Course Title: Subsea Valves Course

Duration: 3 Days

Course Description:

This comprehensive “Subsea Pipeline Valves” course covers the valves of subsea manifolds, SSIVs, HIPPS and ESDVs and comprises of lectures, photos and video presentations, some case studies and workshops providing an overview of subsea pipeline valves. This course provides an insight to fundamental issues for a robust, safe, and economical selection of subsea valve and actuator systems. The topics of the course are carefully selected to cover pipeline valve aspects from conceptual to detailed design. The principal codes followed in this course include ASME VIII div. 1 & 2, ISO 10423 (API 6A) Whd’s and XMT, ISO 13628-4 (API 17D) subsea W’hds, ISO 14313 (API 6D), ISO14723 (API 6DSS), and ISO 15156 (NACE MR 0175). Associated Recommended Practices are also included for completeness, viz :- DNV RP F112 Design of duplex stainless steel under cathodic protection, and DNV RP B401 Cathodic Protection Design.

The attendees will receive a certificate from Z-Subsea/Valve Institute upon successful completion of the training course.

This training course helps to gain understanding on:

- Steps involved in engineering and design of subsea valve systems from initial selection to pre-commissioning;
- Key topics related to engineering of subsea valves and actuators;
- Physical concept behind valve design philosophy;
- Criteria for robust and safe design of valves and actuators.

Who should attend:

- Engineering Graduates;
- Pipeline engineers;
- Commissioning and Pre-commissioning engineers;
- Subsea and offshore engineers;
- Inspection and Maintenance Engineers;
- Project engineers and managers.

  Engineers from other sectors of the Oil and Gas industry who wish to gain understanding of subsea pipeline engineering.

Subsea Valves Course

Z-Subsea

Course Contents:

Introduction
Subsea Valve Criticality
Subsea Global Trends and Challenges
Overview of all Project Phases
Potential valve failure modes

Valve Fundamentals
Definitions
Valve Abbreviations
Valve Symbols
Valve Types and applications
Valve Configurations
Function of the main components
Nameplate details

The Subsea Environment
Corrosive service fluids
Injected fluids and seawater
Hydrogen embrittlement
Corrosion mechanisms

Specifications, Codes and Standards
ASME VIII div. 1 & 2
ISO 10423 (6A) Whd's and XMT
ISO 13628-4 (17D) subsea W'hds
ISO 14313 (6D), ISO14723 (6DSS),
ISO 15156 (NACE)

Material selection
Base Materials
Coating
Welding
Weld overlay (cladding)
Elastomers
Bolting

Design
Basic Design Considerations – actuation/configuration/forge/cast
Hand Calculations
Finite Element Analysis
Valve Extensions

Manufacturing Processes
Forging
Casting
Hot Isostatic Pressing
Welding
Tungsten Carbide Coating
Non-destructive Testing

Qualification and Testing
Qualification Requirements
API 6A – PR2 testing
Factory Acceptance Test
System Integration Test

Data sheet Requirements
Sizes
Pressures
Temperatures
Depths
Materials
Seal configurations
End Termination
Produced and Injected fluids

Operation and handling
Understanding Torque Curves
Torque Requirements
Shipping
Precommissioning
Operating Torques
Scores
Galling

Actuators
Gear Arrangements
Hydraulic configurations
ROV Interface Requirements
Torque Requirements

ESDV – Emergency Shutdown Valves
Definition
Response Times
Functional Requirements
Pipeline Safety Regulations
Safety Instrumented Systems

Small Bore Valves
Isolation – Double Block and Bleed
Subsea Manifolds
Line tees for future tie-ins
Jacket flooding valves
SSIV (Sub Sea Isolation Valves)
Injection and Service Valves