

Low Salinity Waterflooding

Basic Course for Engineers and Managers

This course is an introduction to the fundamentals of Low Salinity/Smart waterflooding in sandstone and carbonate reservoirs. Participants will learn the development of low salinity methods, the complexity to isolate the underlying mechanism, and the current approach to model and evaluate field implementation of improved oil recovery by low salinity waterflooding. An understanding of important aspects of low salinity application will be obtained.

Target Audience

Staff/engineers/managers with interest in low salinity waterflooding.

Skills Learned in Course

Participants in the course will learn to:

- Evaluate benefits and limitations of low salinity waterflooding relative to other EOR processes
- Select laboratory tests for low salinity waterflooding
- Discuss the preparation of the cores for coreflood tests and example lab results
- Screen a field for application of waterflooding and present published field results
- Insight to low salinity mechanisms
- Set expectations of performance of low salinity floods in laboratory, pilot and field scales
- Status of simulation and modeling of the low salinity waterflood

Course Description

Low salinity has received increasing attention as an EOR recovery technique that is potentially low cost and efficient in producing incremental oil. Familiarity with the topic is important when evaluating assets for low salinity implementation potential. The current status and implementation of low salinity waterflooding technology is discussed. Cost analysis will help participants make decisions for the value of the technology to an asset.

Course Content

- Overviews of Waterflooding
 - Wettability
 - Effect of brine composition at high salinity
 - The low salinity effect
 - Mechanism of increased waterflood recovery
 - Electrostatics and wettability
 - Recovery from sandstones and carbonates
- Laboratory and economic screening
 - Permeability reduction
 - Potential for incremental recovery
 - Source of low salinity water
 - Economics of low salinity waterflooding
- Field design and facilities
- Current low salinity models
- Field case review