UREP Phase 1 Summary

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Background

UREP (Unconventional Reservoir Engineering Project)

HISTORY: Formed as a consortium in October 2012.

FOCUS: Unconventional aspects of unconventional reservoirs

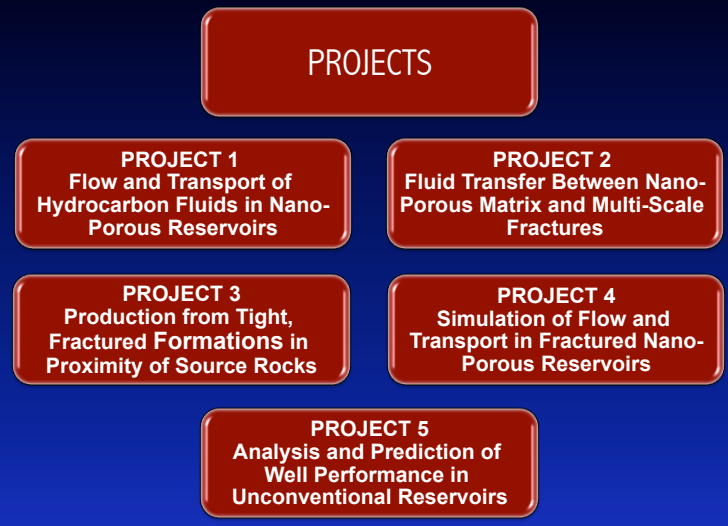
OBJECTIVE: Contribute to the long-term, sustainable production from unconventional reservoirs including but not limited to nanoporous resource plays such as shale-gas, tight-oil, liquids-rich formations, and tight carbonates.

CURRENT STATUS: Phase 1 of UREP (2 Years) was completed on Sept. 30, 2014.

MEMBERSHIP: 12 members

BUDGET: $1M for two years

Projects



Status

PROJECT 1
Flow and Transport of Hydrocarbon Fluids in Nano-Porous Reservoirs

Deliverables

· Bubble-point suppression due to pore proximity
Phase 1 tasks completed; continuing into Phase 2
· Condensation-point enhancement due to pore proximity
Continuing into Phase 2
· Phase behavior results from nanofluidics experiments
Phase 1 tasks completed; continuing into Phase 2
· Filtration through nanopore throats
Phase 1 tasks completed; continuing into Phase 2
Anomalous-diffusion models in tight, fractured, unconventional reservoirs
Phase 1 tasks completed; continuing into Phase 2

Status

PROJECT 2
Fluid Transfer Between Nano-Porous Matrix and Multi-Scale Fractures

Deliverables

· New models of fluid transfer from matrix to fractures
Partially completed; continuing into Phase 2
· Dual-porosity vs. anomalous diffusion models
Partially completed; continuing into Phase 2

Status

PROJECT 3
Production from Tight, Fractured Formations in Proximity of Source Rocks

Deliverables

· Layered reservoir model
To be started in Phase 2
· Drainage area and well spacing considerations
To be started in Phase 2
· Characterization and flow modeling guidelines
To be started in Phase 2

Status

PROJECT 4
Simulation of Flow and Transport in Fractured Nano-Porous Reservoirs

Deliverables

- Black-oil simulator incorporating bubble-point suppression & dew-point enhancement
  Phase 1 tasks completed; continuing into Phase 2
- N-porosity simulation model
  Phase 1 tasks completed; continuing into Phase 2
- DSMC and LB approaches for pore-scale modeling
  Started in Phase 1; to be pursued in Phase 2
- Numerical modeling of anomalous diffusion in unconventional reservoirs
  Started in Phase 1; to be pursued in Phase 2

Status

PROJECT 5
Analysis and Prediction of Well Performance in Unconventional Reservoirs

Deliverables

- Superposition-time analysis of tight-gas production under variable viscosity-compressibility conditions
  Phase 1 tasks completed; continuing into Phase 2
- Well-interference model in fractured unconventional reservoirs
  Phase 1 tasks completed; continuing into Phase 2
- Isochronal testing of wells in unconventional reservoirs
  Phase 1 tasks completed; continuing into Phase 2