Petroleum Engineering for Non-Engineers

Course Objective:

This course is designed to provide non-engineering petroleum industry technical professionals with a thorough overview of most key aspects of petroleum engineering technology and its applications. The course addresses engineering issues ranging from initial involvement with explorationists, reserves evaluation and field development, production optimization, and all the aspects of well drilling and completion for on-shore and off-shore fields. The sessions will focus on relevant and practical issues; including real case studies. Detailed course materials are provided.

Who Should Attend:

This course is aimed at non-engineering professionals involved in the oil industry and also for junior exploitation engineers/technologists, and geologists.

Course Instructors:

Saad Ibrahim, P.Eng., an independent consultant and president of Petro Management Group Ltd., established in Calgary (1994). Graduated from the University of Alexandria (Egypt) with B.Sc. in Mechanical Engineering in 1973. He also completed a post-graduate program with the University of Calgary, Canada, in Chemical and Petroleum Engineering in 1983.

Mr. Ibrahim has 30 years of reservoir/production engineering experience in Western Canada and internationally. The focus of Mr. Ibrahim's experience lies in the areas of reservoir management, well-test planning/analysis, and training.

Roger Hough has had extensive drilling and operations experience with major multinational oil and gas producers as well as offering consulting services to the industry. He has chaired a number of technical conferences, and has been an SPE Distinguished Lecturer on the topic of Slim Hole Technology.

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Course Agenda:

- **Overview**
- **Reservoir Geology**
  - **Geologic cycle**
  - **Types of reservoir rocks**
  - **Main elements of petroleum reservoirs**
- **Rock and fluid properties**
  - **Types of rock porosity and measurements**
  - **Definitions of formation permeability**
  - **Hydrocarbon classifications and fluid sampling**
- **Reservoir derives**
  - **Primary and secondary recoveries**
  - **Types of reservoir drives and impact on performance**
- **Reserves determination**
  - **Volumetric and material balance methods**
  - **Decline analysis**
  - **Empirical method to estimate recoverable reserves**
- **Reservoir delineation & development**
  - **Field development considerations**
  - **Types and applications of artificial lift**
  - **Horizontal well applications and Multi-stage fracing**
- **Production operations and optimization**
  - **Well performance**
  - **Operational problems**
  - **Well testing**
- **Enhanced Recovery Mechanism**
  - **Types of EOR**
  - **Planning of a waterflood design**
  - **Monitoring of waterflood project**

- **Unconventional Oil and Gas**
  - **CBM**
  - **Shale gas and oil shale**
  - **Heavy oil**

- **Economics**

- **The Drilling Rig**
  - **Down hole equipment**
  - **Offshore and inland drilling**
  - **Properties of drilling fluids**
  - **Well casing and cementing**

- **Special Drilling Operations and Well Completion options**
  - **Deviated drilling**
  - **Multi-laterals and horizontal drilling**
  - **Horizontal well completion options**
  - **Multi-stage fracing of Horizontal wells (open hole vs cased hole)**
  - **High pressure and high temperature (HPHT) wells**
  - **Underbalanced drilling**
  - **Rig management (staff role, safety, environment, blow-out)**

- **New Developments**
  - **Automatic drilling rigs and casing drilling**
  - **Slim hole drilling**
  - **Expandable tubular and slim hole drilling**

- **Well Abandonment**

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