

ARTIFICIAL LIFT SYSTEMS

General:

Discipline: Reservoir, Completion, Production and Facilities engineering

Level: Basic/Intermediate

Duration: 5 days

Instructor: Jairo Balcacer

Purpose:

Learn conditions to be considered in the selection of the optimum artificial lift system that ideally will give the highest present value for the life of the project. Learn details around the major artificial lift systems components as well as their benefits and disadvantages, as well as monitoring systems leading to optimize the system performance.

Designed for:

This course is focused to instruct any team member involved in the production operations, as well as part of the well performance optimization process, the basic considerations to select the required artificial list system and their operating conditions, maintenance and troubleshooting.

You Will Learn:

- General considerations during the artificial lift system selection
- Details on Gas lift, Electro Submersible Pump, Reciprocating Rod pump, Progressive Cavity Pump, Hydraulic Pump and Plunger Lift systems
- Outline details involved in the design of each system
- The basic operating principles
- The tools and methods used to monitor and optimize the system performance

Course Content:

Selecting and Artificial lift System

- Initial screening criteria
- Economics of artificial lift
- Artificial lift in horizontal and options
- Artificial lift applications summary

Gas Lift

- Gas Lift applications
- Downhole installations
- Gas lift valves and mechanics
- Continuous gas lift
- Intermittent gas lift

- Aspects of well unloading and operation
- Gas lift surface facilities

Electro Submersible Pump

- ESP system overview
- ESP power components
- ESP operating principles
- ESP system design
- ESP system operation

Reciprocating Rod Pump System

- Rod Pumping overview
- Surface equipment
- Subsurface equipment
- Rod string system
- API system design procedure
- Pumping Unit design procedure - Rod Analysis
- Polished rod dynamometers
- Rod load vs Displacement
- System monitoring Dynagraphics

Hydraulic Pump System

- Subsurface hydraulic pumps
- Downhole installations
- Surface facilities
- Reciprocating pumps, System design
- Reciprocating pumps, conditions
- Jet Pumps: design and operation

Progressive Cavity Pumps

- PCP system components
- PCP system applications
- PCP system design and installations
- PCP operation

Plunger Lift System

- Plunger lift overview
- Plunger lift design and installations

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
- “Petroleum Production Systems”; M. J. Economides, et al, Prentice Hall Petroleum Engineering Series

