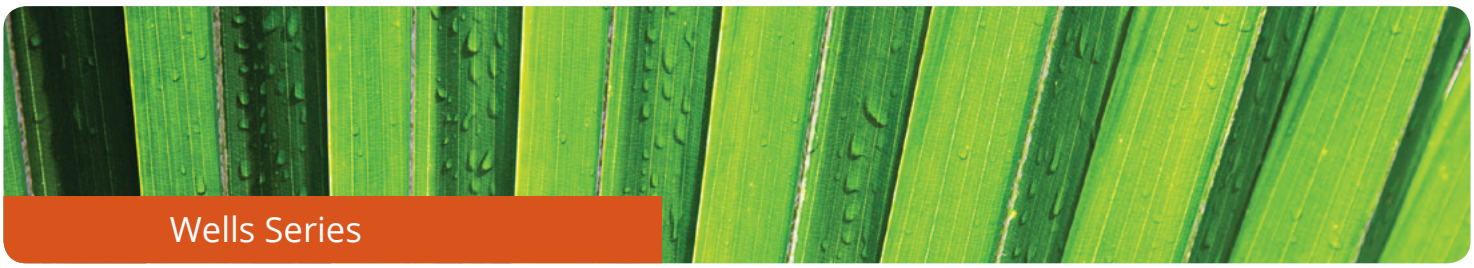


Wells Series

High Pressure High Temperature (HPHT) Drilling

Designed for:
Experience drilling engineers with no previous HPHT experience, who want to work in HPHT fields. They will learn to identify the areas of complexity for this type of reservoir, and ultimately, how to design HPHT wells.

Duration
(days)

1 2 3 4

Learning Level:

Skills
Knowledge
Awareness

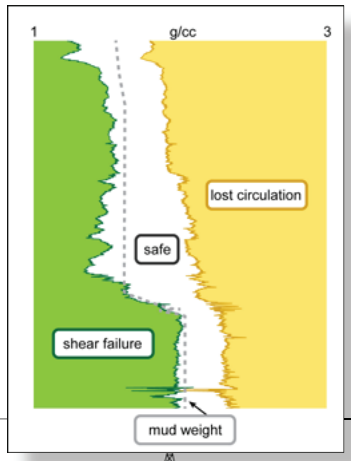
HPHT Drilling is a course designed to build confidence in planning and drilling wells in HPHT fields through case study work and discussions.

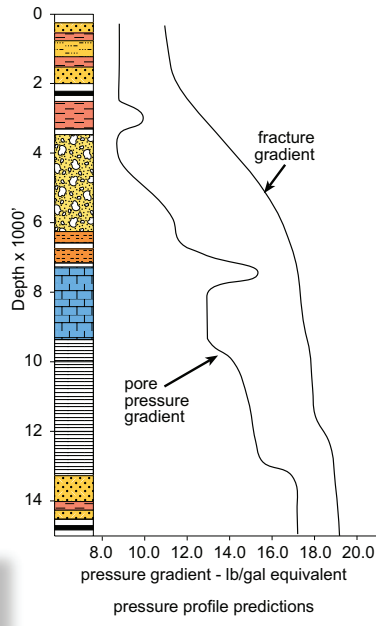
This course introduces students to the HPHT well complexities and will teach them how to identify the specific areas where detailed design work is required to properly plan and drill an HPHT well.

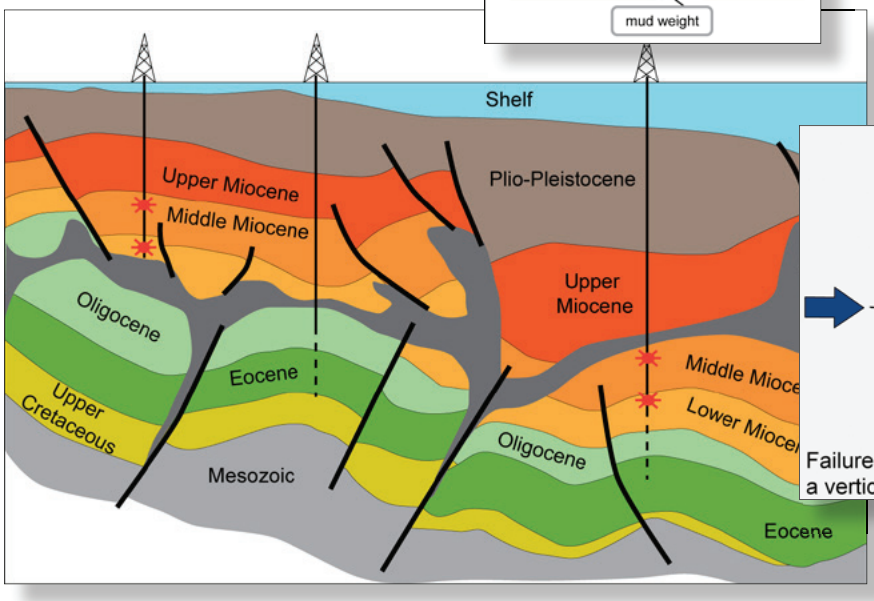
The course will step through the stages of well planning but focuses on the specific issues that are unique to HPHT drilling.

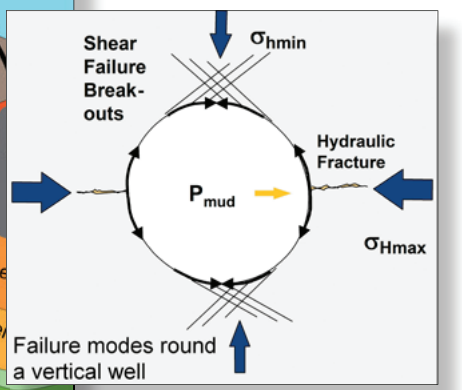
All the subjects are supported and reinforced by numerical examples.

The course contains a mixture of formal teaching, individual and group exercises, and case histories Informal discussions of local issues will be covered.



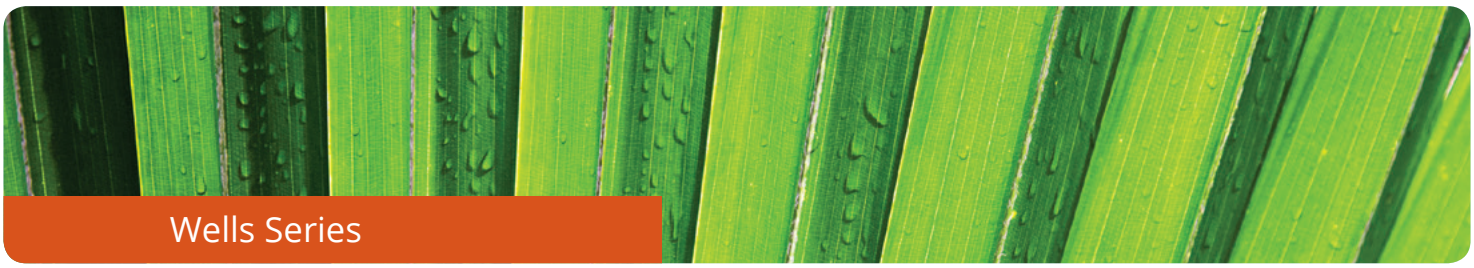






Early Development
E&P Overview
Reservoir
Wells
Business & Risk
Open Air
Coaching
Master Class

TRACS



Wells Series

High Pressure High Temperature (HPHT) Drilling continued

Course Content:

The course covers all aspects of HPHT well construction operations including:

Fluids

- Mud types and selection
- ECD issues
- Temperature effects
- Barite sag
- Compressibility
- Fluid stability
- Elastomer compatibility

Well control

- Pore pressure and fracture gradient windows
- Gas expansion
- Formation charging / ballooning
- Loss circulation
- Crew awareness and training
- Dissolved gases in mud
- HPHT well control procedures and equipment

Course Duration:

Duration is 4 days

Well design and drillstring design

- Design considerations
- Loads on casing and tubing
- Shoe placement
- Effect of doglegs (conductor verticality)
- Connection selection
- APD due to heat / thermal expansion
- Temperature deration
- Casing wear
- H_2S and CO_2 effects
- Torque and drag
- Design safety factors
- Failure of downhole tools
- Wellbore stability
- Running tubulars in tight gradients
- Critical cement placement
- Hole size selection to match ECD requirements
- Casing / liner pressure testing decisions
- Liners versus long strings

Rig selection

- Types of rigs and suitability
- Rig equipment rating
- Additional equipment required

Equipment

- Downhole equipment selection
- Solids control equipment
- Torque and vibration mitigation
- Logging tools

Well planning

- Risk assessment
- Decision trees
- Contingencies
- Relief well planning

Courses available from this series:

Drilling Awareness
Introduction to Drilling
Well Productivity Awareness School (WASP)
Completion Design
Completion Practices
Well Management
Tubing Stress Analysis
Artificial Lift
HPHT Drilling
Integrated Well Planning & Drilling Operations
Operations Geology
Maximising Well Productivity in a Low Oil Price World
Stuck Pipe Prevention
Well Integrity Management

Course Tutor

Mark Peacock

Main Series tutoring: Wells
Industry experience: 25 years, well engineering - land, platform, jack up, subsea, 3 years, business improvement - certified Lean/Six Sigma blackbelt
Career background: Shell and AGR
Personal: Well engineering manager, SPE guest lecturer, well team leader

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