

International Coalbed and Shale Gas Symposium 2005

Tuscaloosa, Alabama, USA
17 - 19 May 2005

ISBN: 978-1-5108-6369-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (xxxx) by University of Alabama
All rights reserved.

Printed by Curran Associates, Inc. (xxxx)

For permission requests, please contact University of Alabama
at the address below.

University of Alabama
Box 870388
Tuscaloosa, Alabama 35487-0388
USA

Phone: (205) 348-6222
Fax: (205) 348-3029

dkeene@ccs.ua.edu

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com



May 17-19, 2005
Bryant Conference Center
The University of Alabama
Tuscaloosa, Alabama, USA

TABLE OF CONTENTS

WELCOME

KEY PAPER

Improvements in Coalbed Methane and Enhanced Coalbed Methane Reservoir Simulators
W.D. (Bill) Gunter, and David H.-S. Law, Alberta Research Council (ARC) Inc., Edmonton, Alberta, Canada; and Matt Mavor, Tesseract Corporation, Park City, Utah, USA1

GENERAL TECHNICAL SESSIONS

- **SEQUESTRATION**

0504

Carbon Sequestration in Coal Seams: Defining the Nature of the Interactions Between CO₂ and Coal

A.L. Goodman and K.T. Schroeder, U.S. Department of Energy, National Energy Technology Laboratory; L.M. Campus, ORISE, Chemical Engineering, Carnegie Mellon University, Pittsburgh, and M.M. Hill, ORISE, Environmental Science, Indiana University22

0509

The Representation of Multi-component Adsorption in Reservoir Simulation of CO₂ Sequestration in Coal and Enhanced Coalbed Methane Recovery

Z. Pan and L.D. Connell, CSIRO Petroleum, Australia31

0510

Development of a Neuro-simulation Tool for Coalbed Methane Recovery and CO₂ Sequestration

F.B. Gorucu, National Energy Technology Laboratory, U.S. Department of Energy and Pennsylvania State University; T. Ertekin, Pennsylvania State University; G.S. Bromhal and D.H. Smith, National

Energy Technology Laboratory, U.S. Department of Energy; W.N. Sams, National Energy Technology Laboratory, EG&G; and S. Jikich, National Energy Technology Laboratory, Parsons45

0512

Experimental Study on Gas Displacement in Enhanced Coalbed Methane Recovery

K. Adachi, S. Shimada and H. Li, Institute of Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo; and Y. Oshima, Environmental Science Center, The University of Tokyo58

0518

Characteristics Tests of Coal of CO₂ Injection Test Field in Japan

K. Ohga, Hokkaido University, and M. Fujioka, Japan Coal Research Center70

0522

The Allison CO₂-ECBM Pilot, A Reservoir and Economic Analysis

S. Reeves and A. Oudinot, Advanced Resources International, Inc.75

0523

The Tiffany N₂-ECBM Pilot - A Reservoir and Economic Analysis

S. Reeves and A. Oudinot, Advanced Resources International, Inc.91

0525

CO₂ Leakage Risk Evaluation Using Enhanced Coalbed Methane Recovery Simulator

S. Shimada and Y. Funahashi, Institute of Environmental Studies, Graduate School of Frontier Sciences, The University of Tokyo102

0528

Development of a Probabilistic Forecasting and History Matching Model for Coalbed Methane Reservoirs

A. Oudinot, S. Reeves, and G. Koperna, Advanced Resources International, Inc.112

0531

The Development of Analytical Model for Hydraulic Treatment of Coalbed and Determination of Its Main Hydrodynamic Parameters

L.A. Puchcov, S.V. Slastunov, G.G. Karkashadze, and K.S. Kolilov, Moscow State Mining University124

0532

Sorption-Induced Coal Strain Measurement

E.P. Robertson, Idaho National Laboratory and R. Christiansen, Colorado School of Mines133

• **RESERVOIRS**

0515

Looking for Permeability Loss or Gain During Coalbed Methane Production

I.D. Palmer, Higgs Technologies; J.R. Cameron and Z.A. Moschovidis, PCM Technical, Inc.148

0502

Modelling the Movement of Coalbed Gas for Different Coal Permeability

A Godbole, School of Mechanical, Materials and Mechatronics; F. Sereshki, N.I. Aziz, and I. Porter, School of Civil, Mining and Environmental Engineering, University of Wollongong167

0521

Productivity of Fractured and Non-fractured Horizontal Wells in Coalbed Methane Reservoirs

H. Jahediesfanjani and F. Civan, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma181

0513

Coal Mine Methane Reservoir Testing and Production Methodologies

P.M. Sööt, D.R. Jesse, M.E. Smith, and A.M. Sööt, Northwest Fuel Development, Inc.197

0514

Gas Flow Characterization of Illinois Coal: Assessment for Recovery of Coalbed Methane and Carbon Sequestration Potential

A. Zutshi and S. Harpalani, Department of Mining and Mineral Resources Engineering, Southern Illinois University211

- **GEOLOGY/RESOURCE ASSESSMENT**

0501

Effect of Coal Properties on Gas Drainage

A. Hutton, School of Earth & Environmental Sciences; D. Bruggemann, N.I. Aziz, and F. Sereshki, School of Civil, Mining and Environmental Engineering, University of Wollongong221

0506

Geologic Assessment of the Natural Gas Resources in Powder River Basin Fort Union Formation Coal Seams

C.R. Nelson, Energy & Environmental Research Center, University of North DakotaN/A

0511

Studies for Coalbed Methane Evaluation in Northern Spain

F. Pendás, J. Loredó, J.J. Fernández and P. Cienfuegos, E.T.S. Ingenieros de Minas, University of Oviedo, Spain235

0519

Coalbed Methane Exploration in Thrust Belts: Experience from the Southern Appalachians, USA

J.C. Pashin, Geological Survey of Alabama246

0526

Coalbed Gas Potential in Pennsylvanian Coalbeds of Indiana

W. Solano-Acosta, M. Mastalerz, J.A. Rupp, Indiana Geological Survey, Indiana University; D. Strapoc and A. Schimmelmann, Department of Geological Sciences, Indiana University260

0530

Same Day Downhole Gas Content Analysis with Raman Spectroscopy

Robert Lamarre, WellDog, Inc.272

- **DIVERSITY**

0503

Key Issues in China Coalbed Methane Exploration & Development and Corresponding Settlements

L. Honglin, W. Hongyan, W. Yibing, L. Hongjian, and L. Yanxiang, Natural Gas Institute, Research Institute of Petroleum Exploration & Development, PetroChina Company Limited, Langfang, China273

0533

The Effect of Moisture on the Carbon Dioxide Storage Capacity of Ft. Union Coals

C. Hartman, M.R. Winkler, and T.J. Pratt, TICORA Geosciences, Inc.280

0505

Numerical Analysis of the Impact of Longwall Panel Width on Methane Emissions and Performance of Gob Gas Ventholes

C.O. Karacan, W.P. Diamond, E. Esterhuizen and S. Schatzel, NIOSH, Pittsburgh Research Laboratory289

0520

Rapid Determination of Equilibrium Gas Isotherms in Wet Coalbeds from Non-equilibrium State Measurements

H. Jahediesfanjani and F. Civan, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma317

0527

Measurement and Prediction of Single- and Multi-Component Methane, Carbon Dioxide and Nitrogen Isotherms for U.S. Coals

S. Reeves, Advanced Resources International, Inc., and K. Gasem, Oklahoma State University332

0529

Significance of Hydraulic Fracturing in Meeting U.S. Natural Gas Supply Requirements

C.M. Boyer, II, J.R. Williamson, Data and Consulting Services, a Division of Schlumberger Technology Corporation; and J.R. Duda, U.S. Department of Energy, National Energy Technology Laboratory347

• **COMPLETIONS**

0507

Implementing Sand Propped Hydraulic Fracture Stimulation for In-seam Drainage Holes: A Demonstration of an Enhanced Drainage Technology

R. Jeffrey, CSIRO Petroleum; C. Boucher, Dartbrook Coal; and K. Mills, SCT Operations Pty., Ltd.361

0508

History Matching for Optimization of Gas Drainage from Horizontal Wells Containing Sand Propped Hydraulic Fractures

L.D. Connell and R.G. Jeffrey, CSIRO Petroleum, Australia370

0516

Assessment of the Effectiveness of Coalbed Methane Well Completions

J.R. Cameron and Z.A. Moschovidis, PCM Technical, Inc.; and I.D. Palmer, Higgs Technologies, LLC383

0517

Methodology and Examples of Wellbore Stability in Coalbed Methane Wells

Z.A. Moschovidis and J.R. Cameron, PCM Technical, Inc.; and I.D. Palmer, Higgs Technologies, LLC397

0524

Coalbed Methane Well Automation/Optimization

R.G. Ward, Oil & Gas, Control MicroSystems410