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COURSE BROCHURE

Waterflood Management and Surveillance Training Course

17 – 21 May 2027
Dar es Salaam

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Registered in the United Kingdom and Saudi Arabia

Waterflood Management and Surveillance Training Course

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Waterflood Management and Surveillance is a 1-week training course for reservoir and production engineers who run water injection projects and need a waterflood surveillance plan that turns injector and producer data into timely corrections. Many oil fields now depend on injected water for most of their remaining output, so poorly balanced patterns, early breakthrough and plugged injectors quickly erode recovery and raise water handling costs. Jupiter Prime Training delivers this waterflood management course.

Why Waterflood Management and Surveillance Matters Now

Three pressures shape waterflooding today: maturing fields where rising water cut squeezes facility capacity; tighter limits on produced water disposal that push operators to reinject and recycle; and leaner asset groups that must watch hundreds of wells with fewer engineers. An operator that manages its flood well sustains plateau rates, defers costly infill drilling and keeps water handling in step with oil output. One that neglects surveillance cycles water through thief zones, fractures formations and strands oil between injectors. The course rests on classical displacement theory, pattern voidage accounting and routine surveillance plots used by reservoir engineers worldwide.

Who Gains Most from Waterflood Management and Surveillance

- Engineers who set injection targets and allocate water between patterns
- Specialists who interpret water cut, pressure and injection logs
- Production engineers who manage producer choke settings and artificial lift under rising water
- Facilities engineers responsible for injection water treatment and pumping capacity
- Asset planners who forecast oil and water volumes for budgets

Asset groups gain most when reservoir, production and water treatment engineers attend together and agree one surveillance routine.

Waterflood Management and Surveillance Capabilities

Participants learn to read a flood pattern by pattern, spot the signals of poor sweep and decide which lever to pull.

- Calculate voidage replacement ratio by pattern — injection target setting
- Apply fractional flow and Buckley-Leverett concepts to predict breakthrough — producer planning
- Specify injection water quality limits for solids, oil and oxygen — water treatment decisions
- Build Hall plots and water-oil ratio diagnostics — injector stimulation and conformance choices
- Weigh pattern realignment and infill options — drilling and conversion budgets

- Communicate flood performance with surveillance dashboards — asset leadership reviews

Key Waterflood Management and Surveillance Terms

- Voidage replacement ratio — The reservoir volume of water injected divided by the reservoir volume of fluids produced over the same period.
- Sweep efficiency — The fraction of the reservoir contacted by injected water, combining areal and vertical coverage.
- Mobility ratio — The ratio of water mobility to oil mobility; values above one favour fingering and early breakthrough.
- Hall plot — A cumulative plot of injection pressure against injected volume that reveals plugging or fracturing at an injector.
- Thief zone — A high-permeability layer that takes most of the injected water and bypasses oil in tighter layers.
- Pattern balancing — Adjusting injection and production rates so that each pattern receives the water it needs.

Waterflood Management and Surveillance Day by Day

Day 1: Waterflood Fundamentals and Design

- Displacement Theory and Fractional Flow Curves — Predicting Water Breakthrough Timing
- Buckley-Leverett Frontal Advance — Estimating Recovery at Breakthrough
- Mobility Ratio and Viscous Fingering — Judging Flood Suitability
- Five-Spot, Line Drive and Peripheral Patterns — Selecting Well Layouts
- Injection Rate and Pressure Limits — Avoiding Unintended Formation Fracturing

Day 2: Injection Water Quality and Injectivity

- Source Water Options and Compatibility Testing — Preventing Scale and Souring
- Suspended Solids, Oil-in-Water and Oxygen Limits — Setting Treatment Specifications
- Filtration, Deaeration and Biocide Systems — Choosing Water Treatment Steps
- Injectivity Decline and Skin Build-Up — Scheduling Injector Stimulation
- Produced Water Reinjection Practices — Balancing Disposal and Pressure Support

Day 3: Sweep Efficiency and Conformance

- Areal and Vertical Sweep Estimation — Locating Bypassed Oil
- Reservoir Heterogeneity and Layering Analysis — Identifying Thief Zones
- Injection and Production Logging Profiles — Confirming Where Water Flows
- Mechanical and Chemical Conformance Options — Shutting Off Unwanted Water
- Streamline Allocation Concepts — Linking Injectors to Producers

Day 4: Surveillance Plots and Pattern Balancing

- Voidage Replacement Tracking by Pattern — Adjusting Injection Targets
- Hall Plots and Injection Pressure Diagnostics — Detecting Plugging or Fracturing
- Water-Oil Ratio and Chan Diagnostic Plots — Distinguishing Coning From Channelling
- Bubble Maps and Heterogeneity Index Charts — Ranking Underperforming Wells
- Pattern Rebalancing and Injector Conversion — Redirecting Water to Unswept Areas

Day 5: Practising the Waterflood Surveillance Plan

- Pattern Voidage Review for a Mature Field — Applying Balance Calculations
- Injector Diagnosis From Hall Plot Data — Applying Injectivity Methods
- Producer Water Diagnosis and Conformance Choice — Applying Sweep Methods
- Surveillance Frequency and Data Responsibilities — Defining the Monitoring Routine
- Waterflood Surveillance Plan — Presenting Actions and Triggers to Asset Leaders

Applying Waterflood Management and Surveillance After the Course

- Calculate voidage replacement for every pattern in one field and flag patterns outside the agreed range.
- Build Hall plots for the five injectors with the largest injectivity loss and propose stimulation or water quality fixes.

Waterflood Management and Surveillance Questions FAQ

What is waterflood management and surveillance and why does it matter now?

Waterflood management and surveillance is the routine monitoring and adjustment of water injection to maximise oil sweep. It matters now because many fields rely on injected water for most of their output while water handling capacity and disposal options are tightening.

Which roles gain most from waterflood management and surveillance training?

Reservoir engineers, production engineers, surveillance specialists and water treatment engineers gain most. You benefit if you set injection targets, diagnose high water cut or manage injector performance.

How does waterflood management and surveillance differ from an enhanced oil recovery course?

This waterflood management course concentrates on running and monitoring conventional water injection, while enhanced oil recovery courses compare gas, chemical and thermal methods that follow or replace waterflooding.

What do you bring back from waterflood management and surveillance training?

You bring back a surveillance plan with pattern voidage checks, injector and producer diagnostics, monitoring frequencies and action triggers, ready to apply to your own field.

Waterflood Management and Surveillance: The Way Forward

The waterflood surveillance plan becomes the reference for monthly flood reviews, first informing which patterns need injection changes. Reservoir, production and water treatment engineers use it to share one view of flood health. After its first use, revisit the action triggers once a full season of data shows which signals predicted real problems and which raised false alarms.