

ARMA-AAPG-SEDHEAT WORKSHOP
SUCCESSFUL ENGINEERING OF SEDIMENTARY GEOTHERMAL SYSTEMS
Friday June 24th and Saturday June 25th, 2016
50th Rock Mechanics/Geomechanics Symposium
Westin Galleria, Houston, Texas
<http://armasyposium.org/workshops>

Conveners: Derek Elsworth, John Holbrook, Charles Fairhurst, Sid Green

Objective: The sedimentary geothermal resource in the United States is of the order of 100,000 EJ with the potential to contribute significantly to reduce the current carbon-focused consumption of energy in the US of ~100 EJ/year. This workshop is the third in a series to examine key issues impacting the successful development of sedimentary geothermal resources (NSF, 2011), challenges in detecting, defining and controlling flow pathways (Penrose, 2013); and now the focus is on engineering challenges.

This workshop will explore the impediments to making sedimentary geothermal reservoirs a commercial reality and in particular will examine the potential to leverage new practices and techniques evolving from subsurface engineering in low permeability and environmentally challenging environments – such as shale oil and gas and for current geothermal energy.

FRIDAY AM

Introduction and Setting-the-Stage

Welcome, Overview and Goals of the Meeting – The Conveners
The SedHeat Initiative – John Holbrook (TCU)
Newberry EGS Demonstration; Results and Future Plans – Mike Swyer (AltaRock)

Reservoir Engineering at Large Scale [1]

Cornell Geothermal District Heating Trade-offs: Hot Sedimentary Aquifers or Basement EGS? – Terry Jordan (Cornell)
CO₂ Plume Geothermal – Jimmy Randolph (UMN)
N₂ Plume Geothermal – Jeff Bielicki (OSU)

FRIDAY PM

Reservoir Engineering at Large Scale [2]

Influence of Heterogeneity on EGS performance – Tom Doe (Golder)
Reservoir Geomechanics for SedHeat – Peter Connolly (Chevron)
The Radiator-Enhanced Geothermal System: Benefits of Emulating a Natural Hydrothermal System – Markus Hilpert (JHU)

Geopressured Resources/Co-Produced Reservoirs

The UND-DOE Low Temperature Geothermal Power Plant – Will Gosnold UND
A Sedimentary Enhanced Geothermal Reservoir: Lyons Sandstone Formation, Wattenberg Field, Colorado – Luis Zerpa (CSM)
50 years of CO₂ EOR experience benefits CO₂ storage – Larry Lake (UT)

SATURDAY AM

Drilling

Drain Holes and Mud Motors for Geothermal Applications – Bill Maurer (Maurer Engineering)
Drilling Challenges in Geothermal Reservoirs – Doug Blankenship (Sandia)
Directional Drilling: Historical Developments, Current Technology, Future Challenges – Emmanuel Detournay (UMN)

Completions

Flow in narrow channels – Mitch Plummer (INL)
Modeling Hydraulic Fracturing – Pengcheng Fu (LLNL)
New Hydraulic-Natural Fracture Interaction Mechanisms Unique to 3D Hydraulic Fracturing – Ernie Brown
ARMA Fracturing Workshop Summary - John McLennan (UU)

SATURDAY PM

Geophysical Characterization of Completions

Fracture Network Engineering: Optimizing Geothermal Production using Geomechanical Sensitivity Analyses – Will Pettitt (Itasca)
Microseismic Geomechanical Interpretation of Hydraulic Fracture Stimulation of Unconventional Reservoirs – Shawn Maxwell (IMaGE)
Coupling Downhole High Flowrate Hydromechanical Tests with Active Seismic Monitoring to Characterize Stimulated Deep Sedimentary Fractured Systems – Yves Guglielmi (LBNL/Marseilles)

Induced Seismicity

Induced Seismicity: Fluid Migration and Earthquake Nucleation in Oklahoma - Katie Keranen (Cornell)
Monitoring of the Process of Rock Fracturing Induced by Fluid Injection in the Laboratory – Sergey Stanchits (SLB)
Simulation and forecasting of induced seismicity and its collective properties – David Dempsey (Auckland)

Consensus, Challenges and Needs – The Conveners

Closure and Adjournment