Offshore Field Development Planning: Concept Selection, FPSO and Subsea Tiebacks

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Paris - Right Bank business hotel



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Introduction:

Offshore field development decisions lock in most of an asset's lifetime value before engineering starts, yet many teams move from discovery to host selection with weak concept inputs, narrow option lists and cost estimates nobody can defend at the gate. This Core Concept course follows the appraise, select and define phases and shows asset teams how to frame the opportunity, screen fixed platforms, subsea tiebacks, FPSOs, TLPs and spars, estimate cost and schedule, and rank concepts on value and risk. Participants finish with a Field Development Plan Concept Select Report for a sample offshore discovery.

Course Objectives:

- Structure an offshore field development plan around the appraise, select and define phases and prepare the deliverables each decision gate requires
- Translate subsurface volume ranges, production profiles, fluid properties and metocean data into a basis of design for concept screening
- Screen fixed platform, subsea tieback, FPSO, TLP and spar concepts together with subsea layout, flow assurance and export route options
- Build concept-level well count, drilling sequence, cost and schedule estimates with stated accuracy ranges
- Assess installation, HSE, emissions and decommissioning implications of each concept at select stage
- Rank short-listed concepts with economics, sensitivity and risk analysis and defend the recommendation in a Field Development Plan Concept Select Report

Target Audience:

- Subsurface leads responsible for volume ranges, production forecasts and appraisal strategy feeding development concepts
- Facilities and subsea leads responsible for host selection, layout and flow assurance screening at concept stage
- Drilling and wells leads responsible for well count, well access and rig strategy in development plans
- Project and cost engineering leads responsible for concept estimates, schedules and gate readiness
- Commercial, economics and new venture leads responsible for concept valuation, partner alignment and investment recommendations

Course Outline:

Day 1: Offshore Field Development Life Cycle and Decision Gates

- Offshore Development Life Cycle from Discovery to First Production
- Front-End Loading Phases: Appraise, Select and Define with Gate Deliverables
- Decision Support Package Contents for Each Gate Review
- Opportunity Framing: Development Objectives, Constraints and Value Drivers
- Field Development Plan Document Structure and Approval Pathway

Day 2: Reservoir-to-Surface Concept Inputs and Basis of Design

- Subsurface Uncertainty Ranges: Low, Base and High Volume Cases
- Production Profile Envelopes: Plateau Rate, Decline and Water Handling Capacity
- Fluid Characterisation Inputs: Gas-Oil Ratio, Contaminants and Arrival Temperature
- Metocean, Water Depth and Seabed Survey Data for Host Screening
- Basis of Design Register and Design Premise Assumptions Log

Day 3: Offshore Development Concepts and Host Options

- Fixed Jacket and Gravity-Based Platforms: Shallow Water Applicability
- Tension Leg Platforms and Spars: Dry Tree Deepwater Hosts at Overview
- FPSO Hull, Turret Mooring, Crude Storage and Shuttle Tanker Offloading
- Subsea Tieback to an Existing Host: Ullage, Tie-In and Host Modification Assessment
- Concept Long List and Fatal Flaw Screening Matrix

Day 4: Subsea Architecture, Flow Assurance and Export at Concept Level

- Subsea Production System Architecture: Trees, Manifolds, Umbilicals and Control System
- Riser and Flowline Configuration Options for Floating and Fixed Hosts
- Concept-Level Flow Assurance Screening: Hydrate, Wax and Slugging Risk Flags
- Export Route Options: Trunkline Pipeline, FSO and Shuttle Tanker Comparison
- Field Layout Sketch and Tieback Distance Trade-Off Chart

Day 5: Guided Case Study: Screening Concepts for Two Discoveries

- Case Study: Shallow Water Gas Discovery Near Existing Infrastructure
- Case Study: Deepwater Oil Discovery with FPSO Versus TLP Host Choice
- Long List to Short List Reduction Using Weighted Screening Criteria
- Concept Description Sheets for Two Short-Listed Options
- Peer Challenge Using a Select Gate Review Checklist

Day 6: Well Count Strategy, Cost Estimation and Schedule to First Oil

- Well Count Strategy: Producer and Injector Numbers Against the Production Profile
- Dry Tree Versus Wet Tree Well Access and Intervention Implications
- Drilling Sequence, Rig Type Selection and Pre-Drilling Ahead of First Oil
- Concept Capex Breakdown, Factored Estimates and Estimate Accuracy Ranges
- Schedule to First Oil: Long-Lead Items, Critical Path and Schedule Contingency

Day 7: Marine Installation, HSE and Decommissioning at Concept Stage

- Installation Methods at Overview: Heavy Lift, Float-Over and Pipelay Vessel Spread
- Weather Windows and Offshore Installation Campaign Sequencing
- Inherent Safety Principles, Manning Philosophy and Escape Arrangements by Concept
- Emissions Intensity, Flaring and Produced Water Discharge Screening by Concept
- Designing for Decommissioning: Removal Scope and Reuse Options per Host Type

Day 8: Concept Economics, Partner Alignment and the Selection Decision

- Concept Economics Model: NPV, IRR, Unit Technical Cost and Breakeven Price
- Sensitivity Tornado Charts on Volume, Price, Capex and Schedule Slippage
- Multi-Criteria Concept Ranking with Decision Quality Checks
- Joint Venture Partner Alignment and Gate Endorsement Workshops
- Concept Select Recommendation Narrative for Management and Partners

Day 9: Risk Registers, Benchmarking and Assurance of the Selected Concept

- Concept Risk and Opportunity Register with Mitigation Owners
- Value of Information Analysis for Additional Appraisal Wells
- Peer Assist and Independent Project Review Before Gate Approval
- Benchmarking Concept Cost and Schedule Against Analogue Offshore Developments
- Define Phase Readiness: FEED Scope, Deliverables Register and Gate KPIs

Day 10: Capstone: Field Development Plan Concept Select Report

- Sample Discovery Data Pack Review: Subsurface, Metocean and Infrastructure Inputs
- Team Concept Selection Build with Screening Matrix and Economics Model
- Field Development Plan Concept Select Report Drafting
- Gate Review Panel Presentation and Challenge Session
- Action Plan for Applying the Concept Select Method in Participants' Organisations

Skills You Will Gain:

- Offshore Opportunity Framing
- Basis of Design Development
- Host Facility Screening
- Subsea Layout Planning
- Concept Cost and Schedule Estimating
- Development Economics Modelling
- Decision Gate Preparation
- Concept Risk Assessment

Why Attend This Course:

- Leave with a Field Development Plan Concept Select Report built on a sample offshore discovery, ready to adapt to your own opportunities
- Challenge host and export choices with a screening method that exposes fatal flaws before money is spent on engineering
- Present concept recommendations to management and partners with defensible cost ranges, schedules and sensitivities
- Work alongside subsurface, facilities, wells, project and commercial peers from operators and consultancies across several offshore basins

Conclusion:

A sound offshore development starts with a disciplined select phase: good inputs, a wide option list, honest estimates and a clear ranking. Week one builds the capability, moving from the life cycle and concept inputs through host options, subsea architecture, flow assurance and export, then tests it on two discoveries. Week two adds well count strategy, cost and schedule estimating, installation, HSE, decommissioning, economics, risk and assurance, and closes with each team presenting a Field Development Plan Concept Select Report to a gate review panel.