WELL COMPLETION DESIGN AND BEST PRACTICES

General:

Discipline: Reservoir, Completion, Production engineering
Level: Basic/Intermediate
Duration: 5 days
Instructor: Jairo Balcacer

Purpose:

This course provides the concepts and procedures leading to an optimized completion design, considering the functional specifications, key components and constraints underlying different well completion concepts.

The design process will be driven by the company policies, industry standards and regulatory requirements along the different stages of the process. The understanding of the development of the Statement of Requirements (SoR) and Basis of Well Design or Completions Design (BoWD/BoCD) and the communication to the involved parties in the RACI Matrix for Well Completions will be covered, as well as the servicing requirements over the life of the well, along with the constraints that the completion design places on the drilling program.

The stages followed in the generation of completion costs estimates and the required accuracy of cost estimates at each stage will be reviewed, as well as the modifying well objectives and procedures based on previous results (optimization process)

Designed for:

This course is intended to provide the attendants (drilling, reservoir, completion, production engineers), with the proficiency needed for designing an optimum completion program that focus on attaining the highest well performance, and thus, the highest NPV to the company.

You Will Learn:

- The general criteria for a completion design
- The basic downhole configurations
- Specialized completion designs
- Analyzing well inflow performance leading to optium completion/production performance
- Completion planning stages: from FEED through completion optimization with performance revision

Course Content:

General Criteria for Completion Design

- Completion team roles and responsibilities
- Design process, standards and regulations
- HSSE and Risk Management
- Statement of Requirements and Basis of Design
- Life of well functional and servicing requirements
- Drilling considerations
- Completion operations planning
- Cost estimate, AFE and other approvals

Basic Downhole Configurations

- Open-hole completions
- Uncemented liner completions and open-hole gravel packs
- Perforated completions
- Multi-stage fracture-stimulated horizontal wells
- Single and multi-zone selective completions
- Observation well completions

Specialized Completion Designs

- High-pressure, High-temperature (HPHT) completions
- Completion for complex well trajectories
- Offshore completions
- Completions for cold heavy oil production (CHOP)
- Completions for thermal recovery processes
- Completions for unconventional gas wells

Completion Productivity and Injectivity

- The well completion and the major role in the production system
- Well inflow performance relationship (IPR)
- Vertical lift performance
- Integrated system analysis
- Production constraints and optimization

Completion Planning

- Completion planning and project management
- Contracts, procurement and logistics
- Incorporating well evaluation results
- Programming and supervising
- Workover planning and operations
- Assignment

Software applications:

- MS Excel spreadsheets
- Prosper

Text and Consulting books:

- "Petroleum Engineering Handbook", Larry W. Lake, Volume IV, Production Operations Engineering, Society of Petroleum Engineers
- "Well Completion Design" J. Bellarby, DEvelopment in Petroleum Science