

On the Rocks



A Newsletter of the Michigan Basin Geological Society

2003-2004 Number 2

www.mbgs.org

September 2003

EVENTS

September 6-10, 2003: 2003 AAPG Eastern Section Meeting-2003 SPE Eastern Regional Meeting, Joint Technical Conference; "Taking a Closer Look", Pittsburgh, Pennsylvania. See www.aapg-spe-2003.org.

September 10, 2003: Joint MBGS-SPE Meeting; Topic: "Unconventional Shallow Biogenic Gas Systems" by George Shurr.

September 21-24, 2003: The Society for Organic Petrology (TSOP), 20th Annual Meeting Washington, DC, USA. For further details: <http://www.tsop.org/mtgdc.htm>.

October 1-3, 2003: Midwest Ground Water Conference. To be held at the Fetzer Center at Western Michigan University. Additional details available at: <http://www.wmich.edu/geology/mwgwc.html>.

October 4-9, 2003: AIPG 40th Annual Meeting in Glenwood Springs, Colorado.

October 6th, 2003: Well Log Interpretation and Reservoir Characterization of Carbonate Reservoirs in the Appalachian Basin workshop in conjunction with the Ohio Oil and Gas Association Meeting Easton Hilton in Columbus, Ohio.

October 12-18, 2003: Earth Science Week- For information, see www.earthsciweek.org.

Oct. 23, 2003: PTTC Trenton/Black River Core Workshop at the Holiday Inn, Mt. Pleasant, Michigan.

April 18-21, 2004: AAPG Annual Meeting, Dallas, Texas; Abstracts due September 11, 2003. Submit the abstract online at www.aapg.org/meetings/dallas04.

May 2004: Conference/Field Excursion Gaylord, Michigan. For more information see the MBGS website at: www.mbgs.org.

MBGS-SPE Meeting

September 10, 2003

Location: Holiday Inn (South)
6820 S. Cedar St., Lansing, MI.

Schedule: 5:00 to 6:00 PM Social Hour
6:00 PM Dinner
Presentation after dinner

Cost \$25.00/member \$10.00 Student (includes dinner)

Topic: "Unconventional Shallow Biogenic Gas Systems"

By
George Shurr

MBGS Dinner Meeting Reservation

Name _____

Number attending _____ Society _____

Enclosed Registration Fee _____

Please make your check out to the SPE and return to Frank Kuri by September 8, 2003

Send to: Frank Kuri
El Paso/ANR Pipeline
27725 Stansbury Blvd. Suite 200
Farmington Hills, Michigan 48334
Ph: 248-994-4047 Fax: 248-994-4040.
E-mail: frank.kuri@elpaso.com

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University Talks and Seminars Websites

Western Michigan University,
www.wmich.edu/geology/SeminarGeos.html

Michigan State University,
www.glg.msu.edu/news/lectures.html

University of Michigan, Turner Lecture Series,
www.geo.lsa.umich.edu/announce/turner02b.html

Michigan AIPG Section website: www.aipg-mi.org.

MEETING CANCELLATION POLICY

Monthly meetings will be automatically cancelled whenever the National Weather Service issues a "Storm Warning" for the Lansing area. If driving conditions are poor but a "Warning" has not been issued please contact any member of the Executive Committee for the status of the meeting.

MICHIGAN BASIN GEOLOGICAL SOCIETY PUBLICATIONS

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, Devonian to Silurian Rock Fieldtrips to MI, WI, IL and Ontario, 2000, \$15

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$10

Historical CD #3: Six out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$12

Special Price - Historical CD #1, #2 & #3, \$30

Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, 56 pp., chart, \$2.65 picked up or \$4 mailed, Can be ordered from MBGS or Geological Survey Div. of the DEQ

Price Includes postage, handling and any applicable sales tax. MBGS Members receive a 10% discount on MBGS publications.
Orders for publications should be prepaid in U.S. Funds and addressed to:
MBGS - Publications
c/o Dept. of Geological Sciences
206 Natural Sciences Building
Michigan State University
East Lansing, Michigan 48824-1115

MBGS Mug and Jacket Sale

The Michigan Basin Geological Society is offering mugs and jackets with the society logo for sale. The mugs are \$5.00 each. The jackets are \$60.00 each plus postage. Please contact Dan McGuire at: Phone (517) 772-5219, Fax (517) 772-7021, or danmcguire@sensible-net.com. Remember to include the correct size of the jacket and the quantity of each item. Checks should be made out to the MBGS.

Dues

Dues for membership in the MBGS are \$25.00. The dues are payable by September 2003 for the 2003-2004 season. Unless otherwise noted all members who receive the Newsletter by e-mail must pay dues for the 2003-2004 season. If you are unsure of your status e-mail the Treasurer or the Newsletter Editor.

Michigan Basin Geological Society Dues Notice

Please fill out this form when paying your dues for 2003-2004. Dues are \$25.00 for active member and \$10.00 for students.

Name _____

Address _____

Phone _____

E-Mail _____

Amount enclosed _____

Send Newsletter by e-mail _____@_____

or by US Mail at the above address

Make check payable to: MBGS

Send to: Tom Hoane
1748 Danby Lane SE
Grand Rapids, MI 49506

CALL FOR PAPERS

**Conference/Excursion Gaylord, Michigan
May, 2004**

SPONSORS

**Michigan Basin Geological Society
American Institute of Professional Geologists
Michigan Association of Environmental Professionals**

TOPICS

Local and Regional Geology
Structure and Tectonics
Environmental Geology and Local Issues
Glacial Geology
Reservoir Geology and Engineering
Local Natural Resources
Stratigraphy, Sedimentology and Paleontology
Surface and Ground Water Resources and Management
Cross-disciplinary areas of Science are encouraged

Professionals and students are invited to submit papers for inclusion into a guidebook and for oral evening presentations or in discussions during the two day field excursion. Topics should be geological or geologically related to the Northeastern Lower Peninsula Michigan.

SESSION DETAILS

Friday evening sessions: Four 25-minute presentations with a 5-minute question and answer following.

Saturday field excursion with visits to points of interest and short presentations.

Saturday evening sessions: Four 25-minute presentations with a 5-minute question and answer following.

Sunday field excursion with visits to points of interest and short presentations.

Abstract Deadline: October 31, 2003

Paper Deadline: March 31, 2004

Submit abstracts to: NE LP 04 Conference, MBGS,
C/o Department of Geological Sciences,
206 Natural Sciences Building, Michigan State University,
East Lansing, Michigan 48824-1115

Or

Send via internet to: mark@mbgs.org

Registration forms for attending the conference/excursion will be posted once final arrangements have been made and all abstracts have been submitted. Members wishing to attend may reserve a space by indicating so in an e-mail addressed to Mark Wollensak sent to mark@mbgs.org.

Shallow Basin Margin Gas Systems--Descriptions, Exploration Strategies, and Implications for Business Models

By George W. Shurr

GeoShurr Resources, LLC

www.geoshurr.com

Shallow natural gas systems on basin margins have some similarities with deep gas systems in basin centers. Both have relatively continuous, unconventional reservoirs and local, embedded sweet spots that are associated with fracturing and regional Landsat linear features. There are, however, striking differences including depth, pressure, well performance, and exploration costs. Exploration strategies must take into account both the similarities and the differences.

Shallow basin margin gas systems generally are characterized by historical production, are controlled by geologic structure, and are associated with ground water flow. Economic accumulations on basin margins fall into three distinct systems: migrated thermogenic, early generation biogenic, and late generation biogenic. Each system has contrasting geometries of source rocks, timing of gas generation, and distances of migration. And, each system has a representative archetype area of production.

Migrated thermogenic gas is produced from heterogeneous Permian rocks in the Hugoton embayment on the northwestern margin of the Anadarko Basin. Gas has migrated long distances up the basin margin and away from the thermogenic kitchen at the basin center. Linear features mapped on Landsat have patterns similar to patterns of production and also mark locations of paleofaults that control traps.

Early generation biogenic gas is produced from Cretaceous, marine clastic reservoirs in the Northern Great Plains on the southeastern margin of the Alberta Basin. Reservoir and source rocks are interbedded and gas has not migrated significantly since generation shortly after deposition. Landsat linear features outline patterns of pressure change due to gas production. In addition, linear features correspond with paleotectonic block boundaries interpreted from facies and thickness changes.

Late generation biogenic gas is produced from fractured Devonian Antrim Shale on the northern margin of the Michigan Basin. The marine black shale acts as reservoir and source rock, so gas migration is minimal. The gas was generated in the recent geologic past and is in relatively young water that is flowing down the basin margin, away from subcrops beneath glacial drift. The area of best production is located near the intersection of Landsat linear features and ground water flow paths parallel linear features in some places.

In the Rocky Mountains, shallow basin margin accumulations are found in unconventional reservoirs (>100 sq mi) containing unmigrated biogenic gas, in smaller sweet spots (5-20 sq mi) with migrated biogenic gas, and in foreland structures (.5-10 sq mi) filled with migrated thermogenic gas. All three shallow basin margin gas systems are represented in the region. However, some of the most exciting emerging economic developments have been in late generation biogenic gas accumulations: northeastern Powder River Basin CBM, eastern margin of the Williston Basin, and glacial drift production on the northern margin of the Alberta Basin.

Exploration strategies are different for each of the three shallow natural gas systems situated on basin margins. Thermogenic gas in sealed buoyancy traps has migrated from mature source beds in the basin center kitchen. Large early generation biogenic gas accumulations are located

in water-sensitive host rocks confined to specific paleotectonic blocks. Late generation biogenic gas is found in aquifers where microbes are currently active.

It is important to know which shallow basin margin gas system you are dealing with. Differences among the systems dictate exploration strategy, but also influence drilling and production techniques, lease acquisition programs, and the economics of reserve development. In a fundamental way, a company's business model will be influenced by the type of shallow basin margin gas system that is being developed.

Professional Biography

George W. Shurr is a consulting geologist and partner in GeoShurr Resources, LLC. Prior to establishing the company in 1999, Shurr had a thirty-year career of university teaching and part-time employment with the US Geological Survey and South Dakota Geologic Survey. He holds a BA from the University of South Dakota, an MS from Northwestern University, and a PhD from the University of Montana. Consulting services and research interests include shallow gas systems on basin margins, lineament block tectonics and fractured reservoirs, and the stratigraphy of Cretaceous reservoir and source rocks. GeoShurr Resources, LLC focuses on shallow natural gas prospects in the Northern Great Plains and in particular, on the margins of the Williston Basin.

Thanks

Thank you to all members, officers, speakers and others that provided so much help and support to me last year. I really appreciated your efforts. With the input of so many people, our organization rolled on with few bumps in the road for another year. Please keep up the good work this year for President Tom too. Sincerely,

Milt Gere, Past President.

Well Log Interpretation and Reservoir Characterization of Carbonate Reservoirs in the Appalachian Basin

The Ohio Geological Society is planning, in conjunction with the fall OOGA meeting, a full day well log interpretation workshop on **October 6th, 2003** at the Easton Hilton in Columbus, OH. Dan Hartman (DJH Energy Consulting) will be conducting a hands-on workshop to demonstrate that with an understanding of rock type, saturation models, and elevation of rocks in the hydrocarbon column, we can forecast performance. Mark your calendar for this event.

Dan received his B.S. in geology from New Mexico Tech in 1963, and has worked in various capacities in exploration for Pan American Petroleum and Mitchell Energy Company. He started DJH Consulting in 1985 which specializes in exploration/exploitation consulting and education for the oil industry.

PTTC Trenton/Black River Core Workshop

It will be at the Holiday Inn, Mt. Pleasant on Oct. 23, 2003 in conjunction with the monthly MOGA meeting. Cores from Albion/Scipio and Stony Point fields will be displayed and presentations will be made. For more information contact Dr. William B. Harrison, III at Western Michigan University, Ph. 269-387-8633 or email at: harrison@wmich.edu. Information will also be available on the Michigan PTTC website at: <http://wst023.west.wmich.edu/>