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COURSE BROCHURE

# Voidage Replacement and Pressure Support Planning Training Course

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Registered in the United Kingdom and Saudi Arabia

# Voidage Replacement and Pressure Support Planning Training Course

**Ref:** 2912_110941 **Date:** 20 – 24 September 2027 **Location:** Rome **Fees:** 7200 GBP

Voidage Replacement and Pressure Support Planning is a 1-week training course for reservoir and production engineers who decide how much water or gas to inject, where and when, and who leave with a pressure maintenance plan with voidage targets for their own field. As mature fields lose energy and injection capacity becomes a scarce, costly resource, deciding the replacement ratio well protects recovery and well life. Jupiter Prime Training delivers this course on voidage replacement and pressure support planning.

## Why Voidage Replacement and Pressure Support Planning Matters Now

Three pressures meet in injection planning today. Ageing fields need more support per barrel produced, while surface water treatment, compression and disposal capacity are already stretched. Asset owners want recovery without early water or gas breakthrough. Too little support loses drive energy; careless injection fractures rock, plugs sandface and wastes capacity. The course rests on material balance reasoning and reservoir pressure surveys rather than any single proprietary tool.

## Who Gains Most from Voidage Replacement and Pressure Support Planning

- Engineers responsible for setting reservoir offtake and injection allocations by sector
- Engineers who choose injector locations, completion intervals and conversion candidates
- Engineers accountable for injection water treatment, filtration and compatibility with formation brine
- Engineers who run gas reinjection or gas cap support alongside oil production

An asset subsurface group gains most when its reservoir, production and water handling engineers attend together and agree one replacement basis for the field.

## Voidage Replacement and Pressure Support Planning Capabilities

Participants turn withdrawals, capacity and pressure history into sector injection targets.

- Calculate reservoir voidage and replacement ratios from production and injection volumes at reservoir conditions — asset offtake decisions
- Weigh water injection, gas injection and combined support against field drive and fluid properties — development option selection
- Specify injector placement, perforation intervals and conversion candidates for pressure support — drilling and workover sequencing
- Set injection water quality limits for solids, oxygen and scaling tendency — water treatment plant operators
- Assess pressure response from surveys and interference signals across sectors — rate reallocation by the subsurface group
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Build a pressure maintenance plan with sector targets and trigger points — asset leadership and operations

## Key Voidage Replacement and Pressure Support Planning Terms

- Voidage — the reservoir volume vacated by produced oil, water and gas, measured at reservoir pressure and temperature.
- Voidage Replacement Ratio — injected reservoir volume divided by produced reservoir volume over a period, by sector or field.
- Bubble Point Pressure — the pressure at which dissolved gas first leaves the oil, a common floor for pressure targets.
- Fracture Gradient — the pressure per unit depth that splits the formation, setting the upper limit for injection pressure.
- Injectivity Index — injection rate per unit pressure above reservoir pressure, showing how readily a well accepts fluid.
- Pressure Sink — an area where withdrawals exceed support, drawing fluids and lowering local pressure.

## Voidage Replacement and Pressure Support Planning Day by Day

### Day 1: Reservoir Energy and Withdrawal Accounting

- Drive Mechanism Identification — Choosing Which Energy Source Needs Support
- Reservoir Barrel Conversion With Formation Volume Factors — Consistent Voidage Totals
- Sector Withdrawal Balances — Locating Pressure Sinks Across The Field
- Material Balance Pressure Checks — Confirming Aquifer And Gas Cap Contribution
- Pressure Floor Selection Against Bubble Point — Setting Minimum Reservoir Pressure

### Day 2: Choosing Water, Gas or Combined Support

- Water Injection Suitability Screening — Mobility And Sweep Expectations
- Gas Reinjection And Gas Cap Support — Conserving Gas Versus Sales Needs
- Alternating Water And Gas Schemes — Balancing Sweep And Gravity Effects
- Source Water Options Comparison — Seawater, Aquifer Or Produced Brine
- Injection Capacity Mapping — Pumps, Compressors And Pipeline Limits

### Day 3: Injector Placement and Well Design

- Peripheral Versus Pattern Injector Layouts — Matching Geology And Pressure Gradient
- Producer Conversion Candidate Ranking — Using Existing Wells For Support
- Completion Interval Selection For Injectors — Targeting Layers Losing Pressure
- Fracture Gradient And Step Rate Testing — Safe Maximum Wellhead Pressure
- Injectivity Decline Diagnosis — Plugging, Scaling Or Reservoir Pressure Rise

## Day 4: Injection Water Quality and Pressure Response

- Suspended Solids And Filtration Limits — Protecting Injector Sandface Over Time
- Oxygen, Bacteria And Scale Compatibility Testing — Treatment Chemical Selection
- Pressure Survey Scheduling — Static Gradients And Shut-In Buildups
- Interference And Pulse Response Reading — Confirming Injector To Producer Connectivity
- Sector Rate Reallocation Rules — Responding To Lagging Or Overshooting Pressure

## Day 5: Practising the Pressure Maintenance Plan

- Field Voidage Balance Rebuild — Applying Day One Withdrawal Accounting
- Support Method And Capacity Fit — Applying Day Two Option Screening
- Injector Drilling Sequence — Applying Day Three Placement Choices
- Trigger Points And Response Actions — Applying Day Four Pressure Readings
- Pressure Maintenance Plan With Voidage Targets — Final Sector Targets Presented

## Applying Voidage Replacement and Pressure Support Planning After the Course

- Rebuild the sector voidage balance for one reservoir at reservoir conditions and flag every pressure sink to the asset group.
- Run a step rate test review on the highest-rate injector and reset its maximum wellhead pressure against the fracture gradient.

## Voidage Replacement and Pressure Support Planning Questions FAQ

### What is voidage replacement and pressure support planning, and why does it matter now?

It is the practice of matching injected volumes to reservoir withdrawals so pressure stays above a chosen floor. It matters now because mature oil and gas fields need more support while injection capacity, source water and compression are limited and costly.

### Which roles gain most from voidage replacement and pressure support planning?

Reservoir and production engineers who allocate injection, select injector sites or oversee water treatment on offshore platforms or onshore fields gain most.

### How does voidage replacement and pressure support planning differ from a waterflood surveillance course?

This course sets the targets and designs the support before and during injection. A surveillance course tracks an operating flood instead.

## What do you bring back from voidage replacement and pressure support planning?

You bring back a sector-by-sector plan with replacement ratios, pressure floors, injector priorities and water quality limits.

## Voidage Replacement and Pressure Support Planning: The Way Forward

The pressure maintenance plan with voidage targets first informs next quarter's injection allocation by sector. Reservoir engineers use it to set rates, production engineers to plan conversions and water plant teams to hold quality limits. After first use, revisit the pressure floor and replacement ratio once new surveys show how each sector responded.