

GULF INSTITUTE



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Acidizing and Fracturing

INTRODUCTION

- This Acidizing and Fracturing training course helps delegates to understand the techniques used for improving the productivity of oil wells. Oil well stimulation techniques are applied on a regular basis to enhance productivity and maximize recovery in oil and gas wells. Matrix acidizing and hydraulic fracturing are suitable to both generating extra production capacity and to restore original productivity in damaged wells. Compared to hydraulic fracturing, acidizing process leads to increased economic reserves, improving the ultimate recovery in both sandstone and carbonate reservoirs. These concepts are emphasized throughout the course by means of examples and field case studies.
- This training course explains flow and transient pressure measurements and responses in oil wells. Fundamentals of oil wells Acidization and fracturing are reviewed. The applicability and limitations of those processes and their various testing techniques are critically discussed through actual field examples. This would enable participants to determine well behaviour, pressure build-up, and flow testing.

Participants attending the Acidization and Fracturing Processes course will develop the following competencies:

- Gaining clear understanding of oil well testing methods
- Improving the performance of oil wells through effective acidization process
- Data acquisition and interpretation related to fracturing process
- Identifying and implementing techniques for repairing wells damages
- Help your team find creative solutions to workplace challenges

PROGRAMME OBJECTIVES

This Acidization and Fracturing Processes training course aims to enable participants to achieve the following objectives:

- Characteristics of oil wells such as structure, pressure and flow measurements
- Methods for improving performance of oil well and fundamentals of acidization
- Principles of fracturing process and data required for better outcomes
- Strategies for improving the performance of oil well and damage prevention
- Risks and hazardous related to acidization and fracturing process

TRAINING METHODOLOGY

- The Acidization and Fracturing Processes course will be delivered by combination of interactive presentations that include practical exercises, supported by video materials, activities and case studies. Delegates will be encouraged to participate actively in relating the discussed topics and knowledge to the particular needs of their workplace.

PROGRAMME SUMMARY

- The Acidization and Fracturing Processes course covers essential skills such as oil production methods, wells testing procedures, shale gas process, acidization and fracturing processes. The presented and explained strategies allow participants to conduct effective testing and adopt appropriate technologies for the implementation of such plants.

PROGRAM OUTLINE

Petroleum Production Engineering

- Fundamentals of Petroleum Production Process
- Methods for Improving Productivity of Oil Wells
- Role of Oil Well Tests and Information in Petroleum Industry
- Oil Well Test Data Acquisition, Analysis, and Management
- Selecting Oil Wells for Optimum Stimulation Treatment
- Reservoir System Characterization Process
- Basic Fluid Flow Equations in Oil Reservoir

Hydraulic Fracturing Methods

- What is Hydraulic Fracturing?
- Why is Hydraulic Fracturing Used?
- Hydraulic Fracturing of Shale
- Water-based Hydraulic Fracturing
- Cavitation Hydrovibration Fracturing
- Hydra-jet Fracturing and Exothermic Hydraulic Fracturing
- Hydraulic Fracturing Enhanced by Water Pressure Blasting
- Foam-based and Oil-based Fluids
- Acid-based and Alcohol-based Fluids
- Emulsion-based and Cryogenic Fluids

Other Fracturing Methods

- Explosive Fracturing and Electric Fracturing
- Pulsed Arc Electrohydraulic Discharges (PAED)
- Plasma Stimulation & Fracturing Technology (PSF)
- Thermal (cryogenic) Fracturing
- Mechanical Cutting of the Shale Formation

Matrix Acidizing Methods

- Matrix Acidizing Fundamentals
- Design of a Matrix Acidizing Setup
- Systems Requirements and Systems Components:
- Pumps and Accumulators
- Heaters and Temperature Controllers
- Pressure Regulators and Data Acquisition
- Piping networks, Valves and Fittings
- General Matrix Acidizing Procedure
- Acid Preparation and Injection Procedures

Safety Aspects and Testing Methods

- Characteristics of Naturally Fractured Reservoir
- Well Test Interpretation Methods, Uses, and Limitation
- Interpretation of Interference Tests in Fractured Reservoirs
- Safety Issues and Precautions
- Programme Summary and Course Closure

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