

# Advanced Well Integrity Management

## INTRODUCTION

- The Well Integrity Forum (WIF) was established in 2007 and one of the main issues that were initially brought up for review was well-integrity training. WIF members acknowledge a need for well-integrity training of key personnel working with well integrity offshore and onshore.
- This 5-day training course on Advanced Well Integrity Management is designed to provide the participants with knowledge to deeply investigate the faultier and risk of well integrity. The participants have an excellent chance to share ideas and to correct the concept of well integrity management. This advanced training course will discuss the proper approach to decision-making to provide certainty within the organization.
- The knowledge and skills to make critical decision throughout well life cycle is vital, not only for WIM purpose but as well as for economic value. This training course will focus on the Well Integrity management systems and interfaces with other teams in the organization. Integrity barriers are defined, Well Failure model and how to establish one is discussed, as well how to create an efficient well integrity organization.
- The training course will deepen your knowledge of well integrity management, and develop the skills for designing, operating, and maintaining well equipment with the ultimate objective of ensuring a permanent, safe containment of all wellbore fluids

This training seminar will highlight:

- The Concept of Well Integrity
- Awareness of regional Standards and Regulations
- Different stages of well operations from Design and Construction, to Production Impact Well Integrity
- Risks associated with different types of well integrity issues
- Different techniques to reduce / mitigate risks
- Procedures, roles and responsibilities of personnel involved in the well lifecycle towards Well Integrity
- The focus on key areas of well integrity assurance
- The Production supervisor's duties with regard to well integrity

## OBJECTIVES

- Improve the delegates' appreciation of the well design and annulus construction; i.e. the well as a "pressure vessel"
- Provide knowledge & understanding of the guidelines and standards that when observed and implemented effectively will ensure well integrity
- Establish an increased awareness of well integrity issues and how they are controlled / managed and by whom
- Provide knowledge of how to maintain equipment for safe and effective operation

## TRAINING METHODOLOGY

- This training course will utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. The daily workshops will be highly interactive and participative.

## ORGANISATIONAL IMPACT

The organization will gain, in sending their employees to attend this particular training course, the following:

- Reduction in the cost of the well in addition avoiding the environmental pollutions
- Extending the well life including all the affecting items in well design
- Ensuring the well integrity, avoiding all risks and solve the problem in a logic and simple ways

## PERSONAL IMPACT

- Obtain integrating knowledge in well integrity management
- Hone their knowledge and get the self-confidence for well design in the proper methods
- Get the latest technology in well inspection, the way to control any problem and the procedures for monitoring
- Solving and avoiding the problems which impact on the cost reduction, and well integrity

## WHO SHOULD ATTEND?

- Affiliate Technical Directors
- Asset Manager
- Petroleum Engineers
- Production Technologists
- Production Personnel (Production Operators, Maintenance Supervisors)
- Drilling and Well Servicing Personnel (Drilling Manager, Drilling / Well Engineers, Completion and Well Service)
- Engineers, Drilling Supervisors, Rig Manager, Toolpusher, Drillers

## Course Outline

### Fundamentals of Well Integrity and Detection of Problems

- Definition of the Various Components of the Well and Showing the Integrity Barriers
- Designing Integrity in Wells-Completion Design
- Well Completion Components
- Well Head Construction Steps
- Influences on Well Integrity and Why It Needs Managing
- Preventive Maintenance Reduces Operating Cost and Optimizes Production
- Maintenance Processes and Differences
- External Well Integrity Tests
- Internal Well Integrity Tests
- Ways of Losing Well Integrity

### How to Prevent Catastrophic Failure of a Well caused by External and Internal Corrosion

- Technology & Tools for Internal Well Integrity Diagnostic & Monitoring
- PLT Logging Techniques
- Securing Internal Integrity, Leak Detection etc.
- Establishes Tubing Base Line Wall Thickness and Corrosion Over Life Cycle of the Well
- Non-intervention Less Investigations like Pressure Testing
- Detects Leaks (Noise logging, temperature logging, etc.)
- Production Profile Analysis
- Risk to the Completion String from Internal Sources
- Barrier Understanding
- The Management of Barrier Testing

### Consequences of Loss of Integrity of One Well to its Surrounding Wells and Potential Financial Exposure

- Monitor for and Understand Mechanical Integrity Problems Preventing Potential Production Rates
- Sand Removal
- Impact of Paraffin's and Asphalten on Well Integrity
- Bacteria Types and Its Effect on Well Integrity
- How to treat these problems in a proper ways?
- How to Execute Scale Removal
- Cement Squeeze for Water and Gas Shut-off
- Evaluating Well Integrity, Annular Pressure Management
- Abandonment: Temporary and Permanent

## Well Integrity & Barrier Philosophy and How Testing is Done

- Well Failure Model
- Leak Rate Determination Calculations
- Risk Based Well Integrity Management and Testing
- Failure Mode and Effects Analyses Diagram
- Show Barriers, Function and Its Severity In Case of Failure
- Discuss Testing and Managing the Data
- Provide Systems and Procedures, which Ensure that the Integrity of the Well is Assured
- Ensure that the Well is Maintained with Reference to Appropriate Procedures and Specifications
- Ensure that the Risks of Operating the Well are as low as Reasonably Practicable
- Basis for the Development of Asset-specific Well Maintenance and Integrity Standards, Policies, Procedures and Performance Targets

## Optimize Well Completion to Optimize Well Integrity during the Lifespan of the Wells, based on Life Time and Possible Intervention Frequencies Assessments

- How to Build an Organization with Sufficient Well Integrity Competence and Capability
- Competent staff
- Well Failure Model
- Failure Modes and Effect Analyses
- Risk Based Well Maintenance
- Well Hand Over Form
- Well Head Check Sheet
- Wrap-up of the Class and Evaluation