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# Reservoir Depletion Dynamics and Well Feedback Training Course

14 – 18 February 2027
Online

# Reservoir Depletion Dynamics and Well Feedback Training Course

**Ref:** 2911_110924 **Date:** 14 – 18 February 2027 **Location:** Online **Fees:** 2900 GBP

Reservoir Depletion Dynamics and Well Feedback is a 1-week training course for reservoir and petroleum engineers who must explain how pressure, fluid movement and well performance interact as a field drains, and leave with a reservoir drive and depletion diagnosis for one field. Ageing fields and tighter facility limits make these interactions decisive for recovery. Jupiter Prime Training delivers this course on Reservoir Depletion Dynamics and Well Feedback.

## Why Reservoir Depletion Dynamics and Well Feedback Matters Now

Two forces shape this subject. Many producing fields have passed plateau, so engineers must judge whether falling rates come from the reservoir, the wells or surface constraints. Asset owners also expect every infill well or injection change to rest on a clear picture of reservoir response. An operator that reads depletion as a connected system sets withdrawal rates that protect long-term recovery; one that treats each symptom separately risks early water breakthrough, gas coning and stranded volumes behind pressure sinks.

## Who Gains Most from Reservoir Depletion Dynamics and Well Feedback

- Engineers who track reservoir pressure and voidage across producing and injecting wells
- Specialists who interpret aquifer influx and gas cap expansion from field histories
- Engineers who set well rates, choke settings and artificial lift against reservoir limits
- Staff who link separator, compression and water handling limits to well deliverability
- Asset engineers who propose infill, workover and injection changes to field leadership

Asset subsurface groups gain most when reservoir, production and facility engineers attend together.

## Reservoir Depletion Dynamics and Well Feedback Capabilities

Participants treat the field as one loop in which reservoir energy, well inflow and surface constraints shape each other over time.

- Diagnose the dominant drive energy from pressure, ratio and cumulative withdrawal trends — depletion strategy owners
- Calculate original volumes in place using tank-style energy accounting — asset volume estimates
- Assess aquifer strength and timing from pressure support signatures — injection and pressure maintenance decisions
- Test how well rates and facility limits feed back on reservoir pressure — production planners
- Weigh withdrawal rate against recovery loss from coning and bypassed oil — field leadership
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Communicate a reservoir drive and depletion diagnosis with its uncertainties — partners and management

## Key Reservoir Depletion Dynamics and Well Feedback Terms

- Voidage replacement ratio — the reservoir volume injected divided by the reservoir volume withdrawn over the same period.
- Drive index — the share of total production energy supplied by each mechanism, such as fluid expansion, gas cap or water influx.
- Aquifer influx — water entering the hydrocarbon zone from a connected aquifer as reservoir pressure falls.
- Compaction drive — energy released when pore volume shrinks under falling pressure, pushing fluids towards wells.
- Inflow performance relationship — the link between a well's flowing bottom-hole pressure and its production rate.
- Backpressure — pressure imposed on wells by surface lines, separators and compressors that limits drawdown.

## Reservoir Depletion Dynamics and Well Feedback Day by Day

### Day 1: The Field as a Connected Energy System

- Reservoir, Well and Surface Network Loop — Locating the Controlling Constraint
- Pressure and Production Histories Over Field Life — Reading Depletion Stages
- Fluid and Rock Expansion Energy — Primary Recovery Expectations
- Voidage Accounting Across Wells and Injectors — Pressure Maintenance Targets
- Causal Loop Diagrams for Depletion — Linking Symptoms to Root Drivers

### Day 2: Diagnosing Drive Mechanisms

- Tank Energy Balance Equation Set-Up — Volumes In Place From Pressure Response
- Straight-Line Plots for Drive Identification — Confirming Dominant Energy Source
- Gas Cap Expansion and Solution Gas Drive — Gas-Oil Ratio Trend Interpretation
- Drive Index Tracking Through Time — Shifts in Energy Contribution
- Compaction and Pore Volume Change — Subsidence and Recovery Implications

### Day 3: Aquifer Response and Pressure Support

- Aquifer Influx Methods for Steady and Unsteady Support — Aquifer Size Estimates
- Water Encroachment Patterns and Watercut Growth — Well Abandonment Timing
- Pressure Interference Between Compartments — Connectivity and Barrier Evidence
- Injection Response Lag and Voidage Ratios — Injector Allocation Choices
- Pressure Survey Campaign Design — Closing Gaps in Depletion Evidence

## Day 4: Well and Facility Feedback on the Reservoir

- Inflow Performance and Drawdown Limits — Sustainable Well Rate Settings
- Water and Gas Coning Behaviour — Rate Versus Bypassed Oil Trade-Off
- Surface Backpressure and Compression Timing — Deliverability Across Field Life
- Artificial Lift Effects on Depletion Rate — Lift Selection Against Reservoir Energy
- Water Handling Capacity as a Recovery Limit — Debottlenecking Priorities

## Day 5: Practising the Reservoir Drive and Depletion Diagnosis

- Assembling the Field Pressure and Withdrawal Record — Evidence Base for Diagnosis
- Drive Mechanism and Aquifer Interpretation — Applying Energy Balance Results
- Well and Facility Constraint Ranking — Applying Feedback Findings
- Depletion Scenarios With Injection and Rate Options — Recovery Outcome Comparison
- Completing the Reservoir Drive and Depletion Diagnosis — Recommendation to Field Leadership

## Applying Reservoir Depletion Dynamics and Well Feedback After the Course

- Rebuild the energy balance and drive index history for one producing reservoir and share the shifts in drive contribution with the asset group.
- Lead a review of well rates and surface backpressure against coning and drawdown limits, proposing revised rate settings.

## Reservoir Depletion Dynamics and Well Feedback Questions FAQ

### What is Reservoir Depletion Dynamics and Well Feedback and why does it matter now?

It is the study of how reservoir energy, well inflow and surface limits interact as a field produces. It matters now because mature fields need decisions on rates, injection and facilities that protect remaining recovery.

### Which roles gain most from Reservoir Depletion Dynamics and Well Feedback?

Reservoir, production and facility engineers gain most, because each controls one part of the loop between pressure, well performance and surface capacity.

### How does Reservoir Depletion Dynamics and Well Feedback differ from a reservoir simulation course?

This course diagnoses drive energy and feedback with tank-style methods and field histories. A simulation course builds and history-matches grid models.

## What do you bring back from Reservoir Depletion Dynamics and Well Feedback?

You bring back a reservoir drive and depletion diagnosis for one field, covering energy sources, aquifer support, constraining wells and facilities, and recommended rate and injection options.

## Reservoir Depletion Dynamics and Well Feedback: The Way Forward

The reservoir drive and depletion diagnosis first informs whether a field needs added pressure support or revised well rates. Asset engineers and field leadership use it to compare injection, lift and compression options. After its first use, revisit the aquifer interpretation once new pressure surveys arrive.