

**TRAINING TITLE**

**EXTENDED REACH DRILLING**

**Training Duration**

5 days

**Training Dates & Venue**

Ref	Training Title	Days	Date	Fees	Location	Category
DE018	Extended Reach Drilling	5	17-21 Feb 2025	\$6,500	London, UK	Drilling

In any of the 4 or 5 star hotels as mentioned below. The exact venue will be informed once finalized.

**Training Fees**

\$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments .

**Training Certificate**

**Define** Management Consultancy & Training Certificate of course completion will be issued to all attendees.

Language: English

**TRAINING OVERVIEW**

**TRAINING DESCRIPTION**

The attendees will strength the design considerations and operational aspects of directional, Extended Reach Drilling.

The course will deliver a detailed understanding of the latest extended reach drilling techniques and the latest industry standards used in high angle well construction. The content can be customized to client specific requirements or to a particular well project for closed courses.

The evolution of extended reach drilling techniques is explained against a background of showing what can go wrong if correct planning or rig site operational practices are not fully implemented.

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This is very much an operationally focused course which looks to deliver a knowledge level that can immediately be put to use not just in ERD projects but in improving performance on smaller wells and substantially cutting drilling costs from development projects.

The knowledge from this course can be directly applied to ongoing drilling operations or future well planning and will have a dramatic impact on drilling performance.

All the topics are placed in their operational context and an understanding of how each topic is interrelated with the other subject areas in the course is developed throughout the week.

Throughout the course areas in which ERD techniques can adversely impact the well cost or increase the well risk are detailed and the mitigations for these risks are discussed.

### **TRAINING OBJECTIVES**

- Recognize the application & selection of potential directional well.
- Interpret torque and drag and what factors affect those in the drilling process ERW.
- Understand main concepts associated to well path planning.
- Recommend suitable measures to mitigate operational issues related to directional extended reach drilling.
- Understand main concepts associated to well construction .
- Recognize the application & selection of potential directional wells
- Interpret TVD, Polar, Rectangle, Coordinates, Dog leg severity and problems associated with it
- Interpret torque ,drag and what factors affect those in the grilling program
- Understand main concepts associated to well path planning
- Understand main concepts associated to well construction ERW well
- Well planning and Drill string design
- Survey Calculation Methods
- How to utilize Perforation, Completion, Stimulation, well contracture in ERW
- Be familiar with placement of stabilizers, motors and steerable systems, and other mechanisms
- Have a basic understanding of the practical methods used to drill ERW
- Understand the limits of tools and methods
- Understand the benefits and risks of directional drilling
- Well Control and Safety Aspects.
- What is new in Directional Drilling

### **WHO SHOULD ATTEND?**

Drilling Engineers, Field Engineers, Petroleum Engineers, Supervisors Technicians from work-over & other company staff involved in directional drilling operations.

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### **TRAINING METHODOLOGY:**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivate everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on a daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussion

### **COURSE OUTLINE**

- Increasing hole angle creates significant problems and NPT because of Hole Cleaning, we look at how to identify, address and mitigate these problems.
- The origins of Torque and Drag in the well bore and how they impact our ability to increase our drilling radius from any rig. Why drag impacts horizontal lateral lengths. Model types, use and limitations.
- Delivering world beating ERD wells with limited rig capabilities.
- Operational practices for connections, tripping and managing BHP within fracture limits.
- How to monitor the well condition and how to interpret the data we collect to get the correct understanding of changes happening in the well.
- How to design the Bottom Hole Assembly (BHA) for low angle wells and how this fundamental design must change as the well inclination increases. This will include a look at jarring and jar placement in high angle BHA's.
- Geomechanics principles and how they can be applied to high angle wells.
- How the tendency of the Bottom Hole assembly to build, drop or hold angle must be designed to match the desired well profile and how this is achieved to deliver wells with the lowest tortuosity. How tortuosity adversely affects modelling of T&D.
- The evolution of directional drilling technology, the key drivers for this and why so many wells are now drilled with high cost rotary steering tools.
- Surveying the well, the key technologies used to survey the well and how mistakes in well positioning are made. Making sure that the uncertainties and errors in the ERD project are minimised. Survey reprocessing techniques to improve accuracy of placement.
- Formation evaluation tools as a drilling engineering resource and how to use this data to show wellbore quality.

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- Shock and vibration of the downhole equipment, its origins, its impact and how to reduce or remove this unwanted problem, reduce NPT and improve performance

## DAILY OUTLINE

### Day 1:

- Registration
- Welcome & Introduction
- PRE-TEST
- Introduction and over view
- Directional drilling and ERW
- Directional Well Applications
- Directional & ERW , Well Profile
- Directional & ERW and side track Well Planning
- Case studies and group work

### Day 2:

- Trajectories and Design of directional well
- Horizontal and ERW design
- Well bore Trajectory Control
- Survey Calculation Methods

### Day3:

- Tool face setting
- Deflection tools
- Friction, Torque and Drag
- Bending Stress and Buckling
- Drill String Design
- Practical exercises & case studies

### DAY-4

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- Operations in ERW well
- Drilling and function of different types of directional drilling
- Casing , cementing and Logging, Coring,
- Running Pipes & Cementing.
- Case studies and examples
- Operations in directional ERW & horizontal wells
- Directional ERW and side tack operations
- Perforation and Completion Types
- **Stimulation and hydraulic fracture**

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• **Work shop and Technical Films**

**Day 5**

- Well Control and Safety Aspects.
- Risk assessment in directional ERW & horizontal well
- Applications in ERW drilling operations
- Applications in D.D Wells
- Directional well problems
- Review all types of directional drilling
- Work shop and group exercise
- POST-TEST

**NOTE:**

**Pre & Post Tests will be conducted.**

**Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.**

**COURSE OUTCOME**

**By the end of the course participants will be confident in understanding of:**

- How to relate your project to the industry drilling envelope and how to define the correct level of planning resource to allocate to ensure success.
- What changes in the well as you increase the inclination, and how these changes need to be reflected in the planning and operational practice. Tripping and connection practices will be examined in detail and the changes from low angle wells will be developed by the group as part of the 'workshop' style teaching.
- How to ensure that NPT and LIH do not affect your project. The focus here will be on understanding both Hole Cleaning for high angle wells and the risks of differential sticking.
- when to use high cost technology like rotary steerable systems and when these systems add little value. How to mitigate the risks of motor drilling when they are used in high angle drilling.
- How to push the drilling envelope further and increase the drilling radius of any rig to deliver more fluids back to the asset.
- How to use the evolving science of geomechanics alongside the increasing volume of formation evaluation while drilling data available in real time to deliver substantially lower NPT on any drilling project.
- How to work with a geology team to geo-place or geo-steer a well path within specific lithologies or a specific fluid type.

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- Why certain vibration types become predominant in ERD wells and how to address these problems.
- How to ensure that once the well is drilled, it is possible to get the casing to bottom and cement it successfully.



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