AVASTHI CONSULTING

PRACTICAL ENGINEERING ASPECTS OF THERMAL EOR

Workshop Description

It is well known that primary and secondary production schemes in heavy oil fields (< 20° API) generally result in recoverable reserves of 15% or less. Addition of new discoveries has been declining steadily in the last decades, and the increase of recovery factors from mature oilfields in known basins will be critical to meet growing energy demand.

Heavy oil fields, since they have low recovery by conventional means, provide significant scope for increasing ultimate recovery using thermal means.

This workshop will provide participants the opportunity to review and learn the most up-to-date information available about thermal enhanced oil recovery (EOR) technologies and strategies practiced today, as well as thermal pilot testing.

Duration and Scope

This high-level workshop is of five (5) days duration and involves a discussion of the state-of-the-art of revitalizing heavy oilfields using thermal enhanced oil recovery (EOR) technologies and strategies. Several hours are devoted to discussion of thermal pilot testing and there are several class problems for the workshop attendees to work on. A combination of technical discussions plus class room exercises will prepare the attendees to identify opportunities based on previous field experiences, lessons learned, and best practices that have been gathered purposely for this workshop.

WORKSHOP CONTENT

History of Thermal Recovery and Present Status
Heavy Oil and Non-thermal Options
Thermal Effects on Rock and Fluid Properties
Productivity of Heavy Oil
Mass and Energy Balance
Types of Thermal Projects
Screening for Thermal Potential
Reservoir Engineering Design of Thermal Projects
- Displacement Model
- Steam Drive Correlation and Prediction

Reservoir Simulation of Thermal Projects – Steam Soak and Drive
Type of Combustion Projects
- Forward, Reverse and Cyclic
- Toe-to-Heel Air Injection (THAI)
- High Pressure Air Injection (HPAI)
- Dry and Wet

Oxygen-fuel interactions, Low and High Pressure Air Injection
Fuel Deposition and Air Requirements
Kinetics
In-Situ Combustion Projects Design and Reservoir Simulation
Reservoir Engineering Surveillance of Thermal Projects
Early Warning of Approaching Burn Front
Drilling of Thermal Wells
Production and Facilities Engineering in Thermal Projects
Health, Safety and Environment (HSE) in Thermal Projects
Thermal Recovery Case Histories
Future Opportunities

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Upon finishing this workshop, the attendees should be able to:

(1) Understand the basics of thermal floods
(2) Understand how to use established design techniques to estimate the recovery from thermal applications
(3) Use established methods for surveillance of thermal operations
(4) Be able to:
    a. Screen reservoirs for their stability for thermal recovery
    b. Identify the requirements of a program to select a thermal flooding system
    c. Apply thermal flooding to screened reservoir
    d. Calculate heat balances
    e. Estimate heat losses under varying reservoir and injection conditions

This workshop also incorporates various thermal recovery case histories from literature and class problems to help the attendees to better understand the discussed issues.

Who Should Attend

This five (5) days workshop is custom-designed for senior managers, managers, senior engineers, and other professionals, familiar with reservoir and production engineering, and interested in mastering thermal enhanced oil recovery (EOR) technologies and strategies, and thermal pilot-testing.

Workshop Requirements

Each workshop attendee should bring their own notebook computer to work on the class problems. Class rooms should be equipped with power strips for attendees to plug in their notebook computers and a projector for instructors to project their PowerPoint slides.

Workshop Manual

Each workshop attendee will be provided a workshop manual (in English) containing copies of the instructors' presentation slides and solutions to the class problem.

Workshop Instructors

This custom designed workshop will be conducted by our high-level and seasoned thermal EOR consultants with extensive knowledge and experience in the subject matter as well as in conducting training programs around the world.

Language of Instructions

This workshop will be conducted in English. However, if desired by the client, one of our bi-lingual consultants can be present throughout the workshop for the benefit of those attendees who are not fluent in English.