

AZUR OFFSHORE LTD

PETRONAS - COURSES

COURSE C - FLOATING PRODUCTION TECHNOLOGY

A THREE DAYS Course for Project Managers, FPSO Engineers, Project Engineers, Process Engineers, etc.....

DAY ONE

08.15 Coffee and Videos

08.45 Course Welcome

09.00 C-L1 INTRODUCTION TO FLOATING PRODUCTION SYSTEMS

- Development of Floating Production Systems
- Floating Hosts
- FPSO Building Blocks
- Floating Production Advantages and Disadvantages

09.30 C-L2 FPSO / FLOATER SYSTEMS REQUIREMENTS

- Functional Requirements
- Available Design Solutions
- Monohull, Semi-Sub, Deep Draught Semi-Sub, Spar and TLP Options
- Characteristics of Design Solutions
- Layout and Safety
- Newbuild or Conversion

10.45 Break

11.00 C-L3 FPSO / FLOATER FIELD LAYOUT REQUIREMENTS

- Field Layout Requirements
- Subsea Wells
- Mooring Patterns
- Operations and Vessel Movements in the Field
- Workovers

12.00 C-L4 FPSO MONOHULL DESIGN REQUIREMENTS & MODEL TESTING

- Design Requirements
- Hydrodynamic Model Testing
- Wind Tunnel Testing
- Computational Fluid Dynamics (CFD)
- Mooring and Riser Loads
- FPSO Motions
- Safety and Operational Information

12.45 Lunch

13.45 C-L5 MOORING SYSTEMS

- Typical Systems
- Components
- Analysis/Design
- Materials
- Safety Factors

- Buoys
- Anchors
- Installation
- New System

15.00 Break

15.15 C-L5 TURRET DESIGN

- Definition of Functions
- FPSO Layout
- Vessel Motions and Mooring Forces
- Turret Size vs Capacity
- Structural Interfaces
- Swivels & Drag Chains
- Bearing Systems
- Mooring Lines and Riser Connections and Handling
- Fluid Transfer Systems

16.30 **DAY ONE EXERCICE, QUESTIONS & ANSWERS**

- Floating Production Host Characteristics
- Mooring System and Turret Design

17.30 Q and As Followed by Close of Day

DAY TWO

08.15 Coffee and Videos

08.45 C-L6 SHUTTLE TANKER AND EXPORT OPTIONS

- Types of Tankers (DP, Thrusters, Standard Trading Tankers, Capacities, etc.)
- Loading/Offloading Rates
- Transfer Systems
 - Direct Offloading (Close Approach of Vessels)
 - Distant Offloading (Separation of Vessels)
- Operational Schedules and Safety
- Metering Requirements
- Costs

10.00 C-L7 CASE STUDY – REVIEW OF DEEPWATER FIELDS

- Deepwater issues
- Current Worldwide Status
 - Brazil
 - Gulf of Mexico
 - North Europe
 - Mediterranean
 - West Africa
 - Others

11.00 Break

11.15 C-L8 CASE STUDY – GIRASSOL / DALIA FIELDS (Angola)

- Angola Block 17
- Girassol and Dalia Reservoir & Field Layout
- FPSO
- Seabed Equipment
- Riser Towers
- Flowlines and Riser Towers
- Girassol Latest Update
- Plan for Dalia Field

12.30 Lunch

13.30 C-L9 INTRODUCTION TO FPSO PROCESSING

- Function of process and utility plant (Reservoir Interaction, Typical Fluids, Product Specifications, Environmental Constraints)
- Processing Facilities (Separation, Compression, Produced Water, Water Injection, Use of Pre-assembled units, Utilities)
- Effect of FPSO Motion
- Alternative technology (What to do with Gas? Gas Conversion?)

15.15 Break

15.30 C- L10 FPSO SAFETY REQUIREMENTS

- Design and Safety Assessment for Floating Installations
- Safety Case-Latest Regulations
- Certification/Verification/Classification
- Discussion with Examples

16.15 C-L11 FPSO COST DATA

- Economic Criteria
- FPSO Costs (New Build vs Conversion)
- OPEX Costs
- Field Development Cost Examples

16.45 DAY TWO EXERCICE, QUESTIONS & ANSWERS

- Oil Export Planning
- Topsides Processing Analysis

17.30 Q and As Followed by Close of Day.

DAY THREE

08.15 Coffee and Videos

08.45 C-L12 CASE STUDY - FPSOs / FLOATERs IN SE ASIAN FIELDS

- Local Offshore Activities
- FPSOs in SE Asia
 - China
 - Vietnam
 - Malaysia
 - Thailand
 - Indonesia

10.00 C-L13 CASE STUDY – FPSOs / FLOATERS IN AUSTRALIAN WATERS

- Local Offshore Activities
- FPSOs in Australian and New Zealand Waters
- Cossack Pioneer
 - Operations
 - Disconnectable Turret
 - Swivel System
 - IMR Activities
 - Export System

11.15 Break

11.30 C-L14 CASE STUDY - OTHER WORLDWIDE FIELDS DEVELOPED WITH FPSOs

- Review of FPSO Field Developments
 - Shallow Water
 - Worldwide Developments
 - Lessons Learned
- Followed by video of full Field Development with an FPSO

12.30 Lunch

13.30 C-L15 REVIEW OF GAS AND LNG MARKETS

- World Gas Production
- LNG Markets
- LNG Technologies

14.00 C-L16 FLOATING LNG AND FLOATING GAS TO LIQUIDS

- Options for Offshore Gas
- Process and Plant for LNG and GTL Technologies
- FLNG Storage Systems
- Offloading and Carrier Systems
- GTL Methanol Production

15.15 Break

15.30 C-L17 FLOATING REGASSIFICATION

- Requirements and Problems
- Locations
- Regassification Methods
- Floating Options
- Recent Examples

16.15 C-L18 CASE STUDY - SNOHVIT LNG

- Field Location
- Operating Plan
- LNG Barge
- CO₂ Sequestration Scheme
- LNG Export

17.15 DISCUSSION

17.30 Presentation of attendance Certificates and Close of Course