CONCEPT

Offshore Brownfield Modifications and Tie-In Engineering: As-Built, Weight and Shutdowns



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Introduction:

Offshore brownfield modifications fail when a new module is designed against outdated drawings, the topside weight margin is used up without anyone noticing, or a tie-in is left for a shutdown window too short to complete it. Late rework, overrunning shutdowns and lost production follow. This Core Concept course trains engineers to verify as-built conditions, control weight and space, select tie-in points and methods, plan shutdown campaigns and carry modifications through hook-up, commissioning and handover. Participants produce a Brownfield Modification and Tie-In Execution Plan for a case platform.

Course Objectives:

- Define the scope, phases and constraint register of a brownfield modification on a producing offshore platform
- Verify as-built conditions using drawing checks, discrepancy logs and 3D laser scanning point clouds before detailed design
- Control topside weight, centre of gravity, deck space and lift routes for new modules, spools and skids
- Select tie-in points and choose between hot work, cold cutting and mechanical connectors with a positive isolation plan
- Plan shutdown windows and campaign schedules that fit tie-ins, bed space and logistics limits
- Lead hook-up, commissioning, management of change and handover so the modified plant is accepted by operations

Target Audience:

- Facilities engineers who design and approve modifications to existing process, utility and safety systems offshore
- Project engineers who scope, estimate and deliver brownfield work packs on producing platforms
- Construction and hook-up engineers who plan and supervise offshore installation, tie-in and completion work
- Operations and maintenance engineers who isolate plant, host modification crews and accept modified systems
- Commissioning engineers who prepare test packs and hand completed systems over to operations

Course Outline:

Day 1: Brownfield Project Lifecycle and Platform Constraints

- Brownfield Versus Greenfield: Scope Drivers, Live-Plant Risks and Cost Profile
- Brownfield Project Phases From Opportunity Screening to Close-Out
- Topside Constraint Register: Deck Space, Weight Margin, Utilities and Bed Capacity
- Offshore Work Pack Maturity and Front-End Site Survey Planning
- Existing Platform Condition Assessment Using a Modification Readiness Checklist

Day 2: As-Built Verification, Weight Control and Layout

- As-Built Verification Against Drawings: Redline Mark-Ups and Discrepancy Logs
- 3D Laser Scanning Survey Planning, Point Cloud Registration and Clash Checks
- Weight and Centre-of-Gravity Control: Weight Reports, Contingency Factors and Trend Tracking
- Space, Access and Lift Route Studies for Modules, Spools and Equipment Skids
- Structural Reinforcement Overview: Deck Strengthening, New Supports and Load Paths

Day 3: Tie-In Philosophy and Execution Methods

- Tie-In Philosophy Document and Tie-In Point Selection Criteria
- Tie-In Register, Tie-In Isometrics and Spool Fabrication Tolerances
- Hot Work Versus Cold Cutting: Pressurised Habitats, Mechanical Connectors and Cold Cutting Machines
- Positive Isolation Planning: Spades, Double Block and Bleed and Purging Sequences
- Onshore Prefabrication Strategy to Reduce Offshore Man-Hours and Hot Work

Day 4: Shutdown Campaigns, Hook-Up and Change Control

- Shutdown Window Planning: Pre-Shutdown, In-Shutdown and Post-Shutdown Scopes
- Campaign Schedule Build: Critical Path, Bed Space and Marine Logistics Limits
- SIMOPS Interface Summary for Modification Crews and Production Operations
- Hook-Up, Mechanical Completion and Commissioning Test Pack Sequence
- Management of Change Records, Field Change Requests and Handover Documentation

Day 5: Case Platform: Brownfield Modification and Tie-In Execution Plan

- Case Platform Data Pack Review: Laser Scan Survey, Weight Report and Process Diagrams
- Failure Case Review: Weight Overrun, Clash Rework and Shutdown Overrun
- Tie-In Schedule and Isolation Sequence Build for the Case Shutdown Window
- Commissioning and Operations Acceptance Plan With Punch List Priorities
- Brownfield Modification and Tie-In Execution Plan Presentation and Peer Challenge

Skills You Will Gain:

- Brownfield Scope Definition
- As-Built Survey Management
- Topside Weight Control
- Tie-In Point Selection
- Cold Cutting Method Selection
- Shutdown Campaign Scheduling
- Hook-Up and Commissioning Control
- Modification Handover Management

Why Attend This Course:

- Return with a Brownfield Modification and Tie-In Execution Plan built on a realistic case platform
- Catch weight overruns, drawing errors and clashes before they reach the offshore crew
- Fit tie-ins into the shortest practical shutdown window without leaving scope for the next one
- Compare modification practice with facilities, project, construction and operations engineers from different offshore assets

Conclusion:

Offshore brownfield modifications succeed when the existing plant is known, weight and space are controlled and every tie-in has a method, an isolation and a place in the shutdown window. The one week move from lifecycle and constraints, through as-built verification, weight and layout, to tie-in philosophy and cutting methods, then shutdown campaigns, hook-up, commissioning and change control. The final day produces a Brownfield Modification and Tie-In Execution Plan for a case platform, ready for peer challenge.