Training - Geomechanics for Drillers

GEOM-EN-P | Face-to-face only | 3 days

This training course aims to ensure the understanding of geomechanics-related drilling problems such as wellbore stability and fluid losses, and to be aware of the techniques used in the petroleum industry to mitigate these phenomena

Level

Knowledge

Public

Engineers and supervisors involved in drilling operations

Objectives

Attendees will be able to implement the following skills:

- acquire the basic geomechanical knowledge useful for drilling operations
- diagnose the mechanisms of wellbore instability and fluid losses including already producing fields
- identify the drilling-related geomechanical parameters as well as the means to measure or assess them from well data and laboratory measurements

Pedagogical & technical resources

Application exercises adapted to drilling situations

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

INTRODUCTION TO GEOMECHANICS IN THE PETROLEUM INDUSTRY — 1.5 hours

Review of all the applications of geomechanics in the reservoir and drilling fields illustrated with real cases.

THEORETICAL BASES USEFUL FOR DRILLING APPLICATIONS — 12 hours

Stresses, deformations, elasticity.
Connection between stress, pressure and temperature.
Rock tensile failure.
Rock shearing failure.

Laboratory measurements of tensile and rupture properties.
Geomechanical model of wells (formation pressure, stresses and mechanical properties) and calibration from laboratory measurements and data and well tests.
Different types of pressure tests in drilling, in particular the leak-off test.

STRESSES & RUPTURE MECHANISMS AROUND THE WELL — 12 hours

Radial, axial and tangential stresses.
Shearing failure conditions and calculation of the minimum mud weight.
Conditions of tensile failure and fracture propagation and calculation of the maximum mud weight.
Impact of the well path.
Impact of reservoir production of infill drilling in already producing reservoirs.

APPLICATION — 4.5 hours

Exercise based on one or several real cases gathering the major issues of reservoir geomechanics.
Knowledge assessment.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com