

Rocky Mountain Section AAPG

2008 Technical Program

Wednesday Morning Oral Sessions

Petroleum Systems Session in Honor of Fred Meissner

Co-Chairs: E. Coalson and S. Goolsby

- 8:00 *Introductory Remarks*
- 8:10 **S. Sonnenberg, A. Pramudito:** Meissner Keys to the Bakken Petroleum System, Williston Basin
- 8:30 **E. Coalson, H. DuChene:** Ismay-Hovenweep Petroleum System, Blanding Basin, Utah
- 8:50 **L. Rasmussen, D. Rasmussen:** Pennsylvanian Petroleum System of the Deep Paradox Basin Fold and Fault Belt, Colorado and Utah
- 9:10 *Break*
- 9:20 **P. Lillis, M. Lewan, D. Selby:** Application of Rhenium-Osmium Geochronology to Phosphoria Oils, Wyoming
- 9:40 **J. Forster:** The Mowry-Muddy Hydrocarbon System of the Powder River Basin – A Developing Resource Play
- 10:00 **I. Pasternack:** Lewis Shale Petroleum System, Eastern Greater Green River Basin, Wyoming and Colorado
- 10:20 **S. Goolsby, E. Coalson:** Basin-Centered Gas Accumulations – Fact or Fiction?

Successful Operations in Sensitive Areas

Co-Chairs: T. Beaubouef and M. FitzMaurice

- 8:00 *Introductory Remarks*
- 8:10 **T. Beaubouef:** LiDAR: A Multidisciplinary Dataset for Integrated Solutions in Onshore E & P
- 8:30 **M. Wagaman, M. FitzMaurice:** Seismic Operations in Sensitive Areas
- 8:50 **P. Dickinson:** Design Considerations for Successful Low Environmental Impact Natural Gas Compression Facilities in Sensitive Areas
- 9:10 *Break*
- 9:20 **J. Drewes, K. Benko*, T. Cath, D. Xu:** Development of Produced Water Management and Treatment Strategies
- 9:40 **R. Brown:** Monte Pallano Gas Field, Abruzzo Region, Italy Terrain Subsidence Monitoring Requirements
- 10:00 **S. Schamel:** Utah Bituminous Sandstone Deposits: The Good, the Bad and the Ugly

- 10:20 **B. Sumner:** Due Diligence in Sensitive Areas: How to Facilitate Project Authorization and Minimize Litigation Risks
- 10:40 **D. Zavadil:** A Case History of Exploration and Development of Natural Gas Resources in an Environmentally Sensitive Area - West Tavaputs Plateau, Utah

Redevelopment: New Technology in Old Fields

Co-Chairs: M. Hendricks and B. Watts

- 8:00 *Introductory Remarks*
- 8:10 **T. Anderson:** Technology in a Teapot: Overview of New Methods for Finding and Extracting Oil in an Old Stripper Field at Teapot Dome, Wyoming
- 8:30 **G. Carlson:** High Pressure Air Injection on the Cedar Creek Anticline
- 8:50 **R. Grundy, H. Harvey:** Use of 3D Seismic to Land Horizontal Wellbores in Thin Beds: Potash Solution Mining near Moab, Utah
- 9:10 *Break*
- 9:20 **R. Balch, A. Iduri:** Data Mining Well Completion Data for the Dakota Formation, San Juan Basin, New Mexico
- 9:40 **J. Arbogast:** Gee Whiz Geophysics...But What about the Log Data? Normalizing, Editing, and Supplementing Log, Core and Production Data from 1935 to the Present
- 10:00 **J. Deardorff, J. McCray, G. Young:** The Carbon Sequestration Potential of Oil and Gas fields in the Denver-Julesburg Basin of Colorado
- 10:20 **R. Broadhead:** Remaining Oil Resources of New Mexico: the Hubbert Curve Denied

Wednesday Afternoon Oral Sessions

The Bakken Play: Current Incarnation

Co-Chairs: D. Eby and J. LeFevre

- 1:15 *Introductory Remarks*
- 1:25 **D. Jarvie, M. Johnson:** Maturity and Organofacies Assessment of Bakken Shale: Implications for New Areas for Exploration and Production
- 1:45 **E. Roller, A. Pepper, G. Sulysto, D. Schmidt:** Integrated Burial and Thermal Reconstruction of the Bakken Shale in the Canadian and US Williston Basin
- 2:05 **A. Pramudito, S. Sonnenberg:** Reservoir Characterization of the Bakken Formation, Elm Coulee Field, Williston Basin, Montana
- 2:25 **L. Canter, O. Skinner, M. Sonnenfeld:** Facies and Mechanical Stratigraphy of the Middle Bakken, Mountrail County, North Dakota
- 2:45 *Break*

- 2:55 **M. Mullen, R. Meijs, M. Tunstall, B. Miller, J. Paneitz:** The Successful Application of a Compartmental Completion Technique used to Isolate Multiple Hydraulic Fracture Treatments in Horizontal Bakken Shale Wells in North Dakota

Business Value of 3D Seismic

Co-Chairs: R. R. Ray and R. Roux

- 1:15 *Introductory Remarks*
- 1:25 **V. Rigatti, J. Bates, M. Schutt:** Rockies 3D: Business Drivers and the Multiple Benefits of the Full 3D Seismic and Associated Data-Sets
- 1:45 **N. Lange, R. Pritchett:** The 3D Path to Successful Decisions in O&G Expenditures
- 2:05 **J. Huck:** The Stone Cabin 3D Leads the Deep Exploration and Development of the West Tavaputs Plateau
- 2:25 **S. Zinke, S. Shearer:** Using 3D Seismic to Forecast Development on the Pinedale Anticline, Wyoming
- 2:45 *Break*
- 2:55 **K. Parsons:** Risk Management and the Economic Redemption of Seismic Data in the Sacramento Basin, California S
- 3:15 **D. Scolman:** The Profitable Use of 3D Seismic in Hydrocarbon Discovery and Development
- 3:35 **R. Trevino, M. Bertness:** Non-Exclusive 3D Geophysical Data Projects in the Western US
- 3:55 **N. House:** Tradeoffs in 3D Seismic Acquisition between Shallow and Deep Objectives OR Value of 3D High Density (infill) Seismic Survey to Improve Economic Results of CBM Wells at Cow Creek Unit

Wednesday-Friday Poster Session

General Poster Session

Redevelopment: New Technology in Old Fields (*authors at posters Wed. 3:15-4:45 pm*)

- **J. Fausnaugh:** Combined Electromagnetic Induction and Magnetic Susceptibility Surveys for the Detection of Near Surface Geochemical Anomalies

The Bakken Play—Current Incarnation (*authors at posters Wed. 3:15-4:45 pm*)

- **R. Pollastro, L. Roberts, T. Cook, M. Lewan:** Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Bakken Formation, Williston basin, Montana and North Dakota, 2008

Global Climate Issues (*authors at posters Wed. 3:15-4:45 pm*)

- **B. Reynolds:** Climate Change through Geologic Time

- **National Center for Atmospheric Research:** Series of Posters and Video Features from NCAR, Boulder
- **P. Trost, F. Varani:** Capture and Beneficial use of Fugitive Production Tank Vapors
- **J. Deardorff, D. Nummedal, J. McCray, G. Young:** A Methodology for Assessing the Carbon Sequestration Potential of Deep Saline Aquifers beneath an Industrial CO₂ Source.

Petrophysics of Shales and Tight Gas Sands: Converting Resource to Reserves (*authors at posters Wed. 3:15-4:45 pm*)

- **A. Fisher:** Detecting Free Water above Jonah Pay using Pickett Plots and Core Analysis
- **Y. Zhang:** Integrated petrophysical study of the fractured tuff in Junggar Basin
- **Y. Zhang:** Experiment study of mud filtrate salinity effect on NMR T2 data in tight clay
- **J. Gegg:** Cased Hole Solutions: Predicting Open Hole Logs Using Artificial Neural Networks
- **W. Salas, P. Porto, M. Mullen, J. Melrose:** Analysis of Completion Design, Log Parameters, and Production Results to Gain a Better Understanding of Effective Production Enhancement Methods in the Piceance Basin.
- **T. Stroker, N. Harris:** K-Ar Dating of Authigenic Illites: Integrating Diagenetic History of the Mesa Verde Group, Piceance Basin, NW Colorado

Fractures and Microfractures—Impact on Resource Play Sweet Spots (*authors at posters Wed. 3:15-4:45 pm*)

- **P. Yin:** Fracture Diagenesis and its Effects on Reservoir Permeability in Tensleep Sandstones, Wyoming
- **L. Anna, T. Cook:** Assessment of the Mowry Shale and Niobrara Formation as Unconventional Hydrocarbon Systems, Powder River Basin, Montana and Wyoming
- **C. Knight, J. Miskimins:** Relationship of Faults, Fractures, and Critical Stress to Mesaverde Reservoir Performance, North La Barge Field, Sublette County, Wyoming
- **M. Mullen, M. Enderlin:** Is that Frac Job Really Breaking New Rock?

Shale Gas—From Geochemistry to Completions (*authors at posters Thursday: 11:00-11:30 am; 4:00-4:45pm*)

- **M. Laine, T. Chidsey, C. Morgan:** Potential Shale Gas Resources in Utah
- **R. Koepsell:** Comparison of Natural Fractures Based Upon Image Logs- Shale Gas Plays of the Western US
- **S. Brown, J Zumbirge, H. Illich, M. Dolan:** ArcGIS Integrated Petroleum System Evaluation of the Greater Green River Basin
- **C. Nelson:** Biogenic Gas Resource Potential of the Upper Cretaceous Pierre Shale in the Denver-Julesburg (DJ) Basin
- **P. Lillis, G. Ellis, M. Dempsey, S. Cumella:** Origin of Gas in the Mamm Creek Field, Piceance Basin, Colorado

- **M. Dolan, D. Majewski, K. Ferworn, S. Brown:** Maturity Determinations in the Vermillion Basin-Baxter Shale: Fluid Maturity Parameters help Interpret Charge and Migration.

Relevance of Sedimentology and Stratigraphy to Hydrocarbon Plays (*authors at posters Thursday: 11:00-11:30 am; 4:00-4:45pm*)

- **D. Eby, T. Chidsey, C. Morgan:** The Use of Epifluorescence Techniques to Determine Potential Oil-Prone Areas in the Mississippian Leadville Limestone, Northern Paradox Basin, Utah
- **D. Pyles, R. Slatt:** Integrating Outcrop and Subsurface data to Define Regional and Reservoir-Scale Patterns in the Lewis Shale and Fox Hills Sandstone of the Great Divide and Washakie Basins, Wyoming
- **J. Melick, M. Gardner:** Region-Based Basin Modeling: Correlating Depositional Environment to Connected Pore Volume, Powder River Basin (PRB), Wyoming and Montana
- **J. Ochoa, M. Gardner, J. Schmitt:** Multiple Origins of Thin-Bedded Deepwater Slope Sandstones: El Rosario Formation (Upper Cretaceous – Paleocene) Baja California, Mexico
- **M. Milliken, D. Foster:** New Facility Offers Public Access to Rocky Mountain Core and Data

Relevance of Structural Geology to Hydrocarbon Plays (*authors at posters Thursday: 11:00-11:30 am; 4:00-4:45pm*)

- **B. Hennessy, K. Giles:** Characterization of Syn-Depositional Faulting of a Composite Type B Halokinetic Sequence along the La Popa Salt Weld, La Popa Basin, Nuevo Leon, Mexico
- **J. Jackson, B. Trudgill:** Fracture Modeling and Fault Zone Characteristics Applied to Reservoir Characterization of the Rulison Gas Field, Garfield County, Colorado
- **S. Larson, E. Gustason:** Timing, Mechanisms and Modes of Cenozoic Fracturing and Deformation in the Southern Raton Basin, Northern New Mexico
- **S. Smaltz, E. Erslev:** Structural Controls on Detachment Folds Associated with Foreland Arches: Beaver Creek Anticline, Wyoming
- **D. Stone:** The Wyoming Transect: What, Where, How, and Why

Thursday Afternoon Oral Sessions

Perception vs. Reality: Resource vs. Reserves

Co-Chairs: J. Tilden, V. Kuuskra, K. Shanley

1:15 *Introductory Remarks*

1:25 **R. Nehring:** Growing and Indispensable: The Contributions of Rocky Mountain Unconventional Gas Resources and Production to U.S. Gas Reserves and Production

1:45 **S. Reeves:** Unconventional Gas Resources to Reserves – A Predictive Approach

- 2:05 **P. Stark:** Transforming Rockies Gas Resources to Supplies: Implications of Gas Production Performance Factors
- 2:25 **B. Richter, D. Simpson, S. Kleinstaber:** Measuring the Currently Unmeasured in a Resource Play: Model of Rulison Nuclear Re-entry Well Shows Higher Than Expected Gas-in-Place
- 2:45 *Break*
- 2:55 **L. O'Connor, J. Seidle:** Contingent Resources: Definitions and Real World Examples
- 3:15 **R. Barg:** Evaluating Reserves in Resource Plays: Strategies and Pitfalls

Petrophysics of Shales and Tight Gas Sands: Impact on Converting Resource to Reserves

Co-Chairs: R. Godfrey and R. Merkel

- 1:15 *Introductory Remarks*
- 1:25 **P. Devine:** Experimental Quantification of “Good Log Characteristics” for Mesaverde Reservoirs of the Piceance Basin, Colorado: Toward a Reconnaissance Method for Evaluating Movable Water in Tight, Shaly Sandstones
- 1:45 **R. Cluff, A. Byrnes:** Evidence for a Variable Archie Porosity Exponent “m” and Impact on Saturation Calculations for Mesaverde Tight Gas Sandstones; Piceance, Uinta, Green River, Wind River, and Powder River Basins
- 2:05 **J. Webb, R. Cluff, D. Krygowski, S. Whittaker, A. Byrnes:** Lithofacies and Petrophysical properties of Mesaverde Tight-Gas Sandstones in Western U.S. Basins
- 2:25 **C. Smith, J. Bray, S. Ramakrishna:** Utilization of Magnetic Resonance Bin Distribution to Determine Specific Permeability
- 2:45 *Break*
- 2:55 **A. Byrnes, D. Osborn, A. Knoderer, O. Metheny, T. Himmertzhim, J. Byrnes, R. Cluff, J. Webb:** Capillary Pressure Properties of Mesaverde Group Low-Permeability Sandstones in Six Basins, Western U.S
- 3:15 **D. Amendt:** Identifying Critically Stressed Fractures Using Borehole GeoMechanics: A Case Study in the Nikanassin
- 3:35 **D. Hoyer, R. Young:** Seismic Petrophysics in Tight Gas Sands – A Piceance Basin, Mesaverde Example
- 3:55 **W. Salas, C. Tamayo, E. Menendez, M. Mullen, J. Shepard, J. Kinser, F. LeGrand, D. Spencer:** Analysis of Production Logs and Calculated Reservoir Properties to Gain a Better Understanding of True Reservoir Quality in an Effort to Eliminate Non-Productive Zones and Enhance Completion Efficiencies in Future Field Development

Fractures & Microfractures: Impact on Resource Play Sweet-Spots

Co-Chairs: J. Lorenz and C. Zahm

- 1:15 *Introductory Remarks*
- 1:25 **K. Lewallen, G. Chen, X. Wu, P. Todd:** Seismic Characterization of Fractured Tight Gas Reservoirs, Piceance Basin, Colorado
- 1:45 **E. LaBarre:** Shear-Wave Splitting Analysis for Natural Fracture Zone Identification, Rulison Field, Piceance Basin, Colorado
- 2:05 **J. Lorenz:** Fracture Characteristics in Core from Tensleep Reservoirs across Wyoming
- 2:25 **D. Meloy:** A Lower Smackover Unconventional Resource Play in Louisiana
- 2:45 *Break*
- 2:55 **D. Keating, M. Fischer:** Fracture and Small Fault Networks in Basement-Involved, Fault-Related Folds above Oblique-Slip Faults: Insights from Physical Models
- 3:15 **J. Johnson, D. Dubois, S. Malone, N. Warpinski, C. Wright, L. Weijers:** An Overview of Hydraulic Fracture Mapping in the Jonah Field and its Implications for Field Development and Completions
- 3:35 **C. Zahm:** Fracture Development within Partially-Decoupled Basement-Involved Folds
- 3:55 **P. Hennings, J. McLennan, T. Allwardt:** Building Better Fracture Models by Combining Structural analysis and Bayesian Updating to Quantify the Relationship between Multiple Fracture Causing Agents

Friday Morning Oral Sessions

Shale Gas Plays: From Geochemistry to Completions

Co-Chairs: M. Brittenham and R. Newhart

- 8:00 *Introductory Remarks*
- 8:10 **J. Curtis, D. Hill:** Realities of Shale Gas Resources: Yesterday, Today and Tomorrow
- 8:30 **R. Hartman:** Recent Advances in the Analytical Methods Used for Shale Gas Reservoir Gas-In-Place Assessment
- 8:50 **M. Dolan, A. Grau, K. Ferworn, S. Brown:** Calibrating Stable Carbon Isotopes of Reservoir Fluids as a Thermal Maturity Indicator
- 9:10 *Break*
- 9:20 **M. Tobey, D. Schmude, R. Newhart:** Trace Gas in Archived Tight Shale Cores as a Tool for Maturation Assessment
- 9:40 **E. Gustason, M. Tobey:** Development Shale Gas Potential of Fine-Grained Cretaceous Source Rocks, Raton Basin, South-Central Colorado and Northeastern New Mexico
- 10:00 **S. Schamel:** Shale Gas Potential of the Paradox Basin, Colorado and Utah

- 10:20 **M. Mullen, M. Blauch, R. Rickman, B. Grieser, E. Petre:** A Practical Use of Shale Petrophysics for Stimulation Design Optimization
- 10:40 **R. Suarez-Rivera:** Effect of Layered Heterogeneity on Fracture Initiation and Containment in Tight Gas Shales

Relevance of Sedimentology and Stratigraphy to Hydrocarbon Plays

Chair: M. Sonnenfeld

- 8:00 *Introductory Remarks*
- 8:10 **L. Banfield, W. Hill, J. Vaitl:** The Wamsutter Tight Gas Reservoir – The Role of Stratigraphy and Sedimentology in a Tight Gas Field Study
- 8:30 **R. Cole, M. Pranter:** Stratigraphic Variability of Sandstone-Body Dimensions in the Williams Fork Formation: Outcrop Data from the Southwest Piceance Basin, Colorado
- 8:50 **N. Sommer, M. Pranter, R. Cole:** Sandstone-Body Connectivity in a Meandering-Fluvial System: an Example from the Williams Fork Formation, Piceance Basin, Colorado
- 9:10 *Break*
- 9:20 **D. Tabet, J. Quick, B. Hucka:** Distribution, Amount, and Maturity of Coal Resources in the Sego Coalfield, Grand County, Utah
- 9:40 **E. Gustason:** Sequence Stratigraphy and Reservoir Architecture of the Lower Cretaceous J Sandstone, Wattenberg Field, DJ Basin, Colorado
- 10:00 **M. Maslyn:** Late-Mississippian Paleokarst Features and Related Porosity Creation and Destruction in the Aspen, Colorado Area

Relevance of Structural Geology to Hydrocarbon Plays

Co-Chairs: N. Sterne and D. Stone

- 8:00 *Introductory Remarks*
- 8:10 **D. Stone:** The Wyoming Transect: What, Where, How, and Why
- 8:30 **C. Kluth, J. Lilligraven, A. Snoke, E. Sterne:** Triangle Zones in Front of Basement-Cored Uplifts in the Rocky Mountain Region
- 8:50 **G. Dodson:** A Tectonic Context for Basement Linears in Northeast Wyoming
- 9:10 *Break*
- 9:20 **M. Caldwell:** Gravity Fault Controlled Structural Traps, North-Central Montana
- 9:40 **B. Davis, H. Harper, D. Nelson, J. Kmeck, C. Pollock:** The Use of Modern 3D Seismic for Interpretation of a Structural and Stratigraphic Framework in the Main Canyon Area of the Northern Uncompahgre Uplift, Uintah County, Utah

- 10:00 **J. Scheevel, M. McCaskey, J. Byl:** Modern 3D Interpretation of a Mature, Structurally-Complex Oil Field, Los Angeles Basin, California.
- 10:20 **D. Richards, T. Murray, M. Kleven, G. Christie:** Probabilistic Analysis of Fault Seal Capacity in Compressional Settings: Risking Prospects and Fields in Exploration and Production
- 10:40 **D. Bate, J. Barraud, M. Davies, P. Versnel:** Covenant Field BlueQube Interpretation Results: Central Utah Hinge Line Exploration Strategy