Reservoir Management Fundamental Concepts

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Introduction:

This course is designed for all professionals working in an integrated asset team in the upstream of petroleum industry, especially for asset managers and reservoir engineers. The course contents are designed based on the fundamental concepts of reservoir management: multidiscipline team work, data management and optimization of reservoir development.

The fundamental theories, knowledge and skills which are needed to perform these tasks are taught in this course. Many quizzes and calculation exercises are used for practice. Practical examples are used for demonstration. Participants are encouraged to bring their own problems or questions for discussion during the course.

Objectives:

By the end of this BTS training course, participants will be able to:

- Understand the fundamental concepts of reservoir management
- Learn the fundamental theories, knowledge and skills needed to perform reservoir management tasks
- Focus more on basic skills to perform daily reservoir engineering tasks
- Apply the principles of sound reservoir management
- Use the interdisciplinary synergistic approach to efficient reservoir management

- Include each reservoir management component and the importance of timing and cost/benefit analysis
- Develop checks and balances to ensure efficient & effective reservoir operation

Who should attend?

Asset managers and reservoir engineers, Oil & Gas Engineers, reservoir operators, geologists, geophysicists, anyone who work in an integrated asset team in the upstream of petroleum industry, those who desire to obtain an overall picture of oil and gas field, development and desire to obtain basic knowledge and skills of reservoir management.

Course Outline:

Introduction to Reservoir Management

- What is reservoir management?
- Definition of reservoir management: an integrated, interdisciplinary team effort.
- Goal setting, planning, implementing, monitoring, and evaluating reservoir performance.
- Field development and field operating plans to optimize profitability.
- Efficient monitoring of reservoir performance.
- Minimizing drilling of unnecessary wells.

- Wellbore and surface systems.
- Well testing and automated production systems.
- Basic components of reservoir management.

Framework of an Asset Team:

- Organization of an asset team.
- Roles of professionals.
- Team work environment.

Data Management:

- Data storage server and library.
- Volume of information (VOI).

Material Balance Equation

- Fundamentals of fluid properties.
- General material balance equation (MBE).
- MBE applications â€“drive mechanisms.
- Special MBEs.
- Gas material balance equation.
- When you use MB analysis?

Reservoir Surveillance and Monitoring

- Well testing program.
- Formation Testing and Sampling.
- Pressure and temperature survey.
- Production and injection profile survey.
- Saturation survey.
- Surveillance and monitoring programs for different processes.

Decline Curve Analysis and Reserves Booking

- Decline rates, Decline mechanisms.
- Exponential, harmonic and hyperbolic declines.
- Theoretical basis of decline curve analysis.
- Common mistakes when considering well operation changes.
- Reserves booking.

Water flooding (Immiscible Displacement)

- Why you have to know this?
- Fractional flow equation.
- Buckley-Leveret theory.
- Welge methods, Water injection patterns.
- Mobility ratio concept.
- Sweep efficiency, Design considerations.

Natural Gas Reservoir Engineering

- Gas flow equations, Gas well testing.
- Production and transport facilities.

Fundamentals of EOR

- Why you have to know EOR but currently no EOR projects?
- EOR screening, Mobility control requirement.
- Concept of capillary number, EOR mechanisms.

Introduction to Reservoir Simulation

- Reservoir simulation â€“ an integrated reservoir management tool.
- Data requirements, Capillary Pressure and fluid initiation.
- Examples of reservoir management using simulation.