Drilling Hydraulics

Course Price

£3050

Course Description

This is a 5-day course intended for individuals with prior experience in drilling fluids and extends their knowledge to drilling hydraulics. It aims to provide basic understanding of drilling hydraulics, the methods and techniques used for pressure drop estimation, overview of drilling fluid rheology and how it affects drilling hydraulics.

Course Objectives

After the course, the delegates will be able to:

• define the components of the drilling fluid circulation system

• understand rheology, different rheological models and impact of each model on pressure loss calculation

• identify importance of measurements and use them to own advantage

• state where pressure losses occur, have means for evaluating them and propose means for reducing them

• understand impact of bit hydraulics energy on penetration rate and have means for optimizing this energy

• show how mud pump pressure, flow rate, pressure losses and fluid rheology and density are related, show how each can be measured and/or calculated

Who Should Attend

Participants can be drilling engineers, drilling representatives, drilling fluid engineers and contractor personnel, drilling supervisors, mud engineers, cementing engineers, tool pushers, managers and technical support involved with drilling operations and responsible for the development, planning and application of the drilling fluids and drilling hydraulics.
Course Content

• the drilling fluid circulation system, mud pumps
• functions and properties of drilling fluids
• overview of drilling fluid rheology
• rheological models, Newtonian, Bingham plastic, power law, Herschel Bulkley
• rheological measurements, data reduction
• measurements in the drilling fluid circulation system
• laminar, turbulent and transitional flows
• pressure losses in drilling pipe and annulus, equivalent circulating density
• pressure losses through jet and diamond bits
• optimization of bit hydraulics, nozzle velocity and diameter
• hole cleaning
• surge and swab flow calculations
• initiation of fluid circulation

The course will involve lectures on the above subjects, hands on exercises, problem solution and overview of field case studies.

CPD Unit

Continuing Professional Development

35 HOURS CPD