

AZUR OFFSHORE LTD

COURSE B – ENGINEERING OF SUBSEA PRODUCTION SYSTEMS

THREE DAYS for; Project managers, Project engineers, Engineers, Technicians

DAY ONE

08.15 Coffee and videos

08.45 Course welcome

09.00 BL1 INTRODUCTION TO SUBSEA ENGINEERING

- Definition
- Main building blocks and sub blocks
- Industry Standards
- Rules and Regulations

09.30 BL2 WELL HEADS AND XMAS TREES

- Drilling and production Well heads
- Xmas trees for Production, Water injection, Gas disposal, ...
- Installation, operation and Maintenance
- Control system interfaces

11.00 Break

11.15 BL3 TEMPLATES AND MANIFOLDS

- Functional requirements
- Predrilling Templates
- Subsea production templates with manifolding functions
- Well clusters and manifolds
- Piping, Valves, Chokes, Instrumentation and Control interfaces
- Installation, operation and maintenance
- Deep water modular systems

12.30 Lunch

14.00 BL4 SUBSEA WELLS OPERATIONS

- Drilling interfaces, well profiles and down hole completions
- Heavy work over operations. Horizontal tree advantages
- Light well intervention with Subsea Lubricator and Coiled Tubing

15.00 BL5 FLOW ASSURANCE AND HYDRAULIC ANALYSIS

- F. A. definition, key issues and simulators
- Hydraulic analysis, methodology and simulations

16.00 Break

16.15 DAY ONE EXERCICE, QUESTIONS & ANSWERS

- Design of Well head and Xmas tree
- Design of Manifold piping system
- Questions & Answers

17.00 Close of day one

COURSE B

DAY TWO

08.30 Coffee and videos

09.00 BL6 INTER FIELD FLOWLINES & EXPORT PIPELINES

- Functional requirements
- Design methodology and softwares
- Installations methods
- Shallow water connections by divers
- Deep water ROV based connections
- Integrity monitoring and pigging

11.00 Break

11.15 BL7 SEA BED LAY- OUTS

- System design and Host platform interfaces
- Shallow water fields installed and maintained with divers. Examples
- Deep water fields. Previous designs and current techniques. Examples

12.00 BL8 PRODUCTION RISER SYSTEMS FOR FLOATERS

- Review of current solutions, Flexibles, SCRs, Hybrid towers...
- Installation requirements, Inspection & Maintenance
- New developments for deep waters and F.A. issues
- Design requirements and softwares

12.30 Lunch

14.15 BL8 RISERS continue

14.45 BL9 NEW TECHNOLOGIES FOR S.P.S.

- Multiphase pumping
- Subsea separation & water re-injection
- Multiphase meters
- Technology examples with Tests to date
- Other new technologies

16.0 Break

16.15 DAY TWO EXERCICE, QUESTIONS & ANSWERS

- Design of flowlines and risers
- Pigging operations
- Questions & Answers

17.0 Close of day two

COURSE B

DAY THREE

08.30 Coffee and Videos

09.00 BL10 SUBSEA PRODUCTION CONTROL SYSTEMS & CHEMICAL INJ.

- Functional requirements and existing solutions
- System design for Platforms and Floaters
- Well and manifold interfaces
- Deep water systems
- Control umbilicals
- Installation and maintenance
- Chemical injection systems and functional requirements

11.00 Break

11.15 BL11 RELIABILITY ENGINEERING AND RISK ANALYSIS

- Concepts
- Reliability Engineering
- RAM analysis
- Reliability Maturity Index
- BP guide to implement Subsea Reliability improvements
- Industry data base SIREN

12.30 Lunch

14.00 BL12 CASE STUDY SHELL MALAMPAYA FIELD TIE BACK

- Field location and operational agreements
- Subsea wells and Xmas trees
- Manifold and cluster
- Flowlines
- Flow assurance and system design
- Control system and chemical injection
- Operations update

15.15 Break

15.30 BL13 UNDERWATER INSPECTION, MAINTENANCE & REPAIR I.M.R.

- IMR Methodology
- Typical scope of work and inspection schemes
- Seabed surveys
- ROV & AUV fleets
- Records & Data Base

16.30 DAY THREE EXERCISE, QUESTIONS & ANSWERS

- Control system design
- IMR data base development
- Questions & Answers

17.00 Presentation of attendance Certificats

17.30 End of Course B. Close of day three