TETRA TECH RPS ENERGY | TRAINING

N411: Mechanical Stratigraphy, Stress and Geomechanics

Instructor(s): Kevin Smart and Adam Cawood

Format and Duration

Classroom - 3 Days
Virtual - 5 Sessions

Summary

This course will apprise course participants of key concepts in mechanical stratigraphy, stress, and geomechanics. Participants will develop the skill sets necessary for planning and evaluating a stress analysis and geomechanics study.

Business Impact: We will explore the importance and application of stress and geomechanical analyses to energy exploration and production in both conventional and unconventional reservoirs, with emphasis on the importance of mechanical stratigraphy and stress states on processes such as natural deformation and hydraulic fracturing.

Learning Outcomes

Participants will learn to:

1. Characterize mechanical stratigraphy based on lithostratigraphy and other information.
2. Assess the role of mechanical stratigraphy and stress conditions on rock deformation behavior including fracture prediction in unconventional and conventional reservoirs.
3. Assess the difference between shear and extension fractures and their different effects on permeability anisotropy.
4. Evaluate the basics of stress analysis and geomechanics, including the interrelationship between stress and strain in the context of geomechanical rock behavior. Estimate an *in situ* stress field for an area of interest.
5. Evaluate geomechanical issues for common petroleum and unconventional resource applications such as well design, borehole stability, and hydraulic fracturing.
6. Plan and evaluate a geomechanics study.

Training Method

This is a classroom or virtual classroom course comprising a mixture of lectures, discussion, and computer-based exercises.

Who Should Attend

The course is intended for exploration, development and production geoscientists and reservoir and production engineers whose focus is on unconventional resources and/or conventional fractured reservoirs.

Course Content

Session 1: Mechanical Stratigraphy

- Lecture

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- Interactive Exercises

Session 2: Stress Analysis

- Lecture
- Exercises (outside of session)

Session 3: Stress Analysis

- Interactive Discussion Exercises

Session 4: Geomechanics

- Lecture
- Exercises (outside of session)

Session 5: Geomechanics

- Interactive Discussion Exercises