TETRA TECH RPS ENERGY | TRAINING

N493: Salt Tectonics of the Gulf of Mexico

Instructor(s): Mark Rowan

Format and Duration
Classroom - 3 Days

Summary

This class discusses the origin and distribution of salt and provides intense instruction on the essential elements of salt mechanics, diapirism, structural styles of salt deformation and salt-sediment interaction. It comprises lectures and exercises from basins around the world but emphasizes those aspects of salt tectonics most relevant to the Gulf of Mexico Basin.

Business Impact: Subsurface professionals attending this class will help thier companies to **identify**, **evaluate** and **risk salt-related prospects**; **build more accurate velocity models** in areas of tough seismic imaging; and **assess the results of appraisal wells and plan development scenarios**.

Learning Outcomes

Participants will learn to:

1. Summarize the nature of layered-evaporite basins and their tectonic settings.
2. Describe how salt differs from other lithologies and the variable deformation of halite and non-halite layers.
3. Characterize the ways in which differential loading, extension and contraction trigger salt flow and diapir growth.
4. Evaluate the geometries that result from extension or shortening of pre-existing diapirs and minibasins.
5. Interpret typical salt and stratal geometries associated with salt evacuation and diapirism.
6. Predict how drape folding around passive diapirs impacts stratal geometries, faulting, and reservoir distribution in diapir-flank traps.
7. Explain how salt sheets/canopies are formed and evolve, and what the implications are for drilling through shallow salt.
8. Interpret salt structures on seismic data, while avoiding the pitfalls associated with complex salt bodies.
9. Assess the effect of salt on various aspects of the petroleum system, including reservoir presence and quality, hydrocarbon maturation and migration, and weld seal.

Training Method

This is a classroom course emphasizing the geometry and evolution of salt structures and their impact on petroleum systems. It consists of lectures, discussions, and exercises.

Who Should Attend

Exploration and development geologists and geophysicists working the Gulf of Mexico Basin and other similar salt basins throughout the world.

Course Content

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1. Salt Basins

- Layered Evaporite Sequences
- Tectonic Settings of Evaporite Basins

2. Fundamentals of Salt Tectonics

- Mechanics
- Gravitational Failure
- Definitions
- Drives

3. Extensional SaltTectonics

- Thin-skinned Extension
- Diapir initiation and reactivation

4. Contractional Salt Tectonics

- Thin-skinned Contraction
- Diapir initiation and reactivation

5. Strike-slip Salt Tectonics

6. Vertical Salt Tectonics

- Vertical Subsidence and Diapirism
- Near-diapir Deformation
- Salt Dissolution

7. Allochthonous Salt Tectonics

- Emplacement
- Salt-sheet Styles

8. Salt and Petroleum Systems

- Trap
- Reservoir Distribution and facies
- Hydrocarbon
  Maturation and Migration
- Seal

9. Interpretation Guidelines

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