GPST
Exploration & Reservoir Characterization Professionals

Learning From the Experienced Trainers

TRAINING BROCHURE

A Brief outline of the courses we offer, to cater to your personalized requirement and help your organization grow.

(2026)

E&P TRAINING COURSES

Contents

1. Petroleum Systems in Rift Basins

Instructor: Dr Ali Jaffri

Audience: This is a custom-made course designed for geologists, geophysicists, petrophysicists, engineers and managers working on carbonate and clastic reservoirs deposited in rift basins.

Prerequisites (Knowledge/Experience/Education required): A general background in structural geology, sedimentology and stratigraphy is useful but not required.

Course Summary: This is an advanced course that focuses on the interaction between structural evolution and sedimentation in rift basins. Participants will be exposed to several case studies from basins across the globe. Exercises will be based on seismic, well-log and core data from the Applied Stratigraphix collection and published examples. Participants are strongly urged to bring their own data. The course will be taught by two instructors. Dr. Jaffri will be teaching in-person in Tunisia while Dr. Turko will be providing online lectures on several topics related to fault kinematics in rift settings. A critical component of the course are two core-workshops: one on rift-basin carbonate plays and another on clastics.

Course Outline:

Day 1:

Introduction to large-scale sedimentation patterns in rift settings from pre-rift lacustrine organic-rich Type I source rocks to syn-rift clastics, carbonates and evaporites. Exercise on seismic data and how to divide sedimentary packages into pre-, syn- and post rift packages. Lunch Break Online lecture on structural styles of extension, evolution and progression of fault deformation by looking at how faults link or remain segmented, and the implications to hydrocarbon migration and trapping mechanisms.

Day 2:

Clastic Reservoirs in rift-settings: Alluvial Fans, Distributary Fluvial Systems, Fan Deltas, Tide dominated and influenced Systems, Deepwater Systems with case-studies and sub-surface examples. Exercise on the recognition of common rift-basin clastic reservoirs using well-logs Lunch Break Online lecture on passive margins and how structures differ from thick-skin extensional structures common in rift basins. Many major extensional structures in passive margins are cored by salt or shale resulting in more listric fault geometries and in some cases very hyper-extended structures. We will discuss each style and how to recognize these structures in seismic data.

Day 3:

Core workshop on data from a wide range of rift basin clastic depositional environments. Participants will learn about reservoir connectivity, compartmentalization and geomodelling considerations. 1

Day 4:

Carbonate Reservoirs in Rift Basins with a focus on the type of carbonate factories. Lunch Break Core workshop on carbonate reservoirs where participants will learn the role of sequence stratigraphy, cyclicity, and diagenesis on production.

Day 5:

Workshop on well-log and seismic data from rift-basins.

2. Exploration and development of Carbonate Reservoirs

Instructor: Dr Ali Jaffri

Course Introduction / Overview:

This is a comprehensive course which has a lecture component and a workshop component. Lectures are delivered from 9:00 am until lunch and during the afternoon participants will perform several exercises the aim of which is to familiarize them with carbonate depositional systems, microfacies and reservoir characterization. Participants are highly encouraged to bring-in seismic lines and well-logs from their own work projects. The fifth day of the course can either focus on reservoir characterization or a 1-day core workshop on your company's core data. There is also an optional exercise in which participants are taught reservoir characterization using a microscope (this is only possible if microscopes are provided by your company).

Who Should Attend

Geologists, Geophysicists, Petrophysicists, Reservoir Engineers and Managers that wish to develop a better understanding of carbonate reservoirs in a petroleum systems framework. By the end of this course participants should be able to use seismic data to generate prospects based upon a sound understanding of sedimentology, sequence stratigraphy and diagenesis. Participants will also learn correlation tools that will lead to more realistic geological cross-sections, geomodels and simulation models.

Course Outline

Day 1

I. Controls on carbonate production, effects of temperature, latitude, depth, salinity and the distribution of reservoir facies.

Carbonate Microfacies: classification schemes of Dunham and Folk, reef rock classification, microbialite classification, the concept of microfacies and introduction to non-skeletal (cortoids, ooids, pisoids, oncoids, grapestones, intraclasts, extraclasts) and skeletal (coral, bryozoans, algae, molluscs, forams and more) grain types, and carbonate matrix.

II. Exercise: Modern carbonate depositional environments, facies distribution

Day 2

I. Introduction to carbonate factories and builders through time, carbonate platforms types (isolated, rimmed attached, attached, and ramps) and their reservoir distribution. T, C and M factories of Schlager.

Carbonate sequence stratigraphy and cyclicity: shelf cycles of ramps, Lofer and Latemar cycles, Brining upwards cycles, recognition of stratal discontinuities in core, well-logs and seismic.

Exercise: Describing core and thin sections

Day 3

I. Carbonate Diagenesis: Cement types, positive and negative effects of dolomitization on reservoir quality, and dedolomitization.

Carbonate Ichnology, bioturbation index and ichnofacies.

Reservoir Characterization and the classification of pore systems.

Exercise: How to approach a carbonate play by integrating seismic, well logs, and core.

Day 4

Carbonate sequence stratigraphy and its control on reservoir distribution and quality, recognition of key surfaces in core, highstand shedding of carbonate platforms, effects of karstification, dissolution and leaching along subaerial unconformities, drowning unconformities (“Type-3 sequence boundaries”) and source rocks, variations in cycle-style in carbonates, the start-up, catch-up and keep-up phases in carbonate platform development.

Exercise on identification of lithofacies and stacking pattern in a carbonate-ramp cyclicity

Day 5

Core workshop/fieldtrip/petrology work on microscope depending on client interest

3. Applied Sequence Stratigraphy

Instructor: Dr Ali Jaffri

Course Introduction / Overview:

Several companies teach sequence stratigraphic courses. We would argue that each company has a different version. The key-word here is 'applied.' That means the course is not academic, we will not bore you with details of trying to figure out whether the cyclicity in your basin is from climate-change, tectonics etc, we won't spend ages drawing Wheeler Diagrams for your basin, and we certainly won't be drawing coastal onlap curves.

The objective of this course is to help you find more oil and gas using well-logs, core and seismic data. Topics include the recognition of key sequence stratigraphic surfaces and systems tracts in seismic, well-logs, core and outcrop. Exercises during the course will teach participants how to chronocorrelate wells using wireline logs and core.

Learning Outcomes:

– To develop a thorough understanding of relative sea-level changes and their effect on the distribution of source and reservoirs rocks

– To create an awareness amongst participants about the limitations of lithocorrelation and the benefits of chronocorrelation

– To prepare participants for realistic facies modeling in the creation of geomodels

Who Should Attend

Geologists, geophysicists, petrophysicists and engineers who wish to develop a better understanding of the factors that control distribution, reservoir connectivity and compartmentalization of a particular reservoir The course assumes no prior knowledge of sequence stratigraphy, which is why we strongly urge engineers to enroll.

Course Outline

Day 1

Introduction, applications in exploration and development, obsolete ideas in sequence stratigraphy, do's and donts of sequence stratigraphy, Walther's Law and facies belts, identification of Subaerial Unconformities (Sequence Boundaries), Maximum Flooding Surfaces, Wave and Tidal Ravinement Surfaces, Maximum Regressive Surfaces in sub-surface datasets such as seismic, well-log and core data, Sequence Stratigraphy of Shallow Marine Siliciclastic Systems.

Performing sequence analysis on well-logs, exercise on identification of lithofacies and stacking pattern in wave-dominated parasequences in core.

Day 2

Sequence stratigraphy of deepwater petroleum systems: effects of relative sea-level fall on sediment gravity flows, canyon incision, longshore drift capture, discussion and identification of key surfaces such as the Maximum Flooding Surface and Sequence Boundary and their identification in seismic, well-log and core data, autocyclic vs allocyclic changes and their controls on reservoir distribution and architecture, predictive stratigraphic models of Mike Gardner (Build-Cut-Fill and Spill and Adjustment-Initiation-Growth-Retreat).

Identification of key-sequence stratigraphic surfaces in sub-surface data from deepwater exploration basins

Day 3

Carbonate sequence stratigraphy and its control on reservoir distribution and quality, recognition of key surfaces in core, highstand shedding of carbonate platforms, effects of karstification, dissolution and leaching along subaerial unconformities, drowning unconformities ("Type-3 sequence boundaries") and source rocks, variations in cycle-style in carbonates, the start-up, catch-up and keep-up phases in carbonate platform development.

Exercise on identification of lithofacies and stacking pattern in a carbonate-ramp parasequence.

Day 4

Sequence stratigraphic models by the Exxon Group, Hunt and Tucker, Plint and Nummedal, Galloway's genetic sequences, T-R cycles of Ashton Embry and the use of 3G parasequences in correlation.

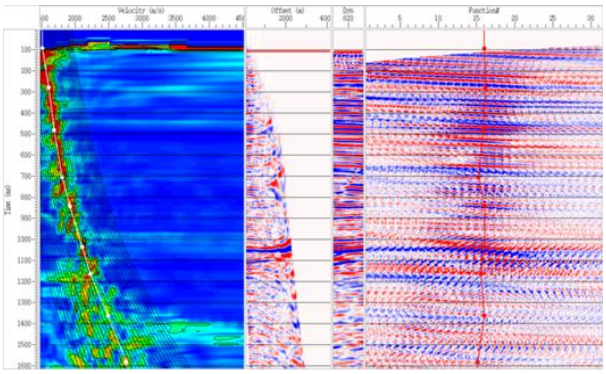
Exercise on using Ashton Embry's techniques in well-log correlation.

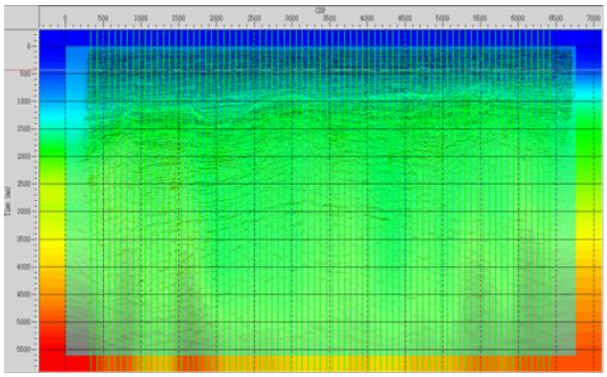
Day 5

Introduction to sequence biostratigraphy: index fossils including planktonic and benthic foraminifera, calcareous nannoplankton, dinoflagellates, spores and pollen, the concept of ecostratigraphy, finger-printing and biosteering.

Well-log workshop on participant data

4. SEISMIC DATA PROCESSING CLASSROOM TRAINING





Instructor: Farhan Ahmed Khan

Duration: 3 Days

Level: Basic – Final Processing

Course Introduction:

Seismic data processing serves as a critical link between seismic acquisition and interpretation. It converts raw seismic field data into a refined, high quality dataset suitable for geological and geophysical analysis. The processed seismic information enables accurate structural and stratigraphic mapping of the subsurface, supporting reservoir characterization and playing a key role in reducing exploration risk and assessing hydrocarbon potential with in the field.

DESIGNED FOR YOU, IF YOU ARE...

Geophysicists, Geologists, Physicists, Mathematicians, Project Managers

HOW WE BUILD YOUR CONFIDENCE

We will use slide presentation, paper exercises, and group tasks.

THE BENEFITS FROM ATTENDING

To understand seismic data processing and concepts in imaging, and also comprehend processing parameters, velocity and migration. Able to communicate effectively with the seismic experts.

Daily Agenda

Day-1

- Introduction
- Why Processing
- Data Processing Objectives
- Seismic data Reformat
- Geometry Definition
- Seismic Navigation Merge

- Data Sorting & QC

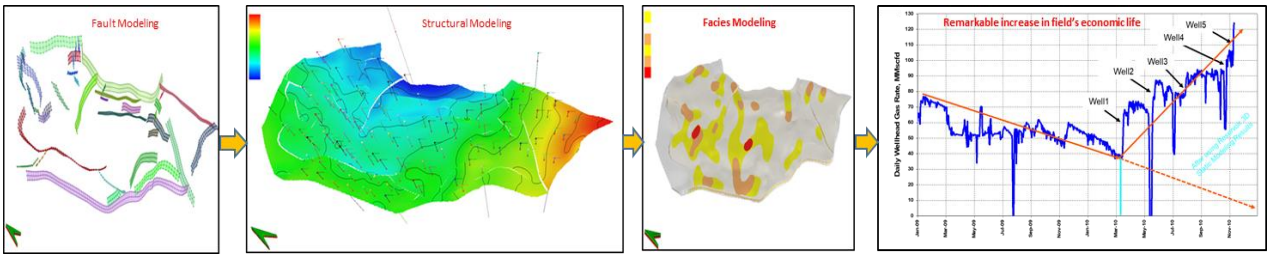
Day-2

- Amplitude Recovery
    - Factors that Affect Amplitudes
    - Types of Amplitude Recovery
- Noise Attenuation
    - Linear
    - Random
- Multiple Attenuation
    - Short Period
    - Long Period

Day-3

- Statics
    - Elevation Statics
    - Refraction Statics
    - Reflection Statics
- Velocity Analysis
    - Types of Velocities
    - Seismic Velocity Analysis Techniques
- Migration and Imaging
    - Concept of Migration
    - Types of Migration

5. Integrated 3D Geo-modeling for optimizing field development and operations strategies



Instructor: Ana de Sousa/ Ghulam Shabbir /Salem Zakkri

Duration: *5 days*

Level: *intermediate - advanced*

Course Overview / Introduction:

Every E & P Company wants to have more hydrocarbon production from their fields with low cost. This goal is directly dependent on how close you have understanding about the real situation of the subsurface. The analysis on the dataset of any individual discipline is insufficient to address the multiscale reservoir heterogeneity. Therefore, a cross-disciplinary integration is fundamental in an effort to extend economic petroleum field's life.

The process of Reservoir 3D Static Modeling offers an effective workflow to integrate the latest concepts and available dataset of all related disciplines. The outcome of this process is taken as input to the simulation studies. The integrity of a simulation model is a function of the reservoir architecture used to construct the model, facies modeling/rock typing/Geological Flow Units (GFUs) and petrophysical modeling.

Thanks to our high computing power software technology (GES – a commercial package or as per client's requirement) that will be used during this course to interpret and perform integration of seismic, core, log, outcrop/field analog, and production data altogether in a single platform for better consistency and quick estimations while building the 3D static model.

DESIGNED FOR YOU, IF YOU ARE...

Geologists, Geophysicists, Petrophysicists, Petroleum Engineers, Project Managers

HOW WE BUILD YOUR CONFIDENCE

We will use slides presentation, paper exercises and live demonstration on software with examples.

The benefits from attending

This training course will be covering main steps of the geo-modeling process starting from the database management, logs interpretation, facies interpretation, geological well correlation, stratigraphic framework building, structural modeling, variogram analysis, rock typing/GFUs, and reservoir properties distribution on 3D grid, and running detailed volumetric calculations by giving practical examples and exercises.

Daily Agenda

Day 1

- Introduction and approaches of 3D Static Modeling
- Key dataset and its management
- CRS, Quick data importing and QC
- Introduction to EOD
- Introduction of Petrophysical Products
- Facies Interpretation
- Facies mapping using patent algorithm

Day 2

- Stratigraphic framework
    - Hierarchy definition
    - Geological well correlation
    - Boundaries of genetic units
- Structural framework
    - Fault modeling

- Reservoir Architecture Building
    - AOI definition
    - Fault compartments and production units
    - Make horizon process
    - Make zone process
    - Layering scheme
    - 3D gridding
    - Grid QC

Day 3

- Well blocking of facies log
- Data analysis
- 3D distribution of depositional facies
- 3D distribution of lithofacies
- QC methods of facies model

Day 4

- Porosity modeling
    - Well blocking of porosity log
    - Data analysis
    - 3D distribution of porosity
    - QC of porosity model

- Permeability modeling
    - Well blocking of K – NN
    - Data analysis
    - 3D distribution of K – NN
    - QC methods of permeability model
- Water Saturation Modeling
    - Well blocking of Sw
    - Data Analysis
    - 3D distribution of Sw
    - QC methods of Sw model
- Formation Fluid Contacts
- Static Volume Calculation

Day 5

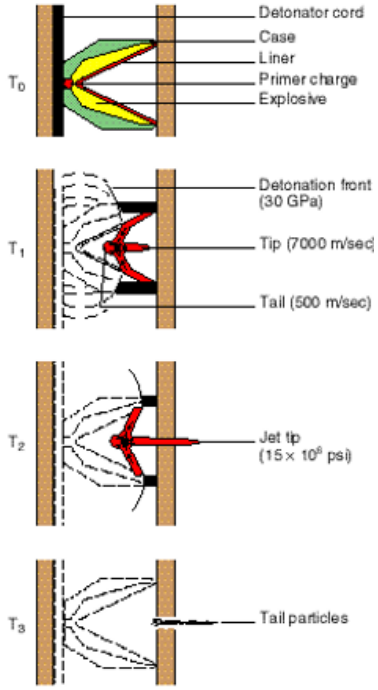
- Presenting geo-model results to management
- High case, base case and low case scenarios
- Static to Dynamic modeling preparations
- Model up-scaling
- Local model update
- 1-button static modeling workflow

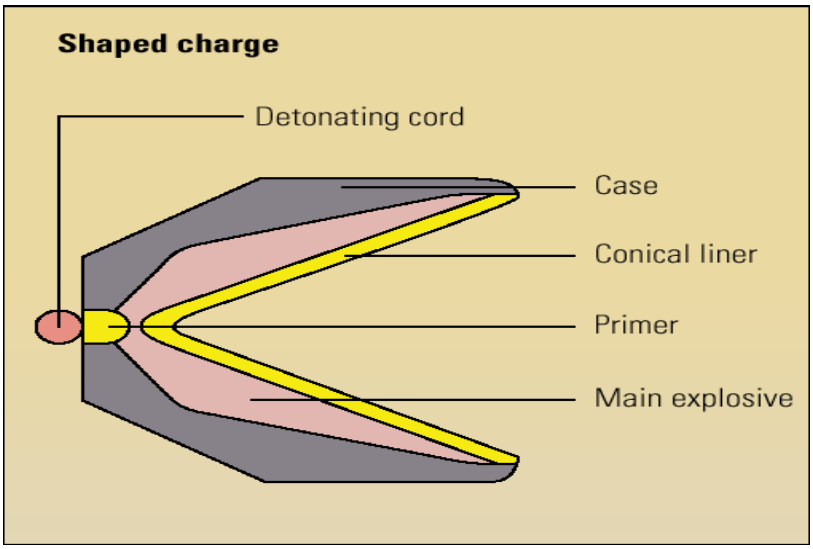
Complementary & Requirement (Optional)

One week plus 1 week free license of an internationally reputed commercial software package and software support so that participants can do practice on their own data. The software package contains all required modules including seismic input, log interpretation, facies analysis, reservoir rock typing, property modeling, volumetric calculations, and workflow of 1-Button static modeling, Advanced Interactive static modeling & Quick deterministic static modeling.

Course participants can bring their laptops to install software and license activation to use during the training sessions and for a period of one week more.

6. Perforating Technology – Well Completion Design





Detailed Session content and training materials will be provided upon course confirmation

Instructor: Saeid Mustafa

Why Choose the Perforating Technology Training Course? Perforation is a key well-completion concept.

The course objective is to provide the engineers with a basic overview of Perforation techniques, including functions and objectives. Gun system and explosion process, charges and penetration, perforating conditions, charge performance, shot density, gun clearance, shot phasing, and wellbore fluid, casing, and formation. Underbalance versus overbalance perforation scenarios. Perforation techniques include wireline perforation or pipe conveyed. Underbalanced or Overbalanced perforation conditions and other techniques.

The primary purpose of the perforation techniques is to choose the perforation interval and wellbore conditions. Specific perforation objectives to validate the cement bond quality across the perforation intervals, review the open-hole logs, fluid contacts, perforation SPOT analysis, and wellbore damage, as well as depth correlation, reference log, wireline, and pipe convey configuration.

The course begins with an overview of many early studies that ignored the damage around the perforation tunnel and focused on the importance of length and entrance hole diameter. Putting damage effects aside, the length of the perforation tunnel is theoretically the most critical factor in a natural completion in which no further stimulation or sand control is planned. The entrance hole diameter becomes more important when some sand control completion designs are planned or fracturing is needed.

This Perforating Technology training course: Best Practices. By attending this course, participants will have:

- Alerting of Perforation HSE Safety Consideration
- Perforating Fundamentals & Perforator Performance
- Perforating Charge/Gun Testing
- Gun Selection
- Gun Deployment
- Formation Damage Principles
- Impacts of perforation selection on the well's productivity
- Sharing Worldwide perforation accidents
- Used SPOT analysis and PulsFrac results to Model Perforation Performance

What are the Goals?

By the end of this training course, participants will be able to:

- Review the fundamentals of perforating
- Understand issues that impact perforator performance
- Update on technology developments
- SPOT Analysis using PROSPER Software (Petroleum Experts Suits)
- Dynamic UB, Propellants, and gun shock
- The relative productivity of a given reservoir is primarily dependent on the near wellbore pressure drop. This is governed by drilling damage, perforation parameters, and stimulation operations.
- Highlight the nature of successful completions, sand management, and stimulation operations that are strongly dependent on perforation systems and processes.

Who is this Training Course for?

This training course is suitable for a wide range of professionals, but will greatly benefit:

- Petroleum Engineers, Production Technologists, Oil Maturation & Reservoir Engineers
- Geologists & Petrophysicists Engineers
- Junior Petroleum Engineers
- Reassigned PE discipline to Production Technologist and Oil Maturation disciplines

How will this Training Course be presented?

This perforation training: A to Z of Best Practices training course will utilise a variety of proven learning techniques to ensure maximum understanding, comprehension, and retention of the information presented. The training course is designed as a blended environment of presentation, class exercises, field application/ analysis and several industry videos showing all processes.

Course Content

Day One:

Overview of Perforation

- Function and objectives
- Gun system and explosion process
- Charges and penetration

Perforating gun performance

- Perforating Charge/Gun Testing
- Shot density/performance
- Gun clearance
- Shot phasing
- Wellbore fluid, casing, and formation
- Perforation Damage and Damage Removal
- Perforation Efficiency
- Underbalance versus overbalance

Perforation techniques/deployment

- Gun Selection/ Deployment
- Wireline perforation
- Pipe conveyed
- Underbalanced
- Overbalance
- Other techniques

Day Two:

Choosing perforation interval and conditions

- Specific perforation objectives
- Cement bond
- Open hole log
- Contacts
- Perforation analysis and conditions

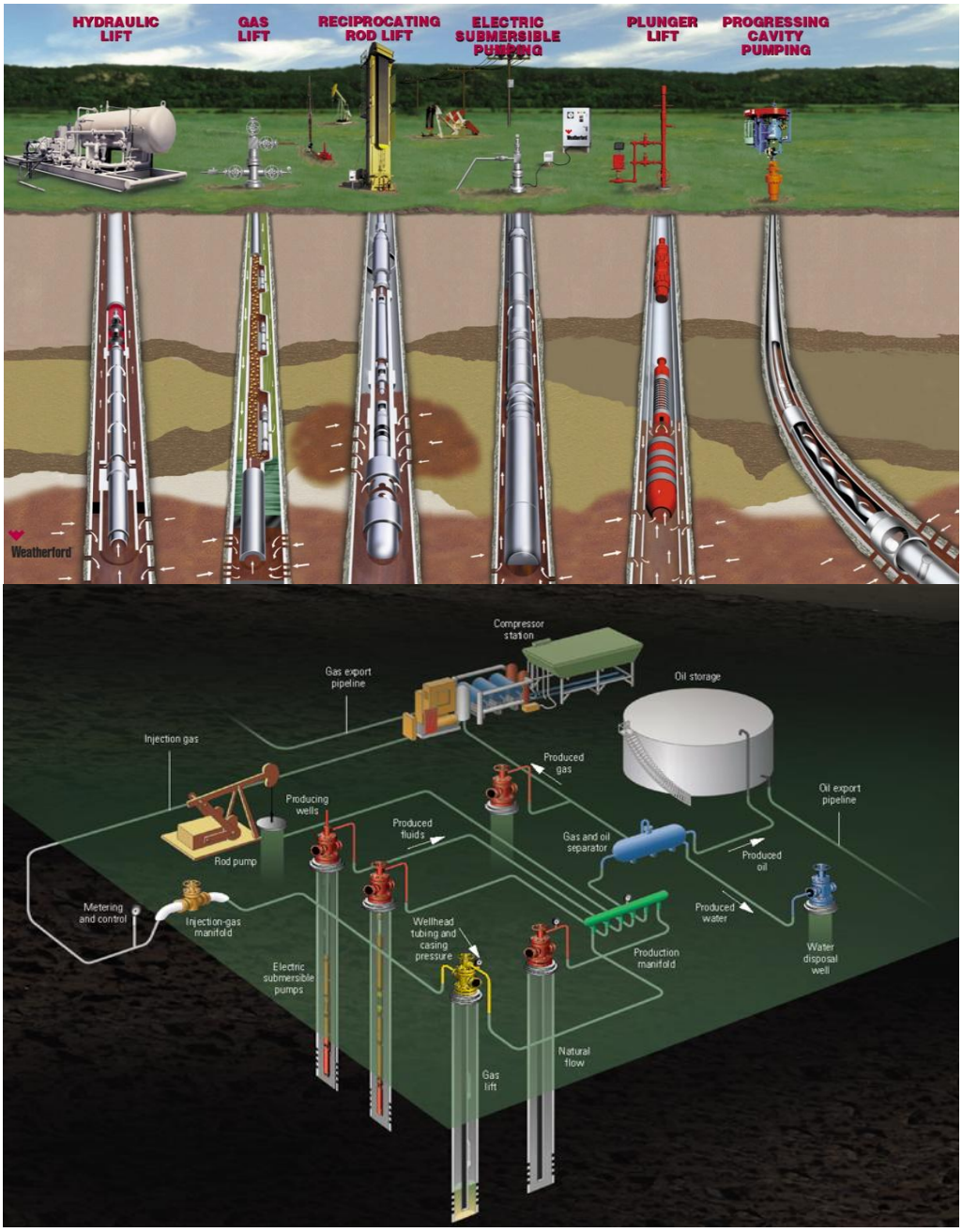
Depth Correlation

- Reference log
- Wireline
- Pipe conveys

Day Three:

- SPOT PROSPER Introduction
- SPOT analysis case study and example models
- Dynamic UB, Propellants, gun shock
- Perforator Performance Testing: API Tests
- Perforating Accidents
- Past Operating Experience
- Wrap-up and problem discussions

7. Artificial Lift System Gas-Lift Design (Basic & Advanced)



Detailed Session content and training materials will be provided upon course confirmation

Instructor: Saeid Mustafa

Why Choose Artificial Lift System Gas-Lift Design (Basic and Advanced): By attending this course, participants will have:

The course objective is to provide the engineers with a basic overview of different types of Artificial Lift and gaslift system in more detail. The primary purpose of installing an artificial lift system is to maintain a reduced bottom hole pressure (drawdown) to enable the desired reservoir fluids to be produced at an

acceptable rate. Maintaining the required (optimal) flowing bottom hole pressure is the design basis for all artificial lift installations, i.e., the well system tubing performance curve (TPC) is displaced downward. If the appropriate drawdown can be maintained, the future reservoir management and well operable completion can be conducted efficiently.
The course begins with a quick overview of production systems analysis and justification for each type of artificial lift and the dynamic sequences of gas lift to increase well productivity, followed by an introduction to gas lift principles, surface installations, and downhole equipment. The three basic elements of continuous gas lift design are covered thoroughly: operating valve positioning, unloading valve positioning, and valve sizing. Other topics covered in the course include gas lift operations, multi-well lift gas allocation, optimization, and a special section on a manual and graphical calculation of GLV spacing for single and dual completion. Gas lift is particularly suitable for applications where high-pressure gas is readily available. High-pressure gas wells can be an economical source of high-pressure gas. Alternatively, gas compressors for gas injection or as sales gas booster compressors may be available. In general, the cost of gas compression/processing far exceeds the cost of subsurface gas lift equipment. Consequently, gas lift should be the first consideration when an adequate volume of high-pressure gas is available.
E & P Company's key delivery targets are to sustain hydrocarbon production from their fields at lower operating costs. This goal can be achieved directly by proper selection of the artificial lift system that can be implemented to operate the field with the existing topside facility. Therefore, surface and subsurface multi-disciplinary integration becomes essential to extend the field operating life cycle to the economic reserve limit.

By attending this Artificial Lift System Best Practices training course, participants will have:

Acquire basic knowledge of artificial lift and gas lift principles and equipment

- Understand various types of gas lift failures and instability
- Be able to perform gas lift design with IPO or PPO using manual calculations, graphical methods, and Prosper software
- Be able to troubleshoot problems
- Be able to perform gas lift optimization in single-well and multi-well cases
- Acquire knowledge of gas lift optimization through the conventional and automation systems.

What are the Goals?

By the end of this training course, participants will be able to:

- Grounding on different types of Artificial Lift and Gas-lift systems
- Inflow – Outflow and Need for Artificial Lift
- Gas Lift Well Unloading Sequence
- Downhole Equipment & Kickover Tool
- Gas-lift Monitoring Scenarios
- Gas-Lift Operating Envelope/GLVCO Process
- Gas-lift design using IPO and PPO valve concepts
- Gas-lift design for dual string completion

Who is this Training Course for?

This training course is suitable for a wide range of professionals, but will greatly benefit:

- Petroleum Engineers, Production Technologists, Reservoir and Oil Maturation Engineers
- Drilling, Well Completion & Workover, Geologists & Petrophysicists Engineers
- Junior Operation, Production Operation, and Project Execution Engineers.

How will this Training Course be presented?

This Artificial Lift System: Best Practices training course will utilise a variety of proven learning techniques to ensure maximum understanding, comprehension, and retention of the information presented. The training course is designed as a blended environment of presentation, class exercises, field application/analysis and several industry videos showing all processes.

Course Content

Day 1

- Introduction and Expectation
- Grounding to Gas-lift
- Simulator Scenarios on the Naturally Flowing and killing the well.
- Well Performance and Artificial Lift Technology
  a) Well Performance
  b) Multiphase Flow
  c) Exercise 1: BHP Survey and Well Model Calibration
- Inflow – Outflow and Need for AL
- Introduction to Gas Lift
- Gas Lift Well Unloading Sequence and Continuous Flow Unloading Sequence (Video)
- Simulator Scenarios on the Unloading Sequences. Mini Quiz

Day 2

- IPO vs PPO Gas-lift
- Gas Lift Valve Mechanics and Performance
- Force Balance Theory for IPO Valves
- Force Balance Theory for PPO Valves
- New Gas Lift Valve Technology
- True Valve Performance
- Simulator Scenarios on the Optimizing well production.
- Downhole Equipment & Kickover Tool
- Surface Equipment

Day 3

- Gas-lift Monitoring Scenarios
- Foam Assisted Lift
- Well Tracer, Echo meter, and Clamp-on
- Simulator Scenarios on the Incorrect Set, Leaking valve, seat cut-out, Dry hole.
- Front line troubleshooting
- Gas-Lift Operating Envelope/GLVCO Process

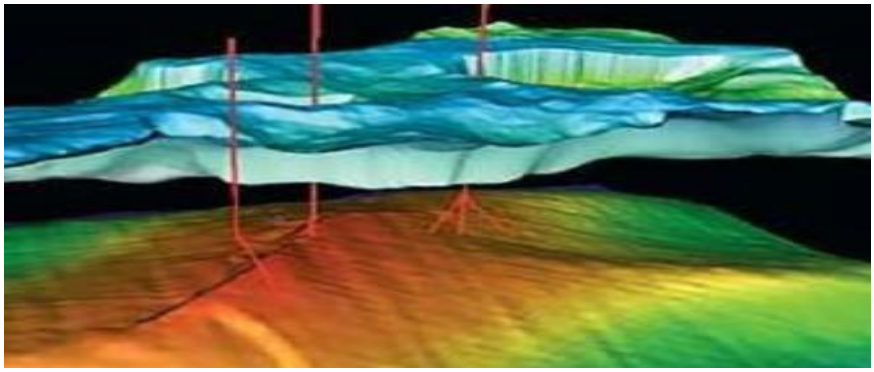
Day 4

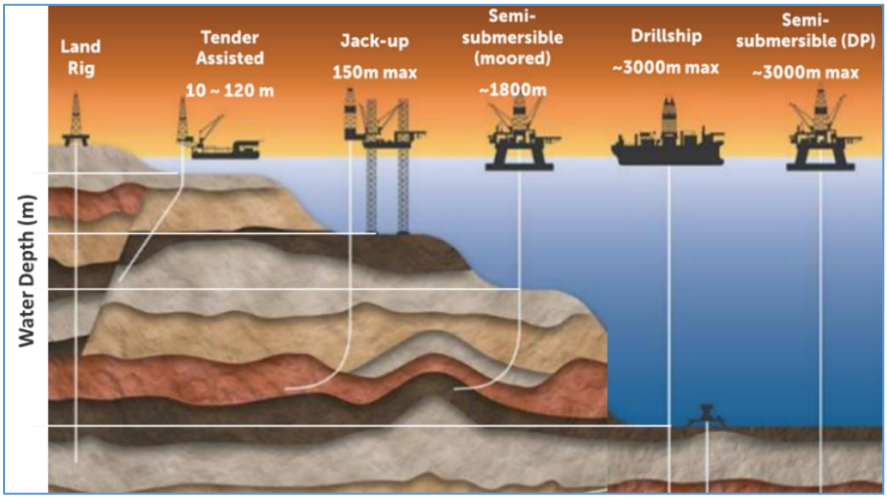
- Gas Lift Optimization
- Well Optimization Approach
- Single-Well Gas Lift Optimization
- Multi-Well Gas Lift Optimization
- Simulator Demo on Beam Pump & ESP
    - Mini Quiz
- Simulator Demo Jet Pump
- Network Optimization Approach

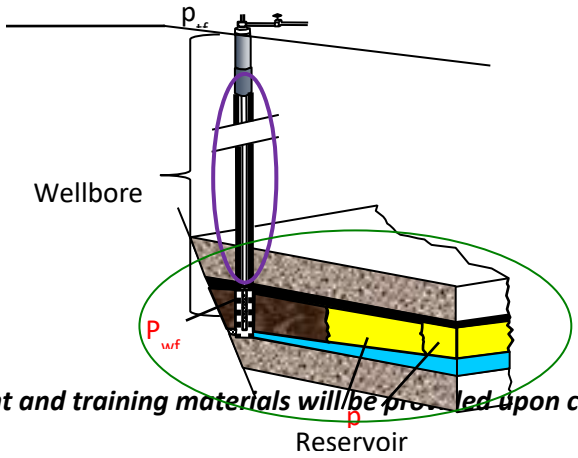
Day 5

- Gas-Lift Design Criteria and design steps in detail
- IPO Design Methodology
    - Constant Casing Pressure Drop Method
    - Casing Pressure Drop Design
    - Exercise 2 and 3: IPO Gas Lift Design (API Manual/Graphical/Prosper software)
- PPO Design Methodology
- Example: PPO Gas Lift Design
- IPO and PPO examples and exercises
- Dual String designs
- Gaslift Trouble Shooting, Diagnostics, and Well Unloading Procedure
- Wrap up and problems discussions

8. Well Completion Design (Criteria and Process)







Detailed Session content and training materials will be provided upon course confirmation

Instructor: Saeid Mustafa

Well Completion Design (Criteria and Process) Fit for Purpose to meet the planned FDP objective:

Well completion is the process of making a well ready for production or injection after drilling operations. Well completion process includes casing till TD and or liner, cementing, perforation, and placement of the completion equipment in the well. Wellbore configuration consists of optimum Tubing size, Landing

Nipple, Sub Surface Safety Valve and any other item planned for the well condition. On the Surface, well completion includes X-mass Tree, choke assembly, and surface Safety valve with the flowline header.
The course objective is to provide the engineers with a clear understanding of the process of completion design criteria. There are several ways of classifying or categorizing completion types. The most common criteria for the classification of completions include the following: Wellbore/reservoir interface, i.e., open-hole or cased hole, horizontal completion, producing zones, i.e., single zone or multiple zone production, Production method, i.e., natural flowing or artificially induced production (Artificial Lift). The completion starts with the 'change-over' to define the basic parameters for Well Completion (selection of perforations and production casing and tubing ID). How to determine wellbore stresses in the well tubular and materials requirements to stand these stresses
Liaise with the subsurface team to verify target zones, drive mechanism, and completion type to construct the completion concept with details of accessory configuration. Determine completion and packer fluids to be first of all with a minimum solids invasion, minimum formation damage, and compatible with reservoir properties and completion accessories, etc. Material selection should be properly determined to provide long service. Ensure the lower completion sand face concept is covered in the well life cycle to provide a sustainable, robust economic completion strategy during the producing life cycle phase.
Cased-hole sandface completion systems vary from relatively simple single-zone low-pressure/low-temperature (LP/LT) designs to complex high-pressure/high-temperature (HP/HT) applications. There are several keys to designing a successful completion system and selecting components, such as: Fit for purpose for both the downhole environment and application. Consideration must be given to the various modes under which the completion must operate and the effects any changes in temperature or differential pressure will have on the tubing string and packer. Sandface completion must be both efficient and cost-effective to achieve production and financial goals. A key factor in the completion design is the initial well potential estimation and or the expected initial production rate for the completed zone (s).
Considering the business objective, project maturation stages, commerciality, HSE, surface and subsurface risk and uncertainties, a full cycle of subsurface and surface integration journey to be focused from the select stage until the completion of the development scenario for a field to maximse overall oil recovery and maintain asset value throughout the field life cycle.
A successful FDP definition that is matured with value drivers contains a comprehensive front-end loading, a high Success Criteria, Key deliverables, Robust project maturation stages, Project assurance, Identifies a number of opportunities and constraints, Risk and Uncertainties, Commerciality and HSE.
E & P operating companies' key deliverables are to sustain and maximize hydrocarbon production from their fields at a lower operating cost. This goal is directly dependent on a clear understanding of the subsurface requirement to consolidate well design completion concept, and establish the basic WRFM data acquisition and surveillance plan, introducing new technology when applicable for expediting decision making to maximize well and field production.

This Well Completion Design (Criteria and Process): By attending this course, participants will have:

- Have a clear understanding of wells and completion strategies
- Develop a high-level completion strategy for wells in a variety of field development conceptual situations
- Select tubing, packers, and completion flow control equipment
- Appraise/design a suitable flow barrier strategy
- Able to relate the importance of installing all the required downhole equipment, considering sand management strategy, artificial gas lift or ESP, and flow assurance in the FDPs to strategize the well completion concept for the production stage
- Become aware of drilling and completion key KPIs

What are the Goals?

By the end of this training course, participants will be able to:

- Describe the full scope for well completion design and strategy.
- Identify and utilize the relevant parameters to design well completion.
- Identify options to introduce a new technology and or methods to perform instantaneous analysis for cost-effective well completion purposes.
- Consider standardizing well design and completion concept to meet asset safety, production target, and well integrity requirements.
- Be familiar with the life cycle of the FDP design stage, well planning, and well completion execution.

Who is this Training Course for?

This training course is suitable for a wide range of professionals, but will greatly benefit:

- Petroleum Engineers, Production Technologists, Oil Maturation & Reservoir Engineers
- Production Engineers and Junior Operations & Petroleum Staff
- Geologists & Petrophysics' Engineers

How will this Training Course be presented?

This Well Completion Design (Criteria and Process): Best Practices training course will utilise a variety of proven learning techniques to ensure maximum understanding, comprehension, and retention of the information presented. The training course is designed as a blended environment, incorporating presentations, class exercises, field applications and analysis, and several industry videos that demonstrate all processes.

Course Content

Day 1

- Introduction and Expectation
- Grounding to Completion Concept
- Introduction: What is the Fields Development Plan (FDP)?
- Wells and Completion Strategies.
- Basis and Consideration of Well Completion Design
- Wells & Completion Phases and Consideration
- Well-Designed Types
- Drilling Operation (Basic Concept) Overview
- Basic Drilling Concept (Well Construction) Overview
- Examples of Common Drilling Challenges
- Case Example: Well Design Concept (Case Study Project)
- Drilling Challenges, Mapping and Rig Selection

Day 2

- Completion Concept
- Well Completion & Intervention
- What is Well Completion?

- What is the Importance of Well Completion
- Well Completion Components
- Well Completion Design Concept.
- Well Design Criteria and Process
- Types Of Well Completions
- Well Completion (Horizontal Well Completion)
- Completion Minimum Standards (CMS) Background

Day 3

- Well's Operation Capability
- Tubing Size Selection (Case Study Evaluation)
- Initial Rate Evaluation and DST Test Calibration
- Material Selection (Case Study Evaluation)
- Case Study: DST Multi-Rate Well Test Validation Process
- DST Well Test Model Validation Objective (Case Study Evaluation)
- Well Completion Comparison.
- Well's Operability and Smart Completion
- Flow Assurance
- Smart Well Completion Benefits
- Smart Gaslift Pilot Trials at Case Study for Infill Drilling Well Project
- Sand Management. Why need to manage sand production?
- Typical Sand Control Well Completion
- Sand Management, Best Practices, and Holistic Sand Management
- Case Study: Requirement of Sand Control Indicatives from the changes in Sonic Logs with time.

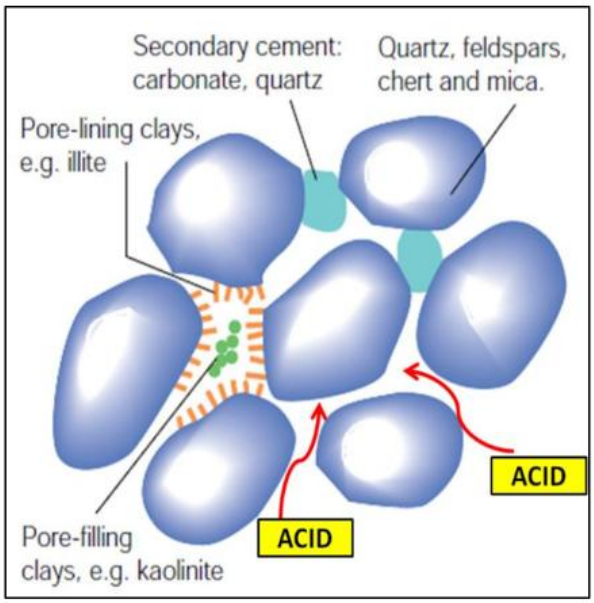
Day 4

- Artificial Lift, Types of Artificial Lift (Gas Lift, ESP, PCP, etc):
- Artificial Lift Requirements
- Real-time Monitoring & Control Dashboard. Digital features to allow for full integration and action without intervention.
- Benchmarking of Total well cost (Drilling & Completion).
- Packer & Completion Fluid
- Sand Control if required
- Material Selection
- Completion Operational Procedure
- Wrap-up and problems discussions

Day 5

- Full-day Exercise on Gas Lift design and or ESP pump sizing and troubleshooting
- Wrap-up and problem discussions

9. Acid Matrix Stimulation and Hydraulic Fracturing



Detailed Session content and training materials will be provided upon course confirmation

Instructor: Saeid Mustafa

Course Overview / Introduction:

Acid matrix stimulation and hydraulic fracturing are both well stimulation techniques used to enhance oil and gas production, but they differ in their approach and application. Matrix stimulation involves injecting fluids (such as acid) into the formation at pressures low enough to avoid fracturing the rock, aiming to dissolve flow-restricting materials and increase permeability within the existing pore spaces. Hydraulic fracturing, on the other hand, involves injecting fluids at high pressures to create fractures in the reservoir rock, increasing the surface area for flow.

This training course session will provide reasonable procedures and guidelines, and offer cautions suggested by particular formation compositions and reservoir conditions. The training course will serve as a direct supporting foundation for the reservoir rock properties, formation damage, perforation technology, acid matrix stimulation, and hydraulic fracturing. Whilst the course material contains the theories, design, execution, and monitoring, this guideline puts the theories and course contents into practice on actual field executions.

Natural damages occur primarily as a result of producing the reservoir fluids. Others are generally called induced damage as a result of external operations on the well, which can occur during any well operation, including drilling, cementing, perforating, production, workover, and stimulation. The damage mechanisms are listed below:

- pore plugging by solid particles
- mechanical crushing or disaggregation of porous media
- fluid effects like creation of emulsions or changes in relative permeability

Natural damages are fines migration, swelling clays, water-formed scales, organic deposits like paraffins or asphaltenes, and mixed organic and inorganic deposits. Induced damages are normally plugging, caused by entrained particles such as solids or polymers in injected fluids; wettability changes, caused by

injected fluids or oil-based drilling fluids; emulsions, precipitates, or sludges, caused by acid reactions, bacteria and water blocks. Figure 1 shows the common types of damage and their locations.

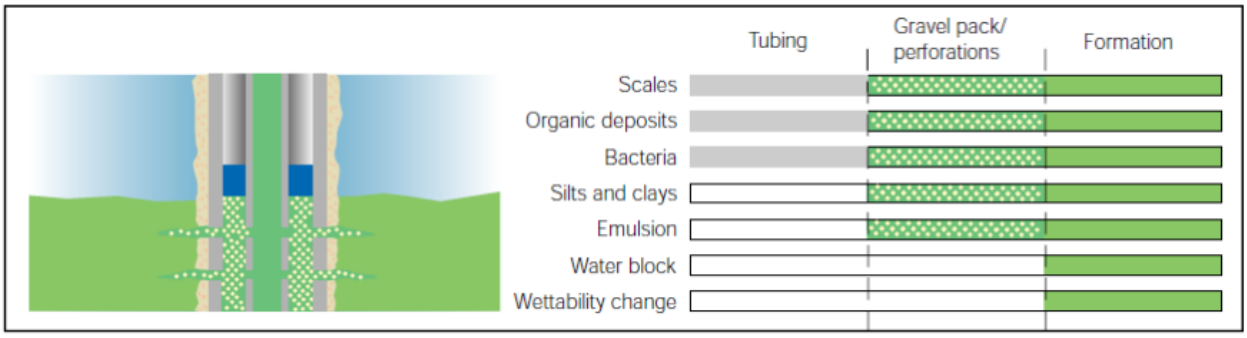


Figure: Locations of various types of damage

This course is designed to help perform acidizing on a well candidate in a logical step-by-step process and then select and execute an appropriate chemical treatment for the oil/gas well. The subject matter is practical in intent and avoids the more complicated acid reaction chemistries. Effective acidizing is guided by practical limits in volumes, types of acid, and procedures so as to achieve an optimum removal of the formation damage around the wellbore.

The main objectives of the training course are:

This Acid Matrix Stimulation in Producing Wells and Hydraulic Fracturing Overview Will Allow Participants to:

- Formation Damage (Definition, mechanism, counter measures, etc.)
- Explain the basics of reservoir rocks' properties and formation damage in sandstone reservoirs and sandstone acidizing.
- Explain the important steps required for sandstone acid matrix stimulation candidate selection, job design, planning, execution, monitoring, and post-job evaluation.
- Improve the flow of hydrocarbons by increasing the permeability of the reservoir rock through the dissolution of minerals or other flow-impeding materials.
- Acidizing (Matrix Acidizing, Acid fracturing, etc.)
- Familiarize with the current available modeling tools for well performance evaluation and acid placement.
- Hydraulic Fracturing Overview
- Briefly explain the basics of hydraulic fracturing in tight reservoirs.
- Explain the important parameters required for a feasibility study.
- At the end of the course, delegates will learn about the many processes involved in acid stimulation operations, about acidizing equipment, and how to plan & execute an acid job.
- Create fractures in the reservoir rock, increasing the surface area available for hydrocarbon flow. Primarily used in low-permeability reservoirs where natural fractures are limited or absent.
- List some examples of optimization tools that can be used for quality control on the design.
- Understand the role and importance of available modeling tools for hydraulic fracturing simulation and well performance.

What are the Goals?

By the end of this training course, participants will be able to:

- Understand the basics of acid matrix stimulation in sandstone reservoirs. Identify requirements for stimulation work & select the appropriate technique
- Select the acid type, additive & design acidizing job for sandstone & carbonate rocks
- Good candidate selection for acidizing treatment (quantify skin and production gain).
- Selection of optimum treatment fluids and modeling with available stimulation software.
- Conduct well and equipment preparation before execution, and monitor during matrix acidizing.
- Conduct post-job evaluation for lessons learnt and future improvements.
- Verify the primary objective of increasing well productivity by removing drilling or production-induced and/or produced damage (sandstones and carbonates). Increasing production network around wellbore (carbonates). Changing the flow regime in the wellbore (fracturing).
- This course will provide you with the essential resources to design and extend the uptime and life of hydraulic systems. Content draws on years of practical field experience and consulting.
- Understand the basics of hydraulic fracturing in tight reservoirs. Understand fracturing mechanisms, identified fracturing parameters & design fracturing jobs.
- Know the key reservoir and rock mechanical properties needed for fracturing design.
- Conduct detailed evaluation and optimization of fracturing design.
- Select suitable fracturing fluids and proppant types.
- Understand various execution methods and well completion considerations.
- In addition to overall system design, you will be instructed in how to solve challenging problems in hydraulic systems.
- Detailed animations are provided to help understand the flow of oil and the operations of the various components and systems.

DESIGNED FOR YOU, IF YOU ARE...

Drilling, completion, workover and production technologist engineers, project execution, and managers. Reservoir engineers and operations staff are responsible for performing surveillance and pumping activities on the producing wells.

HOW WE BUILD YOUR CONFIDENCE

We will use slide presentations, animations, and demonstrations of the CTU, wireline, and high-pressure equipment. This interactive coaching course starts by presenting the fundamental ideas for stimulation job style, execution, and follow-up.

Daily Agenda

Day 1: Introduction to the Basic Reservoir Rock Properties

- Introduction and Expectation
- Grounding to review the main course objectives
- Reservoir Rocks Properties

- Types of Reservoir Rocks
- Homogeneous & Heterogeneous Reservoirs
- Compressibility and Rock Compressibility (Cf)
- Compaction and Fracture Gradient
- Step Rate Test (SRT)
- Leak off Test, LOT or Formation Integrity Test, FIT
- Coiled Tube Unit and Wireline
- Coiled Tube Unit Operation, CT Conveyed Perforation, and sharing CT Mechanical Fatigues & Failures and Corrosion Problem
- Coiled Tube Geometry & Size Change and Major Problem # 1 & #2
- Wellhead & X–Tree Components, Tubing Head & Tubing Hanger and Multiple Completions X–Tree.

Day 2: Why Stimulation? And Perforation techniques/deployment

- Introduction to Scales & Asphaltene, Waxes & Paraffins
- Skin Factor (S)
- Perforation techniques/deployment
- Perforating Gun, Positioning and Gun Size & Penetration Length
- Perforating Charge & VIDEO
- Types of Perforating Guns, Gun Geometry and Gun Calibrating Depth
- Underbalance Perforation and UB Perforation Calculation
- Tubing Conveyed Perforation Gun
- Oriented Perforating System (OPS)
- Perforation Efficiency
- Underbalance versus Overbalance

Day 3: Why Stimulation

- Basic Acidizing Treatments, Purposes/Applications
- Effects of Acidizing: Undamaged Well, Selecting Successful Acidizing Candidates
- Production History Plots, Offset Well Comparison
- Pressure Buildup Tests, Formation Damage Diagnosis
- Identify the Extent/Type of Damage, and Damage Removal by Chemical Solvents
- Acid Stimulation Treatments
- Reminder on Types of Reservoir Rocks
- Acid Stimulation Treatments in SANDSTONE and CARBONATE
- Acid Stimulation Treatments VIDEO
- Acid Stimulation Treatments Summary
- Formation Response to Acid, Formation Properties, Formation Fluid Compatibility
- Sulfate Ion Content, Bicarbonate Ion Content, Crude-Oil Incompatibility (Sludge and Asphaltenes) and Hydrogen Sulfide
- Formation Matrix Properties, Formation Mineralogy
- Methods of Controlling Precipitates, a. Preflush, b. Treatment & c. Postflush or Overflush
- Acid Treatment Design, Matrix Acidizing Design Guidelines

- Diverter System in Matrix Acidizing
- Acid wash (Cleaning) and Matrix Acidizing
- Fracture Acidizing Treatment

Day 4 Hydraulic Fracturing

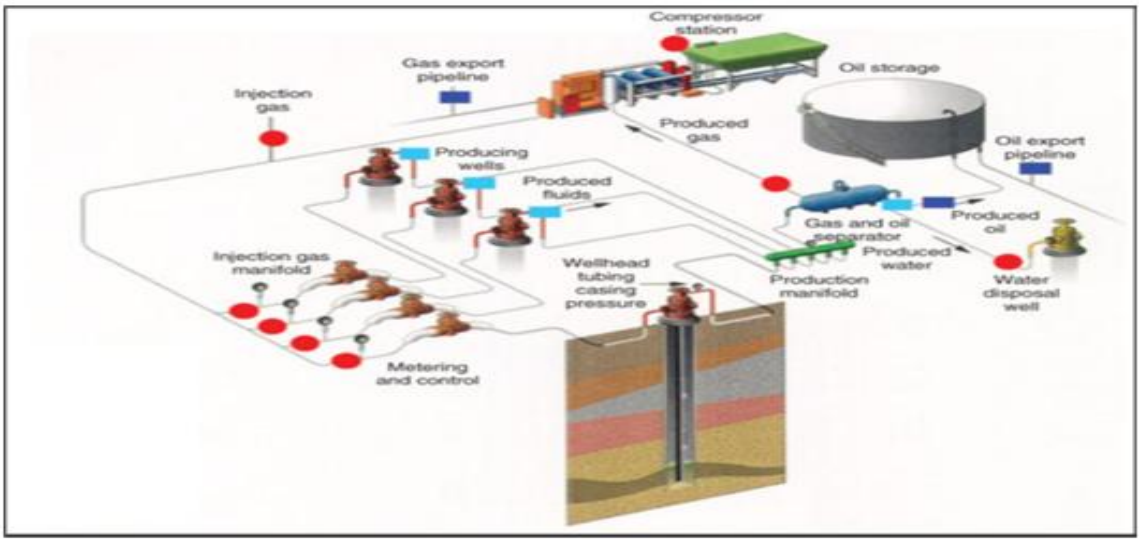
- Acid Type and Concentration, Retarded HF Acids
- Geochemical Models, Acid Placement and Coverage
- Mechanical Techniques, a. Opposed Cup Packer or Perforation Wash Tool, b. Squeeze Packer and Retrievable Bridge Plug, and c. Ball Sealers
- Particulates, a. Pregravel-Pack Acid Treatments, and b. Soluble Particulate Diverters
- Viscous Acid, a. Concentric Tubing, b. Ball Sealers
- Acid Fracturing and Acid Corrosion Parameters
- Advances in Acid Diversion, Horizontal Wells
- Potential Formation Damage Caused by Matrix Stimulation Fluid
- Stimulation Techniques and Objectives Summary
- Introduction into Hydraulic Fracture, Hydraulic Fracture Candidate Selection
- Flow inside Hydraulic Fracture and Hydraulic Fracture Orientation
- Hydraulic Fracture − Fluids, Chemicals, Cross-Linked Gel, and Sand & Proppant Types
- Hydr Fracture Configuration, Models, Flow Regimes, and design considerations
- Fracture Gradient FG, and Step Rate Test (SRT)

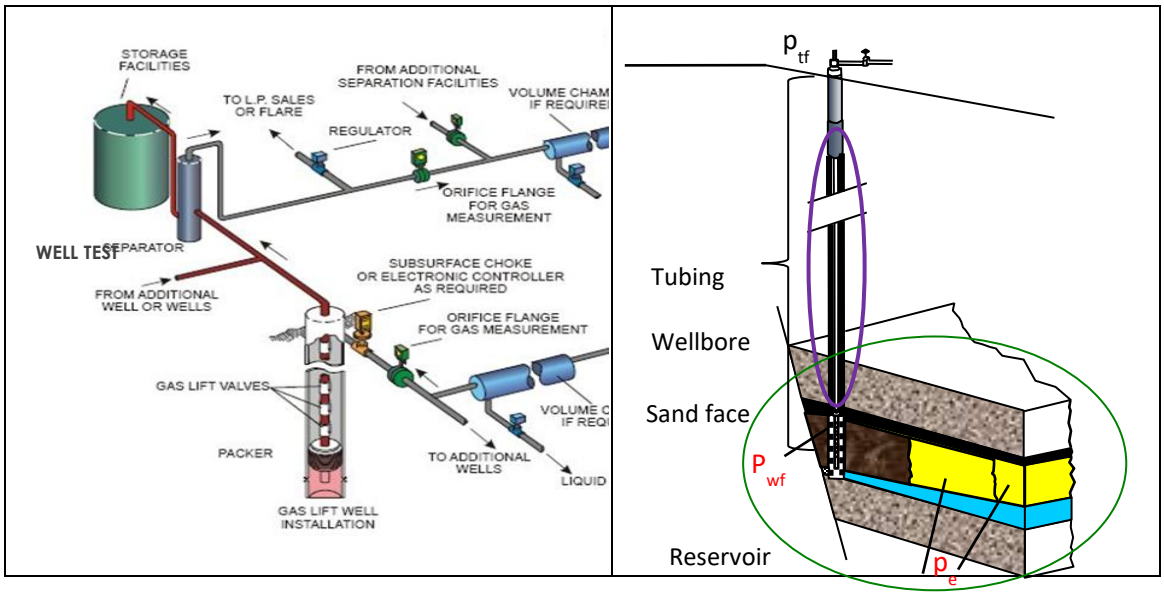
Day 5 Hydraulic Fracture - Operation

- Hydraulic Fracture Operation Equipment Layout, Blender, Pumps & Wellhead. Manifolds.
- Hydraulic Fracture − Mini Frac Stage, MAIN Frac Stage, schedule
- Hydraulic Fracture − Proppant Screen-out and Job Result Summary
- Main Fracture Treatment Design- Execution, Injectivity, Mini frac Test and Basic Schedule
- Hydraulic Fracturing Feasibility Study
- Hydraulic Fracturing Strategy, Fluid and Proppant Selection
- Generate Production Profile and Economic Analysis
- Conclusion, Wrap-up, and problem discussions.

Course Fee

10.ADVANCED FIELD SURVEILLANCE





Detailed Session content and training materials will be provided upon course confirmation

Instructor: Saeid Elshourbagi

Duration: *5 days*

Level: *Intermediate - Advanced*

Course Introduction / Overview:

This training course explores the latest developments in field surveillance and their applications. The course objective is to provide engineers with a clear understanding of the process of advanced field surveillance guidelines in conducting subsurface reservoir data acquisition and surveillance plans. Its main

objective is to provide a standard operating procedure utilizing new technology available in the field for Surveillance Engineers, Production Technologists, and Production Operation Engineers to ensure field monitoring activities are carried out to meet reservoir management objectives effectively and efficiently.

Field surveillance is very crucial for the subsurface team and production operations to monitor, report, and track the behavior of daily well production performance and the effects of various external factors. The importance of field surveillance cannot be overstated, as it provides valuable insights into the complex interactions between the productive sand face deliverability environment, wellbore, and the surface facility operating structures. In recent years, significant advancements have been made in field monitoring techniques, driven by innovations in sensor technology, data analytics, and remote sensing.

Advanced field surveillance technologies encompass a range of tools and techniques used to monitor field operations, enhance safety, and improve efficiency. It includes the addition of hardware such as pressure and temperature transmitters, PDHGs, DTS, remotely operated valves, SCADA, RTUs, and supporting software. These technologies include remote monitoring, video analytics, IoT sensors, and robotic systems for the subsea completions, often integrated with artificial intelligence and machine learning for real-time data analysis and proactive risk mitigation. The development of more sophisticated and cost-effective sensors has been a significant driver of innovation in field monitoring.

Modern sensors can measure a wide range of parameters with high accuracy and reliability, including temperature, pressure, displacement, and vibration. With the integration of the Internet of Things technology, real-time data transmission and remote monitoring have allowed for more efficient wellhead data gathering.

Some of the key benefits of advances in sensor technology and IoT applications include:

1. Improved accuracy and reliability of data, 2. Increased efficiency and reduced costs,
3. Enhanced real-time monitoring capabilities, 4. Real-time data analysis, expediting decision making, and greater flexibility and scalability.
5. Much more frequent data sampling and potentially a greater number of node locations along the production flowpath (DTS).
6. Multiphase flowmeters provide much more frequent and accurate (+-2 to 10%) well test information than traditional separator testing without sacrificing or deferring production.

E & P operating company's key deliverables are to sustain and maximize hydrocarbon production from the fields at a lower operating cost. The instantaneous data monitoring provides better reservoir management to operate the field, maintain asset value, and maximize overall oil recovery throughout the life cycle of the operating field. Introducing new technology always requires a cooperative teamwork initiative to highlight the value of expediting decision-making by considering the corrective actions in the right order of magnitude to maximize field production revenue.

By attending this course, participants will have:

- A clear understanding of the advanced well data acquisition and surveillance scope opportunity.
- Instantaneous well monitoring and highlight well status remotely to maximise wells' uptimes.
- Established a well performance model analysis and generated a robust integrated field model.
- Perform what-if cases of scenarios to maximize well productivity, maintain, and execute production optimization instantaneously.
- Provide reliable production data to establish a robust reservoir performance model to reduce the uncertainty of hydrocarbon offtake and improve the reserve estimation.

- Become more exposed to the available new technology applications to support in-field data acquisition and improve surveillance KPI targets

Who is this Training Course for?

This training course is suitable for a wide range of professionals, but will greatly benefit:

- Petroleum Engineers, Production Technologists, Oil Maturation & Project Execution Engineers
- Production Operations Engineers and Junior Operations and operations staff who are responsible for operating the field and/ or performing surveillance activities.
- Appropriate for subsurface engineers, Petrophysicis and surface operation staff at all levels.

HOW I build YOUR CONFIDENCE

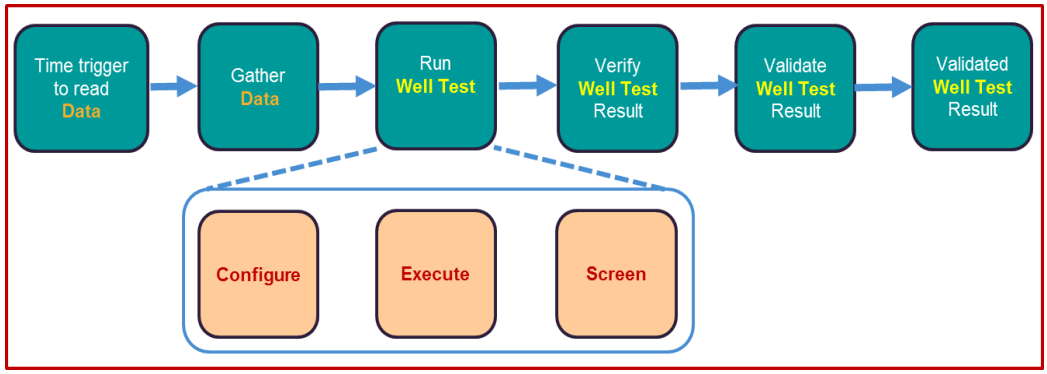
By using slide presentations, paper exercises, and live demonstrations of software with examples.

Daily Agenda

Day 1 Well Overview and Well Test Validation

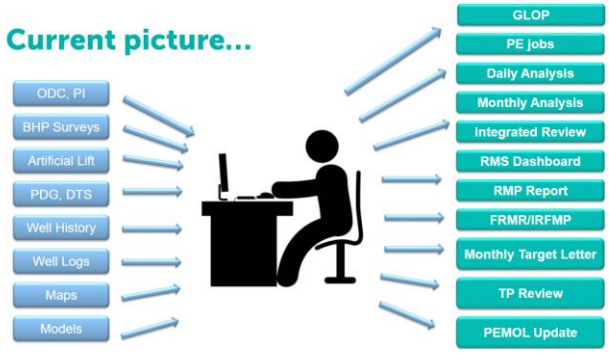
- Introduction and Expectation
- Grounding to field surveillance overview
- Introduction: What is the conventional field surveillance activity?
- Inflow – Outflow and Need for Artificial Lift
- Simulator Scenarios on the naturally flowing and killing the well.
- Well Performance and Artificial Lift Technology
  a) Well Performance
  b) Multiphase Flow
  c) Exercise 1: BHP Survey and Well Model Calibration
- Introduction to Gas Lift
- Gas Lift Well Unloading Sequence and Continuous Flow Unloading Sequence (Video)
- Simulator Scenarios on the Unloading Sequences.
- Well performance monitoring using real-time Pressure & Temperature
- Well test validation, using Production Choke Calculation, MRT, and Well Performance Model
- Well performance model analysis and Integrated Network model analysis to verify bottleneck
- Utilize the functionality of remote well testing using the Motor Operating Valve (MoV) to switch the well from the production header to the test line automatically.

- Well test requirements can be planned and executed effectively with the provision of surface pipeline modification.



Day 2 Corporate Database and Gas-lift System

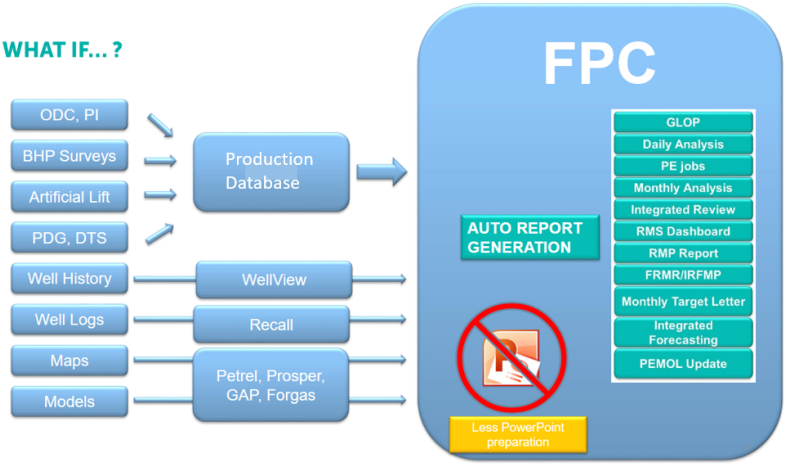
- Field Performance Center Opportunity



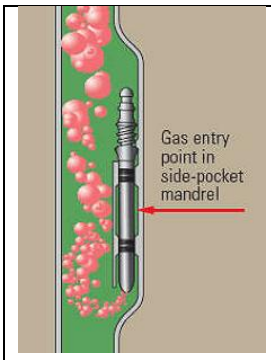
GLOP: Gas-Lift Optimisation

PE Jobs: Production Enhancement Jobs

- What if we applied a central database



- Gas Lift System and IPO vs PPO Gas-lift operating concept
- Gas Lift Valve Mechanics and Performance
- Force Balance Theory for IPO Valves
- Force Balance Theory for PPO Valves
- New Smart Gas Lift Valve Technology for real-time monitoring and control from surface



Conventional Gas Lift Mandrel

Dial Intelligent Artificial Lift DIAL Technology

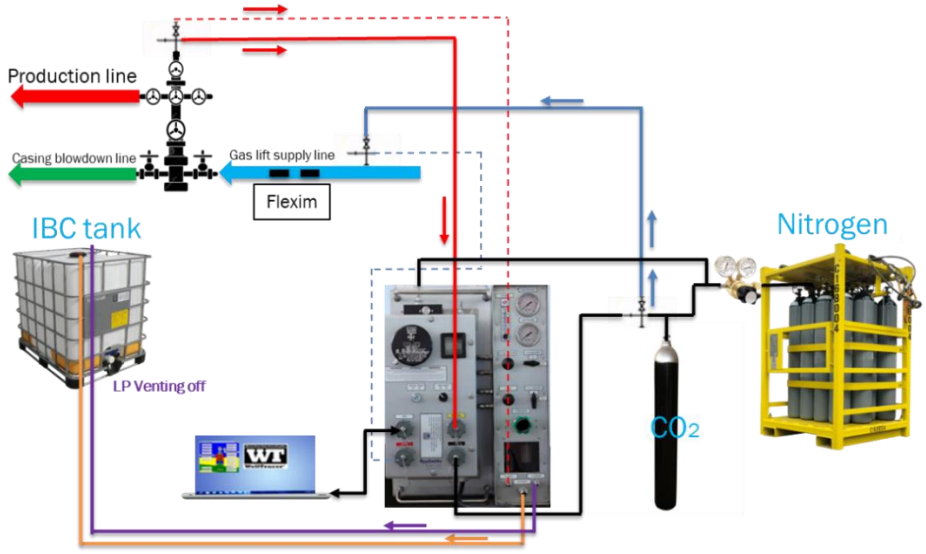
Downhole Product

Intermittently powered
(48V, 0.25A)

- True Valve Performance illustration
- Simulator Scenarios on Optimizing Well Production.
- Downhole Equipment & Kickover Tool
- Surface Equipment
- Proper and regular maintenance of Gas-lift orifice meters!
- Optimization of Gas-lift allocation when compression is limited
- Cased-Hole log analysis using modified AI and machine learning.
- MFC survey analysis using new software and compare with the conventional survey analysis.
- PLT log analysis

Day 3 Advanced Wellhead Monitoring

- Gas-lift Monitoring Scenarios
- Front-line troubleshooting. Gas-Lift Operating Envelope/GLVCO Process
- Simulator Scenarios on the Incorrect Set, Leaking valve, seat cut-out, Dry hole.
- Applied the new technology of well monitoring. It included CO2 WellTracer Technology to detect the POI, Echometer on the A-Annulus for fluid level identification, and Clamp-on for LG injection rate measurement during the CO2 WellTracer survey.



WellTracer Rig up diagram to monitor gas lift cycle and detect the actual POI

- Single-phase Phase Flow measurement using stand-alone Clamp-On meters
- Echometer Surveys at the A-annulus and inside the tubing string for liquid level identification.

- Successful application for liquid loading gas producers to implement foam-assisted Lift and foam sticks to kick off the liquid-loaded wells. Operation excellence activity to minimize the need for CTU activity.
- Gas Lift Monitoring and Diagnostic Services. GURU Services Gas Lift Surveillance and Production Optimization Services. Gas Lift Gurus provides surveillance and in-depth analysis for gas-lifted fields using best practices techniques from gas lift experts and automated processes that review every well in your field every day.
- How Gas Lift Gurus works: Integrate all of the data: tests, pressure surveys, tracer surveys. Consider the validity of the dataset, and flag the needed data. Calibrate using the latest data.
- Check the tubing size. Determine the potential for liquid-loading. Estimate the depth of lift.
- Calculate the gas passage through each valve. Consider the gas rate for production and stability.
- Consider lifting deeper and estimate the gains. Estimate the gain of dropping the back pressure
- Create gas lift designs using expert judgment. Rank based on the severity of problems and the size of opportunities
- Provide updated summary reports on each well. Provide management reports on the entire effort. Coordinate with your team about data collection and implementation
- Improve the entire process based on results. Free your staff for more strategic projects and overall optimization

Day 4 Smart Well Completion Applications

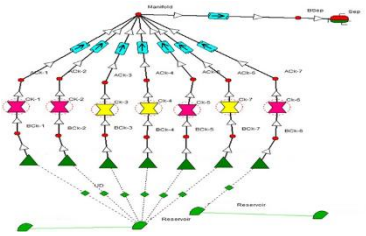
- To understand inflow and outflow performance and their significance to gas lift design
- To acquire basic knowledge on gas lift principles and equipment
- Artificial Lift, Types of Artificial Lift (Gas Lift, ESP, PCP, etc):
- Artificial Lift Requirements
- Understand the concept of the equilibrium curve and its usage in gas lift design and troubleshooting
- Real-time Monitoring & Control Dashboard. Digital features to allow for full integration and action without intervention.
- New Gaslift Unit provides smart functionality compared to conventional SPM. It is called Silverwell Technology. The unit is not gas-charged below and is fully Inconel 718 construction
- Not a gas charge, so it has no pressure or temperature dependence
- Six Customer Selectable Orifices that can be used in ANY combination.
- This enables an extremely wide operating range. Minimum to Maximum flow rate delivered by a selection of valves as required. NO intervention is required to make the injection rate change.
- NO Pressure Dependence. No valve instability occurs as valves are open or closed.
- No chatter means no damage, Easier Gas Lift Design, and a Flexible design allows for poor data accuracy. So, derating relating to gas lift design is no longer required.
- Side pocket safety factors between the valve are not required.
- Wrap up and problem discussions.

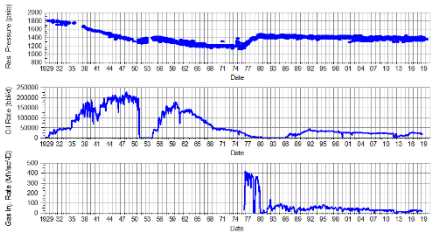
Day 5 Well Design Completion and Flow Assurance

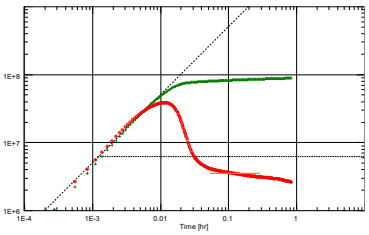
- Well Design Completion Concept
- Well Completion & Intervention. What is Well Completion?
- What is the Importance of Well Completion and Types of Well Completions

- Well Completion (Horizontal Well Completion using Smart Downhole Equipment)
- Completion Minimum Standards (CMS) Background
- Well's Operation Capability to meet with field development concept.
- Tubing Sizes Selection (Case Study Evaluation)
- Initial Rate Evaluation and DST Test Calibration
- Well Test Analysis to identify kh, skin, near wellbore damage, boundaries
- Material Selection (Case Study Evaluation)
- Case Study: DST Multi-Rate Well Test Validation Process
- DST Well Test Model Validation Objective (Case Study Evaluation)
- Well Completion Comparison.
- Well's Operability and Smart Completion
- Flow Assurance and Wax mitigation using downhole retrofit tools
- Smart Well Completion Benefits
- Smart Gaslift Pilot Trials as a Case Study for one of the Infill Drilling Well Projects
- Sand Management. Why need to manage sand production?
- Typical Sand Control Well Completion
- Sand Management, Best Practices, and Holistic Sand Management
- Case Study: Requirement of Sand Control Indicators from the changes in Sonic Logs with time.
- Wrap-up and problem discussions.

11.Production Data Analysis







Instructor: Dr Kourosh Khadivi

Duration: 3 days course

Level: Intermediary

Course Overview / Introduction:

Production data carry reservoir voice through well. Noises sometimes mask data and unclear. Therefore, denoising and outlier removal are imperative tasks to make it clear and informative. Malfunction in measuring devices or inconsistent reporting data make it inclusive, so data checking is a vital step to select right data for interpretation. Knowing production system is essential for translating data into the meaningful messages. Temporal data possess important information contents that can be understood using pressure & rate transient analysis methods. Production optimization and de-bottlenecking are two interesting subjects for the field operators, which can be achieved by the integrated production modelling concept.

DESIGNED FOR YOU, IF YOU ARE...

The course is designed for reservoir/simulation/production engineers with basic knowledge and experience in well-reservoir behavior. This course demonstrates the crucial role of data acquisition and data analysis in building predictive models. The objective is to develop reliable tools for analyzing well-reservoir performance and to provide solutions for production enhancement.

HOW WE BUILD YOUR CONFIDENCE

We will use interactive presentations, practical exercises from real oil fields examples.

THE BENEFITS FROM ATTENDING

This course is a step-by-step guide for constructing production database and developing tools for data evaluation and prediction. This course is divided into three parts and presented in 3 days separately.

The first part is attempting on database construction and developing assisted tools for checking quality of data and selecting right data for the subsequent evaluations. The second part addresses to pressure and rate transient analysis methods to acquire important data from reservoir properties, well-reservoir performance and predicting well productivity. The last part introduces construction of the integrated production model that can be used for evaluating system integrity, debottlenecking and optimization.

The course is highly professional for reservoir/production engineers and is fully integrated with practical examples all through the course, visualizing all the discussed guidelines and methodologies.

DAILY AGENDA

Day 1 – DATA ANALYSIS

A) Database Construction & Developing Tools and Operators
- Introduction
- Database Structure & Construction
- Denoising & Outlier Removal
- Sources of noise and inconsistency
- Denoising & Outlier Removal
- Module 1-Introduction to database structure
- Regular & Sporadic Databases
- Input data types: Production & Test Data Categorization
- Database structure and key data

B) Data Types, Variables
- Access Database Construction
- Input Data and Variables
- Interface & Analysis Tools

C) Module 3 – Data presentations: Graphs, tables, reports and maps
- Tools for better representing data and analysis
- Multi-axis and multi-graph data presentation
- Reporting
- Mapping

D) Data Processing & Analysis
- Test data validation
- Production data validation and verification
- Specialized diagnostic plots for determining water and gas production mechanisms
- Tutorial 1: Well performance analysis
- Tutorial 2: Data integration and reservoir performance analysis

E) Rate Transient Analysis & Production Forecasting
- Decline curve analysis (DCA) module
- DCA methods (hyperbolic, exponential, …) and parameters
- Tutorial 3: oil reservoir production forecasting

- Tutorial 4: gas reservoir production forecasting

Day 2 – PRESSURE TRANSIENT ANALYSIS

A) Introduction

- Well test and drill stem tests (DST)
- Types of tests and objectives
- Well test operation and data acquisition

B) Data Preparation & Analysis

- Data Preparation
- Flow period identification
- Diagnostic plots, flow regimes & verifications
- Tutorial #1

C) Pressure Transient Analysis

- Introduction
- Type curve methods
- Specialized tool and plots
- Log-Log plot analysis and derivative analysis
- Model Identification and verification

D) History Matching

- Log-log plot matching
- Pressure history matching
- Well productivity and deliverability estimation
- Tutorial 2

E) Test Design

- Introduction & objectives
- Model construction and sensitivity analysis
- Operational & Technical concerns in designing test
- Tutorial 3: Construct a typical production network & nodal analysis

Day 3 – INTEGRATED PRODUCTION MODELING

A) Introduction to PETEX Suite

- PROSPER, MBAL & GAP
- Introduction to well modeling by using PROSPER
- Data preparation and model calibration
- VLP/IPR curves and nodal analysis

- Choke performance prediction

B) Artificial Lift Design and Optimization

- Why artificial Lift Methods
- What are common artificial lift methods and selection criteria
- Gas lift design and optimization
- ESP design
- Tutorial 1: Well model and sensitivity analysis

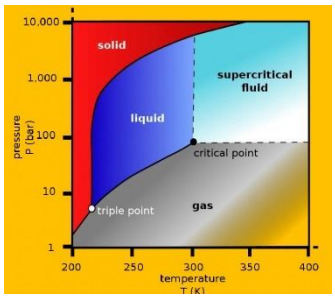
C) Material Balance Calculation by MBAL

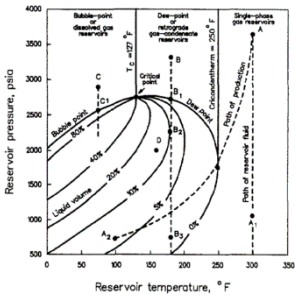
- What is material balance calculation: application and methods
- Analytical & graphical methods
- History matching
- Tutorial 3: Model construction and evaluating derive mechanisms

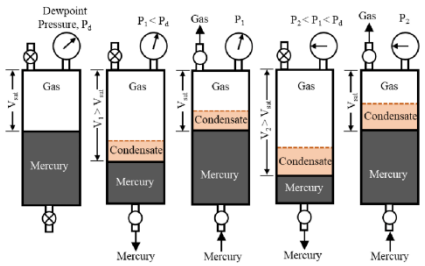
D) Integrated Production Modeling

- Introduction to production network
- Reservoir, well and surface facility modeling
- Tutorial 3: Construct a typical production network & nodal analysis
- Tutorial 4: Production forecasting, debottlenecking & Optimization
- Technical Discussion; Q & A

12. Reservoir Fluid Characterization and Pressure-Volume-Temperature (PVT) Analysis







Instructor: Dr Kourosh Khadivi

Duration: 5 days course

Level: Intermediary

Course Overview / Introduction:

Reservoir fluids attributes to all fluids in the reservoir in three known states of gas, liquid and solid. The fluid type must be determined in the early life of a reservoir to allow volumetric calculations and estimating recoverable reserves.

Reservoir-fluid properties play a key role in the design and optimization of injection/production strategies and surface facilities for efficient reservoir management. Inaccurate fluid characterization often leads to high uncertainties in in-place-volume estimates and recovery predictions, and hence affects asset value. Therefore, proper sampling and measuring properties of reservoir fluids are essential for dynamic simulation, volumetric calculations and predicting recoverable reserves. In this course, the importance of fluid sampling is highlighted then laboratory experiments are reviewed to show how key data are acquired for calibrating Equation of State EOS) and predicting reservoir behaviors.

DESIGNED FOR YOU, IF YOU ARE…

The course is designed for reservoir/simulation/production engineers with the basic knowledge and experience in reservoir fluid behavior. This course demonstrates the crucial role of fluid sampling, laboratory pressure depltion tests and equation of state calibration for predicting fluid behavior in various Pressure-Volume-Temperature (PVT) conditions. The objective is to develop hands-on experiense for analyzing reservoir fluid data.

HOW WE BUILD YOUR CONFIDENCE

We will use interactive presentations, practical exercises from real oil fields examples.

THE BENEFITS FROM ATTENDING

The purpose of the course is to teach engineers how to quickly and confidently do data analysis and gain hands-on experience in calibrating EOS and then use the data in a reservoir simulator. A

variety of different systems will be looked at so that attendees will understand the main issues with different kinds of reservoirs. A number of EOS characterizations will be done. Data screening and quality control will also be outlined.

The course is highly professional for reservoir/production engineers and is fully integrated with practical examples all through the course, visualizing all the discussed guidelines and methodologies. Either PVTi from Schlumberger or PVTP from Petroleum Experts will be used for the PVT characterization.

DAILY AGENDA

Day 1 – Introduction to Reservoir Fluid studies

- Case studies and industrial applications
- The role of fluid properties in reservoir development
- Reservoir fluid composition and classification of reservoir fluids etc.
- Phase behavior and reservoir fluid types
- Properties of Petroleum Gases and Liquids
- PVT tests

Day 2 – PVT Sampling and Measurements

- Fluid Sampling Techniques and Strategy
- Sampling tools
- Compositional Analysis of Reservoir Fluids
- Sample contamination and its remedy
- Purification of oil samples from emulsified water
- PVT laboratory Measurements
- Understanding of PVT reports

Day 3 – SARA Analysis: Saturate, Aromatic, Resin and Asphaltene (SARA)

- Definitions
- Asphaltene deposition at reservoir condition including inhibitor application
- Understanding and dealing with Asphaltene and Wax Problems
- Precipitation/deposition mechanisms in crude oils,
- Oil wells and reservoirs problems due to asphaltene flocculation.
- Review of laboratory methods for asphaltene and resin analysis.
- Definition and Asphaltene Deposition Envelope for a Reservoir Fluid.
- Methods to measure and/or estimate ADE data for reservoir fluids
- Screening of Asphaltene Inhibitors.
- Hydrate formation and inhibition in surface facilities and pipelines
- Wax deposition and its remedy with the latest researches around it

Module 4 – PVT simulation & EOS Calibration

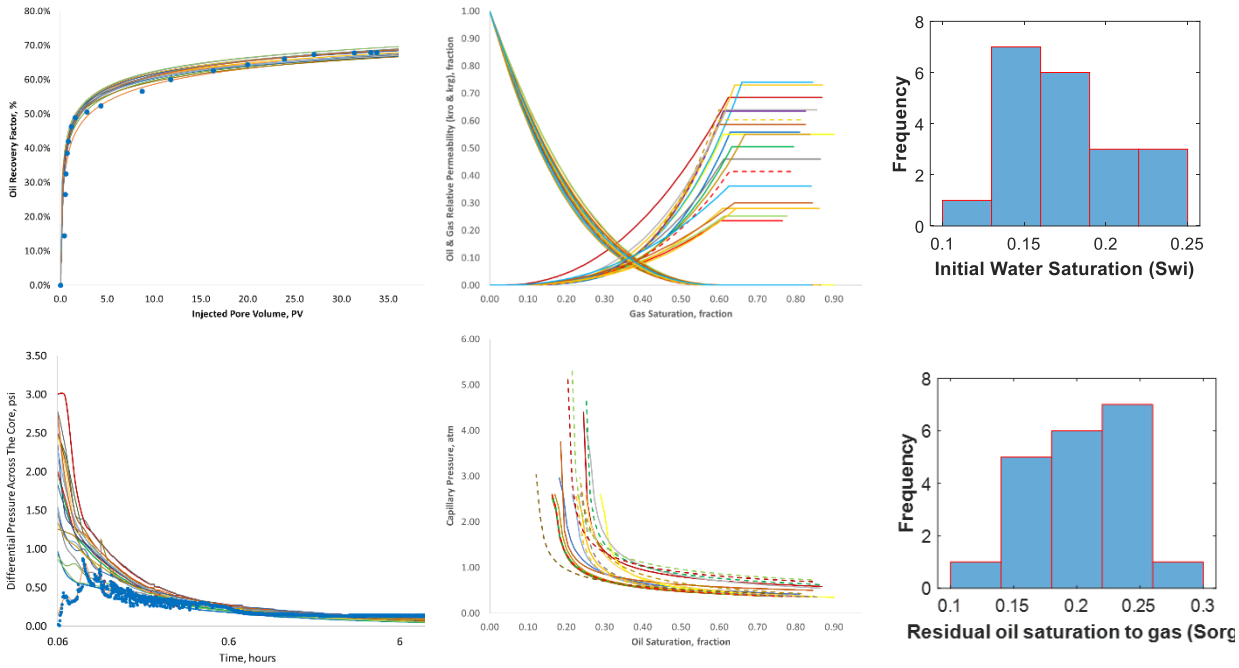
- Cubic equations of state, VLE, and quantitative phase behavior

- Overview of Reservoir Simulation
- Vapor- Liquid Equilibria.
- Thermodynamics of Phase Behavior
- General description of EOS and how it is used
- Phase envelope generation by EOS
- Heavy-End Characterization
- Case studies and industrial applications of EOS and phase envelope
- Miscible Process Study
- Simulation of PVT data and properties
- C7+ Characterization (Splitting/Grouping)
- Simulation of Differential Liberation
- PVT Matching
- Phase/Volumetric Behavior Matching
- Components Grouping
- Swelling Test Simulation

Module 5 – PVT Special Studies

- Advanced measurement techniques for Gas Injection IOR/EOR Projects
- Experimental reservoir fluid characterization from EOR point of view
- Gas injection (miscible, immiscible, CO2 injection)
- Lab studies for EOR type studies
- Advanced phase behavior measurements for IOR, MMP, MCM, Swelling
- Simulation of Gas Injection processes
- PVT experiments (Except for routine PVT tests)
- Visit to PVT Lab
- Technical Discussion; Q & A

13. Reservoir Simulation & Uncertainty Analysis and Quantification



Instructor: Dr Kourosh Khadivi

Duration: 3 days course

Level: Intermediary

Course Overview / Introduction:

Nowadays, reservoir simulation methods are used for predicting reservoir behavior and oil recovery. Analytical methods can be constructed quickly, but are not accurate enough to be used for determining optimum well locations and production optimization. Numerical models provide a more detailed description of the reservoir behavior that allow determining well locations and optimizing recovery mechanisms. However, applying numerical methods for parameter estimation (inversion) encounters the non-uniqueness of solutions.

In this course, constructing a reservoir model is practiced, followed by setting up an optimization algorithm for automatic history matching is elaborated. This combination allows us to undertake production optimization as well which is a goal for the field operators. Furthermore, it can be used for determining relative permeability and capillary pressure curves, which sometimes cannot be determined through a coreflood experiment directly. Non-unique solutions are also used for uncertainty analysis and quantify uncertainty ranges.

DESIGNED FOR YOU, IF YOU ARE...

The course has been designed for reservoir engineers who want to get hands-on experience in constructing reservoir model and optimizing production / injection strategies. It also provides a new approach for uncertainty analysis and uncertainty quantification of SCAL data.

HOW WE BUILD YOUR CONFIDENCE

We will use interactive presentations, practical exercises from real oil fields examples.

THE BENEFITS FROM ATTENDING

This course can provide a basis for future CO2 injection studies dealing with more complex multiphase & multicomponent fluid flow models in EOR and carbon sequestration projects.

DAILY AGENDA

Day 1 – Reservoir Simulation Workshop

- Review of fluid-flow equations in porous media and solution methods
- Construct input data file and run simulator
- Work with visualizer tools for plotting results and performing interpretations.
- Tutorial #1: A case study and sensitivity analysis

Day 2 – Optimization Workshop

- Review of concept and governing equations
- Construct objective function, constraints, and algorithm
- Tutorial #2: Run a typical optimization case study

Day 3 – Production Optimization Workshop

- Coupling reservoir model and optimization algorithm
- Parameterize production control variables
- Tutorial #3: Production Optimization (a case study)

Day 4 – Core-flood Simulation

- Review of the coreflood experiment and objectives
- Relative permeability concept and methods of derivation
- Preparing historical data
- Construct input data file and run simulator
- Tutorial #4: A case study and sensitivity analysis

Day 5 – Uncertainty Analysis & Quantification

- Automatic Coreflood History Matching (ACHM)
- Parameterize relative permeability variables

- Tutorial #5: Application of ACHM for extracting relative permeability and capillary pressure curves (a case study)
- Uncertainty analysis and quantification of key SCAL data.
- Technical Discussion; Q & A

14. Short Bio of Instructors

Dr. Ali Jaffri is the founder of Applied Stratigraphix LLC, and has twenty-two years of experience in sedimentology and stratigraphy projects. He has worked on several onshore US Basins, North Sea, Indus Basins, Barents Sea, Offshore East and West Africa, Taranaki Basin, Offshore Mid-Norway, and Former Soviet Union. He has a doctorate from Colorado State, Masters from Oklahoma State and Bachelors from University of Colorado. Equally proficient in carbonates and clastics, he has trained over five hundred oil and gas professionals from fifty-six companies in eleven countries.

Ali Jaffri, Ph.D. is the CEO of Applied Stratigraphix LLC, and has twenty-six years of experience in geology projects in the US, Suriname, Trinidad and Tobago, North Sea, Pakistan, Barents Sea, Mozambique, Angola, New Zealand, Norway, Denmark, Kazakhstan and Mongolia. He has a doctorate from Colorado State, Masters from Oklahoma State, Bachelors from University of Colorado, and a Professional Masters in Mineral Exploration from the Colorado School of Mines.

He has trained over two thousand geologists and engineers from eighty companies in twelve countries.

Dr. Molly Turko has over 11 years of experience in the oil and gas industry and is a subject matter expert in structural geology. She has had the opportunity to work in multiple basins in the U.S including the Anadarko, Ardmore, Powder River, Appalachian, Onshore Gulf Coast, and Rocky Mountain Basins. She received both a B.Sc. (2009) and a M.Sc. (2011) in geology from the University of Tulsa followed by a Ph.D. (2019) from the University of Oklahoma where she studied under Dr. Shankar Mitra. Some of her favorite projects include numerical modeling of fractured reservoirs and interpreting seismic data in complex geologic settings where structural models are a must! Molly's passion is mentoring and teaching, but her favorite role is leading structural geology field courses in Nevada and Southern Oklahoma. Molly is currently a team member of Applied Stratigraphix as one of their Structural Geology Experts.

Ana de Sousa is a Senior Reservoir Geologist/Modeler with +25 years experience. She was responsible for Dunga Field Geology, Kazakhstan, for Development Plans Reports Analysis for the productive reservoirs and for team presentations.

Static Modeler for different reservoir types with the application of different types of software. Rock type and artificial neural networks classification.

Played several technical roles in reservoir characterization, modeling, and seismic interpretation in Kazakhstan, Brazil, and the Middle East. Collaboration in Thermal Assisted - Gas Oil Gravity Drainage on Natural Fractures (TA-GOGD) study for Carbonate Reservoirs.

Strong skills in integrated reservoir characterization and modeling of multicultural and heterogeneous teams, with excellent multidisciplinary knowledge in exploration, appraisal, and development projects.

Responsable for lectures in Portugal - Instituto Superior Técnico and Instituto Politécnico de Castelo Branco, in Middle East - Petroleum Instearitute Students.

Several publications and presentations in different institutions around the world.

Ghulam Shabeer is a reservoir geoscientist with over 20 years of experience to conduct and manage integrated reservoir characterization and geo-modeling studies of both clastic & carbonate reservoirs; for FDP, production acceleration, IOR and EOR related onshore & offshore projects. Formerly, he has worked within multi-disciplinary teams of Eni, OMV, PETRONAS, Premier Oil, and Weatherford in Pakistan, Malaysia and UAE. He was delivering short courses at CoP forum of PETRONAS and university lectures. His qualification is master degree in petroleum geology & geotectonics from Punjab University and certification in integrated reservoir modeling & petrophysics from IFP School, University of Oklahoma, Texas A&M, and Heriot-Watt University.

Salem Zakkri is a French subject matter expert of reservoir engineering with +25 years of international experience with major oil companies, Total, ENI, ConocoPhillips, Lundin, Petro-Canada and Petronas. Successful track at executing and managing various oil and gas projects in Africa, Asia and Europe. This involves full field cycle commencing with acquiring valued data acquisition & evaluation, exploration opportunities maturation and appraisal, reservoir characterization, static/dynamic data integration, advanced analytical and simulation modelling studies, field develop plan, water/gas flooding, economic evaluation, reservoir management, production optimization and fields re-development. Executed many integrated reservoir simulation studies of clastic and carbonate reservoirs for oil and gas fields over my carrier.

Lamia Ben Khalfallah has more than 13 years of experience as Geoscientist, Geophysicist and Geomodeler, She specializes in seismic interpretation, reservoir characterization, and geomodeling. She has worked across conventional and unconventional reservoirs in over 10 countries, integrating geophysical, geological, and engineering data to optimize exploration and development.

Her expertise includes post and pre-stack seismic inversion, AVO, geostatistical modeling, and rock physics, with a strong focus on field development planning and reservoir studies. She has contributed to major projects in Africa, the Middle East, and beyond, leveraging advanced technologies to enhance subsurface evaluations.

Passionate about innovation and sustainability, she actively supports CCUS initiatives and knowledge transfer within the industry.

Saeid Mustafa Elshourbagi is an experienced Petroleum Engineer with +30 years of specialized skill set as a Production Technologist, offering a robust Field Development Projects Delivery Concept in Oil & Gas, Well Reservoir Management (WRM), enhancing well performance, optimizing production processes, and ensuring cost-effective operations. Proven expertise in Well Surveillance Data Acquisition for Cased-Hole logging, Production Optimization, Well Integrity, Completion & Workovers Operations. SME Artificial Lift (Gaslift & ESP) Engineer.

Adept at utilizing cutting-edge technology for reservoir monitoring, Open-Hole logs data analysis, and problem-solving for subsurface petroleum engineering.

Specialist Petroleum Engineer with leading expertise in the field of Production Technology. Achieved a remarkable project objective while working for international operators, including AppSmiths Technology, Brunei Shell Petroleum, Petronas Cargali, Woodside Energy, Brunei Shell Petroleum, Saudi Aramco, Kuwait Oil Company, AMOCO, and Gulf of Suez Petroleum Company.

My passion for innovation and a track record of Technical Trainer Capability for organizing and conducting Production Enhancement Training Courses.

Training course practices are summarized below;

- Advanced Gas Lift Training Course, Integrated Network Modeling Training Course.
- Integrated Fields Development Project dedicated to Study FDP Team Training Course.
- Production Enhancement Training course.
- Acid Matrix Stimulation and Fracture Training Course.
- Several publications and presentations in different OTCs around the world.

2021-2025: AppSmiths, Brunei
Artificial Lift, WinGLUE User for Gas-Lift Optimization

2014-2020: Petronas, Malaysia
Specialist “Technical Professional” Prod. Technologist

2012-2014: Woodside, Australia
Snr. Prod. Technologist, Reservoir Management

2008-2012: Brunei Shell Petroleum
Snr. Prod. Technologist, East Asset

2006-2008: Saudi Aramco
Lead Engineer, Production Operation Asset.

1998-2006: Kuwait Oil Company
Snr. Petrol Eng. Fields Dev Department

1988-1998: GUPCO
Snr. Petroleum Eng. Section Head District Engr

Certified as SPE Professional Petroleum Engineer since 2006

2024: Author and Presenter. Offshore Technology Conference ASIA, KI, Malaysia

Farhan Ahmed Khan is a geophysicist with over 25 years of global experience in seismic processing, velocity modeling, depth imaging, and interpretation within the Oil & Gas industry. Recognized for delivering innovative geophysical solutions across varied geological settings in North America, Africa, the Middle East, and Asia Pacific. Expertise in designing and implementing seismic model building & imaging workflows and algorithms, and training & mentoring professionals, and leading strategic projects at PETRONAS, Halliburton, Landmark and LMKR.

Dr. Kourosh Khadivi

Kourosh Khadivi has 23+ years of experience in reservoir/production engineering, well-reservoir modeling, integrated production modeling and optimization, as well as training and coaching.

He has served in several oilfield development studies and contributed to production monitoring, data evaluation, pressure transient analysis, and production optimization projects. He worked for OQEP in Oman (2023-2025), and also was responsible for modeling and evaluating gas EOR tests in PETRONAS Research during 2011-2016.

Kourosh holds a PhD and MSc in Petroleum Engineering and has developed several soft tools for automatic history matching, production optimization, and heterogeneity characterization through numerical pressure transient analysis.

15.HOW TO REGISTER

Send us email: info@gpst.com.pk

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THANKS