

RESERVOIR ENGINEERING

GUIDED WORK EXPERIENCES



PetroSkills Guided Work Experiences (GWEs) enable technical professionals to deliver a tangible work product through specific deliverables and performance measures. GWEs have been developed by industry experts and deliver the on-the-job connection between knowledge and action.

Reservoir Fluids

- Adjust a Gas Fluid Model for a Change in Separator Conditions
- Adjust a Gas Fluid Model for the Effect of Small Pore Size on Dew Point Pressure
- Adjust a Gas Laboratory Report for a Change in Reservoir Temperature using an Equation of State
- Adjust a Gas Laboratory Report for a Change in Reservoir Temperature using Correlations
- Adjust a Hydrocarbon Fluid Model for the Effects of Impurities
- Adjust an Oil Fluid Model for a Change in Separator Conditions
- Adjust an Oil Fluid Model for the Effect of Small Pore Size on Bubble Point Pressure
- Adjust an Oil Laboratory Report for a Change in Reservoir Temperature using an Equation of State
- Adjust an Oil Laboratory Report for a Change in Reservoir Temperature using Correlations
- Characterize the Plus Fraction of a Hydrocarbon Fluid
- Create a Black Oil Fluid Model from Composition and Correlations
- Create a Black Oil Fluid Model from Field Data and Correlations
- Create a Black Oil Fluid Model from Laboratory Data
- Create a Dry Gas Fluid Model from Composition and Correlations
- Create a Dry Gas Fluid Model from Field Data and Correlations
- Create a Dry Gas Fluid Model Incorporating Langmuir Isotherms
- Create a Compositionally Grading Fluid Model from an Existing Equation of State Model
- Create a Fluid Model for Brine from Field Data
- Create a Gas Condensate Fluid Model from Composition and Correlations
- Create a Gas Condensate Fluid Model from Field Data and Correlations
- Create a Gas Condensate Fluid Model from Laboratory Data
- Create a Volatile Oil Fluid Model from Composition and Correlations
- Create a Volatile Oil Fluid Model from Field Data and Correlations
- Create a Volatile Oil Fluid Model from Laboratory Data
- Create a Wet Gas Fluid Model from Composition and Correlations
- Create a Wet Gas Fluid Model from Field Data and Correlations
- Design a Sampling Program for a Conventional Gas Reservoir
- Design a Sampling Program for a Conventional Oil Reservoir
- Design a Sampling Program for a Unconventional Reservoir
- Optimize Separator Conditions to Maximize Reservoir Fluid Recovery Value
- Perform Quality Control Checks on Black-Oil Laboratory Data
- Perform Quality Control Checks on Gas Condensate Laboratory Data
- Perform Quality Control Checks on Volatile Oil Laboratory Data
- Tune a Cubic Equation of State Describing a Black Oil
- Tune a Cubic Equation of State Describing a Gas Condensate
- Tune a Cubic Equation of State Describing a Volatile Oil
- Tune a Cubic Equation of State to Describe Reservoir and Surface Conditions Simultaneously
- Tune Black-Oil Correlations to Match Laboratory Data

Reservoir Rock

- Adjust Rock Properties Volumetrically based on Well Test Data
- Calculate the Heterogeneity Index for a Vertical Well
- Convert between Hydrostatic and Uniaxial Compressibility
- Distribute Rock Properties Areally based on Well Data
- Distribute Rock Properties Vertically based on Well Data
- Distribute Rock Properties Volumetrically based on Well Data
- Upscale non-Saturation Dependent Rock Properties Areally
- Upscale non-Saturation Dependent Rock Properties Vertically
- Upscale non-Saturation Dependent Rock Properties Volumetrically



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Reservoir Rock-Fluid Interactions

- Adjust Gas-Liquid Relative Permeability for an Oil Reservoir with a Gas Cap
- Calculate the Elevation Between the Free Water Level and the Oil Water Contact from Capillary Data
- Calculate the height of the Transition Zone from Relative Permeability Data
- Create Gas-Liquid Capillary Pressure Curves from Correlation
- Create Gas-Liquid Relative Permeability Curves from Correlation
- Create Oil-Water Capillary Pressure Curves from Correlation
- Create Oil-Water Capillary Pressure Curves from Laboratory Data
- Create Oil-Water Relative Permeability Curves from Correlation
- Create Oil-Water Relative Permeability Curves from Laboratory Data
- Distribute Water Saturation Volumetrically based on Capillary Pressure Data
- Integrate Gas-Oil and Oil-Water Relative Permeability Curves
- Integrate Oil-Water Capillary Pressure Curves with Oil-Water Relative Permeability Curves
- Reconstruct Gas-Water Relative Permeability from Production Data
- Reconstruct Oil-Gas Relative Permeability from Production Data
- Reconstruct Oil-Water Relative Permeability from Production Data

Darcy's Law

- Calculate the Drainage Radius of a Vertical Well
- Calculate the Pressure Distribution around a Horizontal Well in Pseudo-Steady State Flow
- Calculate the Pressure Distribution around a Horizontal Well in Transient Flow
- Calculate the Pressure Distribution around a Hydraulically Fractured Vertical Well in Pseudo-Steady State Flow
- Calculate the Pressure Distribution around a Hydraulically Fractured Vertical Well in Transient Flow
- Calculate the Pressure Distribution around a Stimulated/Damaged Vertical Well
- Calculate the Pressure Distribution around a Vertical Well in Pseudo-Steady State Flow
- Calculate the Pressure Distribution around a Vertical Well in Transient Flow
- Convert a Production-Pressure Forecast into a Rate-Time Forecast from Darcy's Law
- Estimate the Flow Capacity of a Gas Well from Production Data.
- Estimate the Flow Capacity of a Water Well from Production Data.
- Estimate the Flow Capacity of an Oil Well from Production Data.
- Estimate the Injection Capacity of a Water Well from Injection Data.
- Estimate the Rate Increase/Decrease of a Vertical Well as a Result of Stimulation/Damage

Pressure Transient Analysis

- Design a DFIT
- Design a Drill-Stem-Test for a Conventional Gas Well
- Design a Drill-Stem-Test for a Conventional Oil Well
- Design a Pulse Test between Multiple Wells
- Design a Pulse Test between Two Wells
- Interpret a DFIT
- Interpret a Draw-Down Test on a Vertical Oil Well
- Interpret a Multi-Rate Test on a Vertical Oil Well
- Interpret a Pressure Build-Up Test on a Vertical Oil Well
- Interpret a Pulse Test between Multiple Wells
- Interpret a Pulse Test between Two Wells

Material Balance

- Calculate Aquifer Size from Material Balance
- Calculate Cumulative Water Influx from Material Balance
- Calculate Gas-Cap Size from Material Balance
- Calculate Original Gas in Place from Material Balance
- Calculate Original Oil in Place from Material Balance
- Calculate the Original Oil and Gas in Place from Volumetrics in an Unconventional Reservoir
- Calculate the Original Oil in Place from Volumetrics in a Conventional Reservoir
- Calculate Ultimate Gas Recovery from Material Balance
- Calculate Ultimate Oil Recovery from Correlation
- Calculate Ultimate Oil Recovery from Material Balance
- Estimate the Average Reservoir Pressure from Multi-Well Data
- Forecast Gas Production from Pressure and Fluid Data
- Forecast Oil Production from Pressure and Fluid Data
- Forecast Production from a Gravity Drainage Reservoir
- Forecast Production from Two Reservoirs Sharing the Same Aquifer
- Forecast Water Production from Pressure



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Reservoir Simulation

- Build a Five-Spot Pattern Model
- Build a Full-Field Simulation Model from an Existing Static Model
- Build a Horizontal, Hydraulically Fractured, Single-Well Model
- Build a Horizontal, Line-Drive Pattern Model
- Build a Horizontal, Single-Well Model
- Build a Seven-Spot Pattern Model
- Build a Star-Drive Pattern Model
- Build a Vertical Single-Well Model
- Build a Vertical, Hydraulically Fractured Single-Well Model
- Build a Vertical, Line-Drive Pattern Model
- Divide a Full-Field Simulation Model into Multiple Regions
- Implement Analytical Aquifers in an Existing Simulation Model
- Implement API Tracking in an Existing Simulation Model
- Implement Dual Permeability in an Existing Simulation Model
- Implement Dual Porosity in an Existing Simulation Model
- Implement End-Point Scaling in an Existing Simulation Model
- Implement Local Grid Refinement in an Existing Simulation Model
- Implement Salinity Tracking in an Existing Simulation Model
- Implement Vertical Equilibrium in an Existing Simulation Model
- Modify a Five-Spot Pattern Model into a Nine-Spot Pattern Model
- Modify a Seven-Spot Pattern Model into a Four-Spot Pattern Model

Improved Oil Recovery

- Analyze a Waterflood Using the Cobb Correlation
- Analyze an Injection Pattern Using the Buckley-Leverett Approach
- Analyze an Injection Pattern Using the Craig-Geffen-Morse Approach
- Analyze an Injection Pattern Using the Stiles/Dietz Approach
- Build and Interpret a Hall Plot from Injection Data
- Build and Interpret a Hearn Plot from Injection Data
- Build and Interpret a Chan Plot for a Well Producing Water
- Estimate the Injection Capacity of a Well from Production Data
- Interpret a Fall-Off Test on a Vertical Injection Well

Decline Curve Analysis

- Create a Forecast Consisting of Both Transient and Pseudo-Steady State Periods
- Create a Multi-Well Forecast based on Production Data
- Extrapolate a Fitted Decline Curve to Produce a Forecast
- Fit a Harmonic Curve to Production Data
- Fit a Hyperbolic Curve to Production Data
- Fit a Square-Root-of-Time Curve to Production Data
- Fit an Exponential Curve to Production Data
- Switch from a Hyperbolic Curve to an Exponential Curve to Produce a Forecast
- Rate Transient Analysis (RTA)

Reservoir Management, Surveillance and Reserves

- Create a Surveillance Plan for an Oil Reservoir under Primary Recovery
- Create a Surveillance Plan for an Oil Reservoir under Secondary Recovery
- Create a Surveillance Plan for an Gas Reservoir under Primary Recovery
- Create a Surveillance Plan for an Unconventional Reservoir
- Create a Reservoir Management Plan for a Greenfield Oil Reservoir
- Create a Reservoir Management Plan for a Brownfield Oil Reservoir
- Create a Reservoir Management Plan for a Greenfield Gas Reservoir
- Create a Reservoir Management Plan for a Brownfield Gas Reservoir
- Create a Reservoir Management Plan for an Unconventional Reservoir
- Classify Recovery Estimates of an Oilfield into Reserves and Resources
- Classify Recovery Estimates of an Oilfield into Proved, Probable and Possible Reserves
- Classify Recovery Estimates of an Oilfield into Producing, Non-Producing and Undeveloped Reserves
- Adapt PRMS Style Reserves for SEC Reporting
- Calculate the Relevant Economic Limit for an Oil Reservoir
- Calculate the Relevant Economic Limit for an Gas Reservoir