



ABERDEEN DRILLING INTERNATIONAL

Essentials of Drilling Technology & Equipment

OVERVIEW

This highly interactive and engaging course forms a key component of continuous professional development for any employee who requires an understanding of the drilling process and equipment. The aim of the course is to develop awareness of the technology behind the drilling process and function, in order that non-drilling personnel can engage in effective, value adding conversation with their drilling colleagues. This course includes a half-day of training in "Awareness of Well Control" leading to a Level 1 certificate.

DESIGNED FOR

This course has been designed for individuals from across the E&P supply chain including operating companies, drilling contractors, service companies and manufacturing companies and from administration, contracts, finance, HR, logistics and procurement, technical and non-technical management, QHSE, sales and marketing. The course will benefit those looking for a broader understanding of the industry they work in. It has also proven to be of particular benefit to individuals who are new to the industry or in the early stages of their career.

COURSE DELIVERY

The course is delivered over 3 days through presentation of a series of interactive lectures supported by videos and animations, case studies, group discussion, knowledge tests, drilling simulator exercises and a mini project.

The mini project is included for the candidates to complete either as individuals or in small groups. Given information on geology and formation pressures and taking into consideration potential drilling hazards, the course participants will select a suitable drilling location, casing depths, casing, hole sizes and a drilling rig. The candidates' findings and recommendations are reviewed at the end of the course as a group.

Where available, the full-size rig-floor DS5000 is used for the simulator exercises which allows candidates to put their new-found knowledge of drilling operations into practice. Experience shows that within a short time candidates understand the principles of rig operations, are able to take on the role of the driller and recognise when the well is compromised due to changing hole conditions or changes in wellbore pressures. The use of the simulator embeds the theory and practice in an enjoyable and safe environment.

CERTIFICATION

Successful completion of the course will result in two Aberdeen Drilling School certificates, one recognising completion of the Essential Drilling Technology & Equipment training and one recognising completion of the Level 1 Well Control Awareness training.

ENTRY REQUIREMENTS

There are no formal pre-requisites for this level of training.



INDICATIVE COURSE CONTENT

The course covers the following modules:

Essentials of Geology

The basic principles of the rock cycle and the origin of hydrocarbons are explained leading to a description of the four key elements making up an economic hydrocarbon reservoir (reservoir rock, source, seal and trap). The concept of exploration and appraisal drilling as a means of delineating a field for economic evaluation is explained. The various means of gathering geological and geophysical information from the well is described.

Types and Function of the Rotary Drilling Rig

The different types of rig (land, platform, jack up, semi-submersible and drillship) are described and a comparison made of their different operating envelopes. From this an explanation of the major functions and components of the rotary drilling rig is provided. The evolution of the rotary drilling rig towards the automated rig is described. The function of the drillstring components from drillpipe to drill bit are described and explained.

Wellbore Pressures and Pressure Control

The origins of wellbore pressure are explained. The use of drilling fluids as the primary means of controlling wellbore pressure and the use of the BOP as a secondary means of control is described and explained.

Casing and Cementing

The functions of casing and cementing are discussed and the basic principles of casing depth selection explained. The notion of the “telescoping” casing/hole design is discussed.

Directional and Horizontal Drilling

A brief history of the methods of directional drilling leads to a discussion on the differences between geometric wellbore placement and geological wellbore placement (geo-steering) and the benefits that this has had on well and field productivity. An indication of the future of directional drilling through autonomous downhole tools and remote operating centres is discussed.

Well Completions

Once the well is drilled it is made ready for production by installing a completion. The basic components of a completion are described and their function explained. To complete this section a brief description of the operation of the snubbing unit and coiled tubing is provided.

Advanced methods

To close out the course we look at a number of more advanced techniques such as managed pressure drilling and dual gradient drilling to demonstrate the changes in operational capability of the drilling rig.

Non-Productive Time

The principles of operational efficiency and effectiveness are discussed, together with an overview of the major causes of non-productive time during drilling and completion operations.