessing uncertainty of reserves, Deciding of appraisal well location, Working out of development plan

Development/Production Phase (approx. 2 days)
  • Updating the Geological model and reservoir simulation model based on production result, Optimizing of development plan or working out of additional development plan

Who Should Attend
This course is intended for the disciplines listed below, as well as anyone with a specific interest in the topic.
  • Geologists
  • Geophysicists
  • Reservoir engineers
  • Drilling engineers
Prerequisites
None

Course Method
The course method will be a combination of the following

- Lecture and Workshop (team working, presentation)
- Demonstration

Broken down as follows

- 70% Lectures
- 20% Case Studies & Practical Exercises
- 10% Videos, Software & General Discussions

Daily Course Schedule
The course schedule will include a morning and afternoon break as appropriate throughout the training sessions.

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
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<tbody>
<tr>
<td>Session</td>
<td>Components of a petroleum accumulation.</td>
<td>Volumetrics</td>
<td>Analyzing and integrating the data.</td>
<td>Updating the static and dynamic models.</td>
<td>Updating the static and dynamic models from production results.</td>
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<td>10:00 – 12:45</td>
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<td>(2h45 min)</td>
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<td>Lunch</td>
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<tr>
<td>Session</td>
<td>The petroleum system.</td>
<td>Economic indicators.</td>
<td>The static model.</td>
<td>The FDP.</td>
<td>Additional development plans.</td>
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<td>1:45 – 5:00</td>
<td>The petroleum play.</td>
<td>Locating the wildcat well.</td>
<td>The dynamic model.</td>
<td>Declaration of commerciality.</td>
<td>Abandonment.</td>
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<td>(3h15 min)</td>
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