Training - HPHT Drilling Design and Operations

HPHT-EN-P | Face-to-face only | 5 days

This course aims to provide a comprehensive knowledge on how to design and execute an HPHT well in an exploration or development context

Level

Expert

Public

Engineers, supervisors, superintendents operators from operators, contractors and service companies who will be involved in geothermal, storage or oil/gas drilling operations

Objectives

Attendees will be able to implement the following skills:

- understand the design concepts related to an HPHT well
- learn about required operational preparedness aspects of HPHT drilling operations
- select the well control equipment & procedures applied to HPHT weels
- assimilate the key aspects for executing successful operations in HPHT drilling

Pedagogical & technical resources

- Presentations
- Exercises
- Application to real cases

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

GENERALITIES — 3 hours

Applications, terms and definitions.
PPFG aspects of HPHT reservoirs (effect of depletion, geomechanics).
Well architecture specificities of HPHT wells.

BASIC DESIGN ENGINEERING — 6 hours

Casing design specific to HPHT (thermal simulations/introduction to limit-state and reliability based design/survival loads).
OCTG choice (material grade, SSC, qualification).
OCTG connector choice (test and qualification).
Well equipment (liner, wellheads, casing hangers...).
Annulus management systems (N2 cushion, burst discs, crushable foams...).
Subsea HPHT specificities (wellhead fatigue, X-Mas tree choice, APB).

ADVANCED HPHT WELL ENGINEERING — 9 hours

Casing wear (modeling, measurement, remedial).
Wellhead growth (modeling and impacts, heat island effect).
Fluids & cement aspects of HT environments.
Kick tolerance modeling (dispersed modeling w/drill bench or equivalent, limitations of single bubble in HPHT).
Hydraulic modeling in HPHT operations.
Logging (current HT limitations on MWD tooling).
Introduction to MPD.
In-field drilling (depletion and stress caging...).

OPERATIONAL PREPARATION — 4.5 hours

Rig inspection program for HPHT operations.
Equipment specific to HPHT (mud coolers, kick assembly, early-kick-detection...).
Hydrates (formation mechanisms, prevention).
HPHT checklists.
HPHT procedures (pit management and discipline, breaking circulation, connections, flow checks, tripping procedures, pump out of hole).
HPHT coring and wireline logging.

OPERATIONAL EXECUTION — 7.5 hours

ECD management.
Wellbore breathing (breathing vs. kick, loss-gain scenarios, supercharging mechanisms, fracture...).
Well control aspects.
(E)LOT/FIT in HPHT.
Mud weight management.
Fingerprinting (dummy) connections, swab & surge, compressibility test, drain back/flow volume...).
Case studies (HPHT train wrecks, database analysis of exploration and development wells).

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