



UNCONVENTIONAL RESERVOIR ENGINEERING PROJECT
COLORADO SCHOOL OF MINES



Advisory Board Meeting May 2, 2014 Agenda, Introductions, & Status Report

Erdal Ozkan, CSM



UNCONVENTIONAL RESERVOIR ENGINEERING PROJECT

Agenda

09:00 am – 09:30 am Greetings, Status Report, & Overview – *E. Ozkan*
09:30 pm – 10:00 am Research Perspective – *D. Benson*
10:00 am – 10:30 am Nanofluidics Experiments – *X. Yin & K. Neeves*
10:30 am – 10:45 am Coffee Break
10:45 am – 11:15 am Nanofluidics Lab Tour – *E. Parsa, L. Wang, X. Yin*
11:15 am – 11:45 am Report 1 – *L. Wang, E. Parsa, Y. Gao, K. Neeves, X. Yin, E. Ozkan*
11:45 am – 12:15 pm Report 2 – *F. Geren, T. Frincioglu, C. Ozgen, C. Karacaer, E. Ozkan*
12:15 pm – 12:30 pm COZSim Update – *C. Ozgen & T. Firincioglu*
12:30 pm – 01:30 pm Lunch Break *Marquez Hall Atrium*
01:30 pm – 02:00 pm Research Perspective – *J. Busby*
02:00 pm – 02:15 pm Report 3 – *J.C. Carratu, S. Ozkan, & E. Ozkan*
02:15 pm – 02:45 pm Report 4 – *J. Greenwood & E. Ozkan*
02:45 pm – 03:00 pm Coffee Break
03:00 pm – 03:30 pm Report 5 – *O. Ozcan, H. Sarak, R. Raghavan, & E. Ozkan*
03:30 pm – 03:45 pm Report 6 – *E. Ozkan & R. Raghavan*
03:45 pm – 04:30 pm Advisory Board Discussions – *Group Discussion*
04: 30 pm End of Meeting



UNCONVENTIONAL RESERVOIR ENGINEERING PROJECT

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Introductions

UREP MEMBERS

Baker Hughes
BHP Billiton
Cimarex Energy
Conoco Phillips
EOG Resources
Hess Corporation
Kappa Engineering
Noble Energy
Petrobras
Saudi Aramco
Shell
Total

GUESTS

J. Busby (Craft Tech)
D. Benson (CSM)
C. Weitzel (Anadarko)
T. Blasingame (Texas A&M)
M. Alkobaisi (Abu Dhabi PI)
P. Martin (CSM)
PE Faculty (CSM)



Introductions

UREP RESEARCH TEAM

RESEARCH AFFILIATES:

R. Raghavan
C. Ozgen, T. Firincioglu, B. Savage, C. Karacaer (Nitec)

CSM TEAM

FACULTY: E. Ozkan, X. Yin, K. Neeves

RESEARCH ASSOCIATE: H Sarak

RESEARCH ASSISTANTS:

PhD: I. Eker, E. Parsa, A. Albinali, W. Assiri, R. Holy,
J.C. Carratu, G. Gul, L. Wang

MS: J. Greenwood, O. Ozcan, F. Geren, C. Komurcu,
C. Yesiltepe, A. Marsahala Lumban Gaol, T. Calisgan

RESEARCH SUPPOT: Emilia Clayton



Status

PROJECTS

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

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

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

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

PROJECT 5
Analysis and Prediction of
Well Performance in
Unconventional Reservoirs



Status

PROJECT 1

Flow and Transport of Hydrocarbon Fluids in Nano-Porous Reservoirs

1. O. Ozcan (MS): Anomalous diffusion model for fractured horizontal wells in unconventional reservoirs (H. Sarak, R. Raghavan, E. Ozkan)
Close to completion (Oct. 2014)
2. F. Geren (MS): Osmosis and coupled flows in nanoporous media (T. Firincioglu, C. Ozgen, C. Karacaer, E. Ozkan)
Close to completion (Oct. 2014)
3. T. Firincioglu & E. Parsa (PhD): Phase behavior in pore confinement (C. Ozgen, X. Yin, E. Ozkan, K. Neeves)
Part 1 completed, Part 2 started. (expected completion May 2015)
4. L. Wang (PhD): Experiments based modeling of the nanoconfinement effect on hydrocarbon phase behavior in nanopores (X. Yin, K. Neeves)
Expected completion Nov. 2014



Status

PROJECT 2

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

1. A. Albinali (PhD): Flow models for fractured nanoporous reservoirs (R. Raghavan, E. Ozkan)

Modeling work starting (expected completion Oct. 2015)

2. J. Greenwood (MS): Analytical Model of Fractured Horizontal Wells in Composite Reservoirs (E. Ozkan)

Close to completion (expected completion Oct. 2014)



Status

PROJECT 3

Production from Tight, Fractured Formations in Proximity of Source Rocks

1. I. Eker (PhD): Layered reservoir models for tight-oil reservoirs (H. Sarak, E. Ozkan)

Modeling work will start in Fall 2014 (expected completion Oct. 2015)



Status

PROJECT 4

Simulation of Flow and Transport in Fractured Nano-Porous Reservoirs

1. C. Ozgen, T. Firincioglu (Nitec): COZSim UREP Version (E. Parsa, E. Ozkan, X. Yin)

Bubble-point suppression and n-porosity incorporated, osmotic pressure and condensation-pressure suppression in progress (open ended)

2. R. Holy (PhD): Numerical simulation of anomalous diffusion in fractured unconventional media (E. Ozkan, R. Raghavan)

New research to start in Summer 2014 (expected completion Dec 2015)



Status

PROJECT 5

Analysis and Prediction of Well Performance in Unconventional Reservoirs

1. C. Komurcu (MS): Effect of variable viscosity-compressibility product on production data analysis (L. Thompson, E. Ozkan)

Close to completion (expected completion Oct. 2014)

2. C. Yesiltepe (MS): Transient drainage area and isochronal testing of unconventional reservoirs (E. Ozkan)

New research started in Spring 2014 (expected completion May 2015)

3. W. Assiri (PhD): Production data analysis for unconventional reservoirs (E. Ozkan)

New research to start in Summer 2014 (expected completion Dec. 2015)

4. A. Marsahala Lumban Gaol (MS): Well interference effects in unconventional reservoirs (E. Ozkan)

New research to start in Summer 2014 (expected completion Oct. 2015)



Budget

Budget: \$735,000

Expenditures: \$537,720

Student: \$99,000

Faculty + Post-Doc: \$43,550

Contract: \$313,000

Travel: \$3,600

Miscellaneous: \$23,200

Indirect Cost*: \$55,370

Balance: \$197,280

Projections: &197,000

Student: \$75,000

Faculty + Post-Doc: \$55,000

Contract: \$40,000

Miscellaneous: \$10,000

Travel: \$4,000

Indirect Cost*: \$13,000

**Indirect Cost Rate: 51.49%*

