Best Technology Solutions **BTS**

Natural Gas Reservoir Engineering Training Program

Introduction:

Historical and current background on the reserves, production, consumption, and storage of natural gas all over the world are given. Occurrences, and phase behavior of natural gases are reviewed. Natural gas hydrates, design and metering of flow of gases in pipes and wellbores are covered in detail. The methods for gas reserve estimations and for the analysis of various gas-well tests are provided. This course will take a comprehensive look at several aspects of gas reservoir engineering. It will cover various techniques, including basic gas reservoir engineering, properties of natural gas, material balance, and gas reserve determination. Other concepts that will be covered include gas deliverability, nodal analysis, and well testing in gas reservoirs.

Who Should Attend?

Geologists, Petrophysicists, reservoir engineers, production engineers, laboratory researchers, and gas field operators

Course Objectives:

By the end of this course delegates will be able to:

- Know the basic concepts, equations, and analysis methods used for evaluation, production, transportation, and management of natural gas resources
- Develop ability in solving natural gas engineering problems by analytical thinking and reasoning, while applying the integrated knowledge of physics, mathematics, geo-sciences and engineering sciences
- Develop ability in overcoming design and operational problems encountered in natural gas production and transmission facilities
- Work in teams to discuss and explore the solutions to the natural gas engineering problems by creative thinking

Course Outline:

Basic Gas Reservoir Engineering and Gas Reserves

- Fluids and fluid types
- Drive mechanisms
- Properties of natural gas
- Material balance
- Determining gas reserves
- Gas volumes and material balance
- Calculations and class exercises

Gas Deliverability

- Basic gas deliverability
- Deliverability of gas wells
- Class exercises

Gas Deliverability Continued and Nodal Analysis

- Gas deliverability problems
- Introduction to nodal analysis
- Inflow performance for gas wells
- Outflow or tubing curves
- Vertical multi-phase flow
- Production data analysis

Well Testing

- Introduction to well testing
- Radial flow and radius of investigation
- Wellbore storage, damage, and stimulation
- Introduction to flow and build-up tests

- Analysis of late-time data
- Semi-log analysis for gas wells
- Modification for gas
- Manual log analysis
- Type curve analysis

Well test analysis using type curves

Flow regimes and the diagnostic plot