

2 DAYS PRIMER COURSE - FPSO TECHNOLOGIES

COURSE OVERVIEW

Of the Floating Production Hosts used worldwide the most wide spread is the FPSO (tanker like). They are used in shallow and deepwater fields; in small to very large fields; in calm and harsh weather areas. The course is designed to help the participants to acquire the fundamental knowledge of FPSO Vessels (both New Builds & Tanker Conversions) and to see why they are so widely used by the offshore industry. The topic is covered fully from the FPSOs connection to the reservoir to the export requirements. Details of the FPSO equipment and functions are described. Upon completion of this course, participants should be able to understand the basics of FPSO and offshore oil & gas processing systems, equipment working principles and field requirements. Case Studies, videos and multimedia will be used to illustrate operating principles and lessons learned from past successful projects (with examples taken from around the world).

A DVD of the course videos and presentation Figures in colour will be distributed with the lecture notes.

WHO SHOULD ATTEND

FPSO conversion shipyards, offshore oil rig building yards, offshore vessel building yards, subcontractors, offshore construction companies, offshore equipment vendors, offshore service providers, classification societies and marine & offshore SMEs personnel involved in design & engineering, planning, procurement, project management, engineering production, vessel construction, quality control, equipment and vessel survey, commercial, commissioning, project administration related to FPSOs conversion and new-building.

COURSE CONTENT

- Introduction to Offshore Floating Production
- New Build FPSO Vessels
- Tanker Conversion & Re-Deployment FPSO Vessels
- FPSO Design and Testing Methods
- Turret Design and Mooring Systems
- Introduction to Topsides Processing
- Topsides Equipment Layout and Operations
- Supporting Subsea Field Facilities
- Oil Storage and Export
- Field Examples

PRIMER COURSE - FPSO TECHNOLOGIES

DAY ONE

09.00 L1

INTRODUCTION TO FLOATING PRODUCTION SYSTEMS

- Background and General Trends in Offshore Production
- Review of Fields developed with Floaters and Subsea Production Systems
- Influence of Pressure, Temperature and Field Chemistry on Production System.
- Geographic Requirements
- Typical Field Development Contracts

10.00 L2

GLOBAL ENERGY REVIEW

- * Oil & Gas Production
- * Oil & Gas Prices
- * Floating Production Market

10.30

Break

10.45 L3 FPSO SYSTEM REQUIREMENTS

- Functional Requirements
- Monohull, Semi-Submersible, Deep Draught Semi-Sub, SPAR and TLP Options
- Layout and Safety
- Newbuild or Conversion
- New Developments (Sevan)

12.00 Lunch

13.00 L4 FPSO MONOHULL DESIGN REQUIREMENTS & MODEL TESTING

- Design Requirements.
- Hydrodynamic Studies
- Wave Tank Model Testing.
- Wind Tunnel Testing.
- Computational Fluid Dynamics (CFD)
- Response Amplitude Operators (RAO)
- FPSO Motions and Current Forces
- Operational Studies.

13.45 L5 MOORING SYSTEMS

- Typical Systems
- Components
- Analysis / Design & Safety Factors
- Materials
- Anchors & Piles
- Installation
- New System

14.45 Break

15.00 L6 TURRET DESIGN

- FPSO Layout (External & Internal Turrets)
- Turret Size vs Capacity
- Disconnectable Systems
- Mooring Lines and Riser Connections and Handling
- Fluid Transfer Systems - Swivels & Drag Chains

15.45 L7 Case Study No. 1 - FPSO SHALLOW WATER EXAMPLES

- * North Sea
- * S E Asia

16.30 Q & A followed by Close of Day One

DAY TWO

09.00 L8 INTRODUCTION TO FPSO TOPSIDES PROCESSING SYSTEMS

- Function of process and utility plant (Reservoir Interaction, Typical Reservoir Fluids, Product Specifications, Environmental Constraints)
- Processing Facilities (Separation, Compression, Produced Water, Water Injection, Utilities)
- * Effect of Motion,
- Oil Separation
- * Gas Compression
- * Produced Water Treatment
- * Water Injection System
- * Other Utilities

10.30 Break

10.45 L9 INTRODUCTION TO SUBSEA FACILITIES PRODUCING TO AN FPSO

- * Wellheads & Trees
- * Manifolds

- * Subsea Controls
- * Flowlines
- * Risers

12.00 Lunch

13.00 L10 FPSO FIELD LAYOUT

- * Water Depth and Weather
- * Existing Seabed Structures
- * Safety Issues
- * Operational Issues

13.45 L11 Case Study No 2. ALBA FIELD FSO (North Sea) – Analysis of an FSO

- * FSO Basis
- * Field Layout
- * FSO Vessel
- * Deck piping
- * Export System

14.15 L12 SHUTTLE TANKER AND EXPORT OPTIONS

- Types of Tankers (Shuttle Tankers with DP Thrusters, Standard Trading Tankers, Capacities)
- Loading/Offloading Rates
- Operational Schedules
- Offloading Transfer Systems (Direct or Remote)
- Metering Systems

15.00 Break

15.15 L13 Case Study No. 3 DEEPWATER FIELDS DEVELOPED WITH FPSOs

- Deepwater issues and Range of Production Systems
- Current Worldwide Status – Brazil, Gulf of Mexico, North Sea, West Africa.

16.30 Q & A Followed by Close of course.