Offshore Field Development - Pipelines & Flow Assurance

Overview

LEVEL
Knowledge

PURPOSE
This course provides a deep understanding of offshore technology and techniques, with a particular emphasis on issues of flow assurance.

LEARNING OBJECTIVES
Upon completion of the course, participants will be able to:
understand the technology and design of offshore production facilities,
grasp the architecture of offshore field developments, from shallow water to deep offshore,
understand pipelines technology, laying techniques and main operational problems,
learn the techniques used to prevent main problems of flow assurance.

WAYS AND MEANS
Highly interactive training by industry-specialist lecturers.
Numerous case studies from the offshore industry.

LEARNING ASSESSMENT
Assessment by test at the end of the course.

PREREQUISITES
No prerequisites for this course.

Agenda

OVERVIEW OF OFFSHORE DEVELOPMENTS

0.25 d

FIXED & FLOATING PRODUCTION STRUCTURES

0.25 d

CONSTRUCTION & INSTALLATION OF PLATFORMS

0.5 d

DEEP OFFSHORE DEVELOPMENTS
Typical subsea architecture: subsea wellheads, well jumpers, production manifolds, production lines, production risers, preservation lines, umbilicals. Role and technology of each piece of equipment.

0.5 d
Examples of deep offshore developments.

**FPSO/FSO TECHNOLOGY**
Technology of floating (production), storage and offloading vessels.
Ballast tanks. Atmosphere control.
Oil, methanol... Storage tanks. Blanketing system.
Storage tanks start-up procedures. Incidents.
Technology and operation of FSO/FPSO offloading (tanker loading) buoy.

**OPERATION OF TERMINALS**
Technology of tankers and loading/offloading equipment.
Marine operations of reception and exports.
Terminal constraints: storage capacity, scheduling.

**NEW DEEP WATER TECHNOLOGIES**
Overview of new deep water technologies that are in R&D or pilot stages.

**FLOW ASSURANCE 1/2: PREVENTION OF DEPOSITS IN FLOWLINES**
Main flow assurance problems: hydrates, paraffins, sulfates, sand, salt, napthenates...
Main technical solutions and preservation operations. Intervention techniques.

**FLOW ASSURANCE 2/2: MONITORING OF MULTI-PHASE FLOW THROUGH FLOWLINES**
Multi-phase flow patterns. Application to Oil & Gas upstream activities.
Gas dominated systems: dry versus wet scheme, flowline and slug catcher design.
Oil dominated systems: hydrodynamic slug flow, examples.

**PIPELINES: TECHNOLOGY, LAYING & OPERATION**
Technology of pipelines: standards, material grades, insulation techniques.
Pipeline laying techniques (offshore and shore approach). Illustrations.
Pipeline operation and maintenance:
Main flow assurance problems. Main available technical solutions.
Pipe corrosion monitoring and prevention. Cathodic protection.
Pipeline maintenance/maintenance management.