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Subsea Pipeline Free Span and On-Bottom Stability Training Course

2 – 6 May 2027
Kuala Lumpur

Subsea Pipeline Free Span and On-Bottom Stability Training Course

Ref: 2880_110136 **Date:** 2 – 6 May 2027 **Location:** Kuala Lumpur **Fees:** 4900 GBP

Subsea Pipeline Free Span and On-Bottom Stability is a 1-week training course for subsea pipeline engineers who size allowable spans, check lateral stability and specify seabed intervention, producing a free span and stability assessment. Lines laid on mobile sediments and in stronger currents now move, vibrate and lose support long after installation, so sound assessment protects both integrity and intervention spending. Jupiter Prime Training delivers this Subsea Pipeline Free Span and On-Bottom Stability course.

Why Subsea Pipeline Free Span and On-Bottom Stability Matters Now

Survey vessels and autonomous inspection now map seabed scour and span growth far more often. Tie-backs to existing hubs push smaller, lighter lines into shallow, current-swept water where stability margins are thin. Operators and installation contractors also face pressure to reduce costly rock dumping and trenching without accepting fatigue damage. Good assessment limits intervention to spans that need it; poor assessment means cracked girth welds or wasted vessel days. The course draws on published span fatigue and on-bottom stability design practice, described in general engineering terms.

Who Gains Most from Subsea Pipeline Free Span and On-Bottom Stability

- Engineers who calculate allowable span lengths for new subsea lines
- Specialists who model wave and current loads on pipelines resting on the seabed
- Survey interpreters who turn bathymetry and span listings into assessment inputs
- Installation planners who choose trenching, rock placement or mattress supports
- Integrity owners who decide when an operating span needs correction

Subsea design and integrity groups gain most when their survey, analysis and installation members attend together.

Subsea Pipeline Free Span and On-Bottom Stability Capabilities

Participants link seabed conditions, flow and pipe response into clear span and stability verdicts.

- Calculate hydrodynamic drag, lift and inertia forces from wave and current data — the stability design basis
- Assess vortex-induced vibration onset in in-line and cross-flow directions — the allowable span length
- Estimate span fatigue damage from current and wave cycles — the span correction priority
- Design concrete coating or submerged weight for lateral stability — the pipe specification
- Weigh trenching, rock placement and mechanical supports — the intervention contractor scope
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Communicate span and stability results with clear assumptions — operations and installation stakeholders

Key Subsea Pipeline Free Span and On-Bottom Stability Terms

- Free span — A length of pipeline lifted clear of the seabed, unsupported between two touchdown points.
- Vortex-induced vibration — Oscillation of a span caused by vortices shedding from the pipe in steady flow.
- Reduced velocity — A dimensionless flow speed ratio that predicts vibration onset.
- On-bottom stability — The ability of a pipeline on the seabed to resist lateral movement from waves and currents.
- Submerged weight — The downward force of the pipe and its contents in water, after buoyancy.
- Scour — Removal of seabed sediment around a pipeline by flow, which creates or lengthens spans.

Subsea Pipeline Free Span and On-Bottom Stability Day by Day

Day 1: Seabed, Metocean and Survey Inputs

- Metocean Data, Wave Spectra and Current Profiles — Defining Design Flow Conditions
- Seabed Soil Types and Friction Coefficients — Setting Lateral Resistance
- Bathymetry and Span Listings from Surveys — Building the Span Inventory
- Scour, Sand Waves and Seabed Mobility — Predicting Span Growth
- Pipe Properties, Coatings and Contents — Fixing Structural Inputs

Day 2: Hydrodynamic Loads and Lateral Stability

- Drag, Lift and Inertia Coefficients — Selecting Values for Flow Regime
- Absolute and Generalised Stability Methods — Choosing Screening or Detail
- Dynamic Lateral Response Modelling — Accepting Limited Pipe Movement
- Submerged Weight and Concrete Coating Sizing — Meeting Stability Margins
- Embedment and Passive Soil Resistance — Crediting Seabed Support

Day 3: Span Dynamics and Vortex-Induced Vibration

- Span Natural Frequency and Boundary Conditions — Modelling Support Stiffness
- Reduced Velocity and Response Models — Predicting In-Line and Cross-Flow Onset
- Effective Axial Force and Span Sag — Adjusting Frequency for Pressure and Heat
- Interacting Multi-Spans — Treating Neighbouring Spans as One System
- Direct Wave Loading on Spans — Combining Static and Cyclic Stress

Day 4: Fatigue, Acceptance and Intervention

- Stress Range Histograms and S-N Curves — Estimating Girth Weld Fatigue Life
- Allowable Span Length Screening — Accepting or Flagging Each Span
- Rock Placement, Mattresses and Grout Bags — Selecting Span Correction
- Pre- and Post-Lay Trenching — Lowering Pipe Below Mobile Sediment
- Monitoring and Resurvey Intervals — Tracking Span Change in Operation

Day 5: Practising the Free Span and Stability Assessment

- Gas Export Line Stability Case — Coating Thickness and Embedment Credit
- Oil Flowline Span Survey Case — Vibration Onset and Fatigue Ranking
- Intervention Option Comparison — Rock Volume Against Trenching Effort
- Sensitivity Testing of Current and Soil Inputs — Confirming Robust Results
- Free Span and Stability Assessment — Completing the Engineering Report

Applying Subsea Pipeline Free Span and On-Bottom Stability After the Course

- Screen the latest span survey of an operating line against allowable span lengths and rank spans for correction.
- Recheck the lateral stability of a planned tie-back using current metocean data and embedment credit.

Subsea Pipeline Free Span and On-Bottom Stability Questions FAQ

What is subsea pipeline free span and on-bottom stability and why does it matter now?

It is the analysis of whether a seabed pipeline stays put and whether its unsupported lengths avoid fatigue. More frequent surveys and lighter tie-back lines make these checks central to integrity and intervention spending.

Which roles gain most from subsea pipeline free span and on-bottom stability?

Subsea pipeline engineers gain most, with metocean specialists, survey interpreters and installation planners. Integrity owners deciding on span correction also benefit.

How does this subsea pipeline free span and on-bottom stability course differ from a general offshore pipeline engineering course?

It concentrates on two analyses rather than the whole design. Time goes on loads, vibration, fatigue and intervention.

What do you bring back from subsea pipeline free span and on-bottom stability training?

You bring back a worked free span and stability assessment for realistic lines.

Subsea Pipeline Free Span and On-Bottom Stability: The Way Forward

The free span and stability assessment first informs which spans need correction before the next survey campaign and how much rock or trenching to order. Subsea engineers, installation contractors and integrity owners all rely on it. After its first use, revisit the soil and current assumptions, since resurvey results often change span behaviour more than any refinement of the vibration model.