

DRILLING FLUIDS & SOLID CONTROL

INTERMEDIATE LEVEL

DRL033

COURSE DESCRIPTION

Drilling fluids containing too many drilled solids increase trouble costs or visible and invisible Non-Productive Time [NPT]. Visible NPT costs are usually easily visible because the drilling rig can no longer drill. Invisible NPT can be more expensive because it relates to drilling performance, excessive volumes of drilling fluid because of dilution requirements, as well as cementing problems. Cement barriers often fail because of poor filter cake quality during well production. Each of these problems will be addressed during this course.

In this intermediate course, it is designed to focus on practical methods to design a functional and optimum Drilling fluids solids removal system, best practices, and continuous assessment methodologies. The course will highlight why solids removal must be optimized, how to recognize solids build on hole problems, and drilling efficiency, and how to look for culprit or design/operational flaws in the system. Also, analysis procedures applicable for all drilling rigs, large and small, as well as any drilling fluid, will be discussed. Procedures will be presented to determine the optimum drilled solids removal efficiency for each target drilled solids concentration. This course provides relatively simple guidelines for eliminating most of the visible and invisible NPT, and increasing total drilling performance and significantly decreasing cost.

COURSE GOAL

To enhance the participants' knowledge, skills, and ability necessary to apply the analysis procedures applicable for all drilling rigs, large and small, as well as any drilling fluid, and to determine the optimum drilled solids removal efficiency for each target drilled solids concentration.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand the economics of good solids control and its consequences on mitigating hole problems.
- Discuss the effects of different types of solids on drilling performance.
- Discuss how to determine the quality and quantity of different solids in a drilling fluid.
- Review of best operating practices and design requirements of solids control equipment, their proper sequences, and rules of thumbs for weighted and unweighted fluids.
- Review and practice the different methods to assess solids removal efficiencies for each piece of equipment and for the whole system performance.
- Cover the solids removal system efficiency and optimization.

- Focus on rig auditing, applying corrective measures and their impact on drilling efficiency and hole problems mitigation.
- Arrange each component of a drilling fluid processing plant for proper performance.
- Evaluate each component of a drilling fluid processing plant (called mud tanks).
- Evaluate the effect of drilled solids on drilling fluid properties.
- Minimize drilling fluid discarded.

WHO SHOULD ATTEND

- Drilling Engineers.
- Drilling Rig Supervisors.
- Tool Pushers.
- Drilling Managers.
- Operating Company Personnel.
- Reservoir Engineers.

COURSE DURATION

5 Working Days

COURSE OUTLINES

- Different Aspects of Drilling which are Affected by Drilled Solids.
- Solids Transport Capabilities of a Drilling Fluid.
- How Shale Shakers Separate Drilled Solids.
- The New API Shaker Screen Designation and How It Works.
- Types of Motion of Shale Shakers.
- How Hydro-Cyclones and Centrifuges Separate Drilled Solids.
- How Equipment should be Arranged on a Drilling Fluid Processing Plant.
- Selection of the Proper Centrifugal Pump Impeller.
- Mud Tank Agitation.
- Mud Gun Placement.
- Degasser Operation and Objective.
- Guidelines for Effective Drilled Solids Removal.
- Trip Tank Operation.
- Calculation of Solids Removal Efficiency.
- Evaluation of Mud Cake Compressibility.
- Development of Thin, Slick Compressible Filter Cake in a Well Bore, Drilling a Well Bore which Allows Casing to be Moved while Cementing, Maintaining a Homogeneous Fluid to Fill Drill Pipe.