

# Well Integrity Technologies

## INTRODUCTION

- This highly-interactive training course covers the main aspects of Well Integrity, starting with the construction of the well. Keeping the well operation within the safety envelope is critical for any oil & gas operator (well integrity). Well integrity technologies, focusing on monitoring problematic wells, diagnosing the causes of those problems, and implementing techniques to mitigate and/or repair those problems in order to keep the wells operating safely and avoid release of hydrocarbons to environment.

This training course will highlight:

- Well integrity technologies
- Focus on monitoring problematic wells
- Diagnose of causes of those problems
- Implementing techniques to mitigate and/or repair those problems

## OBJECTIVES

By the end of this training course, participants will feel confident in their understanding of:

- The fundamentals of well integrity monitoring, and all implications on production efficiency
- How to monitor and identify well integrity problems and technical procedures available for their mitigation

## WHO SHOULD ATTEND?

This training course is suitable to a wide range of professionals but will greatly benefit:

- Petroleum Engineers
- Production Engineers
- Drilling Engineers
- Completion Engineers
- Oil Field Technical Staff

## Course Outline

### Introduction to Well Integrity

- What is Well Integrity?
- Well integrity standards
- Problematic wells
- Well integrity failures
- Well barriers philosophy
- Importance of SC-SSSV and control line
- Performance indicators
- Leak detection techniques
- Uneven depletion and cross-flow
- Well management and control
- Scale and Asphaltene management
- Corrosion management
- Investigation of a real SAP Case (practical example, Case 1)

### Monitoring Annulus Pressure and Investigating Causes

- Monitoring annulus pressures
- Evolution of burst and collapse pressures
- Three corrosion modules and MAASP evolution
- Downhole material selection
- Well schematics and basic design
- Importance of cement job quality
- Cement evaluation tools
- CBL-VDL
- Forms of corrosion
- SSC sulfide cracking and its prevention
- CO<sub>2</sub> corrosion
- Investigation of a real SAP Case (practical example, Case 2)

### Corrosion Monitoring and Mitigation

- CO<sub>2</sub>/H<sub>2</sub>S metal loss regimes
- CRA corrosion resistance alloys
- Control / mitigation of corrosion
- Corrosion monitoring
- Corrosion logs
- Corrosion-tubing leaks
- Consequences of well integrity degradation
- Corrosion mitigation and prevention
- Surface casing repairs
- Temporary well abandonment
- Casing perforation best practices
- Risk assessment

## Integrity of Well Heads, HAZOP, and Risk Assessment

- Review of primary cementing and well integrity
- Downtime and maintenance costs
- Testing seals on wellheads
- Well maintenance and managing risk
- Well integrity in a nutshell
- HAZOP & risk assessment
- Investigation of a real SAP Case (practical example, Case 4)
- Course review, evaluation and feedback