Training - Well Performance: Shale Gas Wells

UPROD-EN-P | Face-to-face only | 5 days

This course provides the practical, comprehensive understanding and skills needed to master well performance on shale gas plays and make significant contributions to field productivity studies and well performance monitoring

Level

Knowledge

Public

Reservoir, well performance or production engineers and technicians

Objectives

Attendees will be able to implement the following skills:

- Step by step building PROSPER Modeling of shale gas well
- Select the relevant characteristics shale gas system and fluid properties related to well performance modeling
- Optimize well performance
- Analyze the impact of well completion and equipment on well performance
- Analyze the operation process

Pedagogical & technical resources

- Use of the software program PROSPER™ (training license provided for the duration of the course)
- Short lectures alternating with hands-on sessions
- Course ends with a 2-day integrated case study

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

INTRODUCTION TO PRODUCTION SYSTEM — 0.25 day

Introduction to well performance nodal analysis: inflow x outflow.

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Overview of PROSPER™ software workflow:

- PROSPER™: building initial well system file.

PVT DATA/PVT MODELING — 0.5 day

Gas PVT properties.

- PROSPER™: building PVT model for shale gas well.

SHALE GAS PLAYS PROPERTIES & WELLBORE INTERFACE — 0.75 day

Shale gas systems characterization- dual porosity, stress dependent permeability, gas desorption.
Shale gas completion stimulation (hydraulic fracturing).
Introduction to well performance analysis of unconventional gas reservoirs.
Effect of productivity parameters for horizontal wells (length, wellbore radius, permeability ''anisotropy'', thickness vs. position ''Well Eccentricity'', drainage area, formation damage ''Skin'').
Derivation of analytical solutions.

INFLOW PERFORMANCE/IPR MODELING — 1.25 days

Inflow Performance Relationship (IPR).
Back pressure equation for gas wells.
Transient gas model for horizontal wells completed and stimulated with multiple transverse fractures.
IPRs for horizontal wells:

- PROSPER™: IPR modeling exercise.

IPR of horizontal drains: shale gas well exercise:

- PROSPER™: fractured horizontal well modeling.

WELLBORE FLOW, OUTFLOW PERFORMANCE/VLP MODELING — 1 day

Fundamentals of multiphase flow: gas-liquid flow, flow regimes (sub vertical, deviated, horizontal wells).
Minimum flow rate/gas well loading (pressure drop through a horizontal well for gas flow, effect of the well geometry TOE up, TOE down).
Pressure gradient and Vertical Lift Performance (VLP) curves.
Tubing head pressure, tubing ID impacts:

- PROSPER™: tubing correlations, VLP modeling of shale gas well.

Flow in a choke.

WELL PERFORMANCE — 1 day

Well deliverability nodal analysis: inflow x outflow on shale gas well:

- PROSPER™: IPR + VLP well performance modeling, prediction, analysis and diagnosis.

Sensitivity study.
Effect of compaction permeability reduction.
Effect of well geometry.

KNOWLEDGE ASSESSMENT — 0.25 day

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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