Single Point Mooring (SPM) Systems: CALM Buoy, Hoses, Hawsers and Maintenance

6 – 10 September 2027
London - Central London four-star



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Introduction:

Single point mooring SPM systems keep large tankers loading and discharging offshore, but a worn chafe chain, a kinked floating hose, a seized product swivel or a slack anchor leg can halt exports or release oil into open water. This Core Concept course equips terminal, marine, maintenance and integrity staff to understand CALM buoy, SALM and turret layouts, inspect hoses, hawsers, swivels and anchor chains, apply operating limits and plan hose change-outs. Participants build an SPM Inspection and Maintenance Plan for a buoy terminal.

Course Objectives:

- Identify the configuration, load path and components of CALM buoy, SALM and turret mooring systems from PLEM to tanker manifold
- Inspect subsea hoses, floating hose strings, mooring hawsers, chafe chains and anchor legs against recorded acceptance criteria
- Apply ship-to-terminal compatibility checks and weather-based operating limits before berthing, during transfer and for disconnection
- Plan hose change-out, pressure testing and swivel and turntable servicing using manufacturer data and OCIMF guidance
- Assess failure modes such as hose kinking, hawser overload, swivel seal leakage and chain wear, and set controls for each
- Prepare an SPM inspection and maintenance plan with task intervals, records and emergency release and pollution prevention actions

Target Audience:

- Offshore terminal operations staff who run tanker berthing, connection and disconnection at buoy moorings
- Marine staff who coordinate mooring masters, tugs, workboats and diving support around the buoy
- Maintenance technicians and supervisors who service hoses, swivels, turntables, valves and buoy equipment
- Asset integrity and inspection staff who assess anchor chains, hawsers and hoses and track defects
- Terminal HSE and oil spill response staff responsible for pollution prevention at offshore loading points

Course Outline:

Day 1: SPM Configurations, Components and Load Paths

- Single Point Mooring Types: CALM Buoy, SALM, Tower and Turret Moorings
- CALM Buoy Anatomy: Hull, Skirt, Turntable, Main Bearing and Mooring Bracket
- Fluid Path Mapping: PLEM, Subsea Hoses, Product Swivel and Floating Hose String
- Mooring Load Path: Hawser, Chafe Chain, Buoy Body, Anchor Chain and Pile or Anchor
- SPM Current-State Asset Register and Condition Baseline Template

Day 2: OCIMF Guidance, Compatibility and Operating Criteria

- OCIMF Single Point Mooring Maintenance and Operations Guide Structure at Overview
- OCIMF Mooring Equipment Guidelines: Fittings, Bow Chain Stoppers and Fairleads
- Ship-to-SPM Compatibility Questionnaire: Tanker Size, Bow Arrangement and Manifold Data
- Weather Operating Envelope: Wind, Wave, Current and Swell Berthing and Stay Limits
- Hawser Tension Monitoring and Mooring Analysis Outputs for Tanker Size Range

Day 3: Hose, Hawser, Swivel and Anchor Leg Inspection Practice

- OCIMF Guide to Manufacturing and Purchasing Hoses for Offshore Moorings: Hose Classes at Overview
- Floating Hose String Visual Inspection: Covers, Floatation Collars, Flanges and Markings
- SPM Hawser Inspection and Retirement Criteria Under OCIMF Hawser Testing Guidelines
- Product Swivel and Turntable Checks: Seal Leakage, Bearing Rotation and Torque Records
- Anchor Chain Inspection by Diver or ROV: Wear Measurement, Catenary Profile and Tensioning

Day 4: Failure Modes, Hose Change-Out and Emergency Release

- Subsea Hose Failure Modes: Kinking, Chafing, Abrasion and Buoyancy Loss
- Hose Change-Out Sequence: Isolation, Flushing, Rigging and Workboat Coordination
- Hose Pressure and Vacuum Test Procedure with Electrical Continuity Checks
- Marine Breakaway Coupling Setting, Emergency Release and Tanker Unberthing
- SPM Oil Spill Prevention: Line Displacement, Containment Booms and Tier 1 Response

Day 5: Buoy Walkthrough and SPM Inspection and Maintenance Plan

- CALM Buoy Deck Inspection Walkthrough with Defect Rating Checklist
- Inspection and Test Interval Matrix for Hoses, Hawsers, Swivels and Chains
- Maintenance Work Pack: Spares Holding, Weather Windows and Diving Support Plan
- SPM Inspection and Maintenance Plan Build for a Case Buoy Terminal
- Plan Presentation, Peer Challenge and Implementation Record Set

Skills You Will Gain:

- SPM System Configuration Analysis
- Floating and Subsea Hose Inspection
- Hawser and Chafe Chain Assessment
- Product Swivel Condition Monitoring
- Anchor Leg Integrity Assessment
- Weather Operating Limit Application
- Hose Change-Out Planning
- Offshore Pollution Prevention

Why Attend This Course:

- Leave with an SPM Inspection and Maintenance Plan drafted for a buoy terminal and ready to adapt to your own asset
- Recognise hose, hawser, swivel and chain defects early enough to schedule repairs inside planned shutdown windows
- Speak the same technical language as mooring masters, hose suppliers, diving contractors and integrity engineers
- Compare SPM maintenance and inspection practice with terminal staff from different operators and sectors

Conclusion:

A single point mooring stays available only when every element from the PLEM to the hawser is known, inspected and maintained on a planned cycle. The course moves from SPM configurations and load paths, through OCIMF guidance, ship compatibility and weather limits, to hands-on inspection of hoses, hawsers, swivels and anchor chains, then to failure modes, hose change-out and emergency release. The final day applies a buoy walkthrough and produces an SPM Inspection and Maintenance Plan.