

On the Rocks



A Newsletter of the Michigan Basin Geological Society

2005-2006 Number 7

www.mbgs.org

March 2006

EVENTS

March 16, 2006: This month's meeting is sponsored by SPE. The title of the talk is: "**Reservoir Surveillance via Modern Gravity Methods**," by Jerry Brady. Abstract, and biography are below.

April 5, 2006: Note new date for the next MBGS meeting which will be held at **Western Michigan University's new Core Facility**. Additional information below and in next month's newsletter.

May 8-12, 2006: Institute of Lake Superior Geology meeting and field trips. See info below and at following link. <http://www.lakesuperiorgeology.org/Sault2006/index.html>

GEOLOGY SCHOLARSHIPS AVAILABLE

The Michigan Basin Geological Society will award one or more scholarships of up to \$500 to deserving student(s) majoring in the Geological Sciences. The scholarship will be awarded in May of 2006. Candidates should use a modified AAPG "Grants in Aid" form to submit their application. Preference will be given for student research in the Michigan Basin. If you have any questions or need application forms please **call or e-mail Leonard Espinosa at 517-335-3248 or espinosl@michigan.gov**

Send applications by April 1, 2006 to:

Leonard Espinosa
Forest Mineral & Fire Management, MDNR
PO Box 30452
Lansing, MI 48909

2004-2005 MBGS Officers

The Executive Committee meeting minutes are available on the website.

PRESIDENT: DR. ROBB GILLESPIE,
WMU Geology Department
Ph: 269-387-5354, fax 269-387-5513
robb.gillespie@comcast.net or
robb.gillespie@wmich.edu

VICE PRESIDENT: ROBERT REYNOLDS,
Reynolds Geological, LLC
Ph: 517-676-9936, fax 517-676-8169
reynoldsgeo@voyager.net

SECRETARY: DAVID BAXTER,
Petrodata Resources
Ph: 517-669-5409
PetroDataRes@comcast.net

TREASURER & PUBLICATIONS: TOM HOANE,
FMFM, DNR
Ph: Bus 517-241-3769, fax 517-373-2443
hoanet@michigan.gov

BUSINESS MANAGER: LEONARD ESPINOSA
FMFM, DNR
Ph: 517-335-3248, Fax 517-373-2443
espinosl@michigan.gov

PAST-PRESIDENT: DR. MICHAEL GRAMMER,
WMU Geology Department
Ph: 269-387-3667, fax 269-387-5513
michael.grammer@wmich.edu

CO-FIELDTRIP DIRECTORS:
MARK WOLLENSAK, CPG
HAMP, MATHEWS & ASSOC, Inc.
Ph: 517-641-7333 Fax 517-641-7337
Cell 517-719-8321
wollensak@voyager.net

LEONARD ESPINOSA, FMFM, DNR
Ph: 517-335-3248, Fax 517-373-2443
espinosl@michigan.gov

NEWSLETTER EDITOR: TOM WELLMAN,
FMFM, DNR
Ph: 517-373-7666, Fax 517-373-2443
wellmant@michigan.gov

ELECTRONIC PUBLICATIONS, MARK WOLLENSAK
(see above)

WEBMASTER: GREG VARNUM
me@gregvarnum.com

University Talks and Seminars Websites

Western Michigan University:
www.geology.wmich.edu/Events/lecture_series.htm#spring

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

University of Michigan, Smith Lecture Series:
www.lsa.umich.edu/geo/highlights/smith_lecture/

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, Compiled 2000, \$15

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

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

Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968, and 1970, Northern LP and UP Fieldtrips in MI, Compiled 2004, \$15

Special Price - Historical CDs #1, #2, #3, & #4 \$40

NE Lower Peninsula Geological Field Conf, 2004, T. Black & M. Wollensak, 133 pp, illus, maps, on **CD \$10.**

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

Prices Include 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
P.O. Box 18074
Lansing, MI 48901-8074

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.

SPE-MBGS MEETING

March 16, 2006 (Thursday)

Coyote Creek
6951 Lansing Rd, Dimondale, MI.

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

Cost \$25.00/member \$15.00 Student (includes dinner)

Topic: "Reservoir Surveillance via Modern Gravity Methods."

by
Jerry Brady

SPE Dinner Meeting Reservation

Name _____

Number attending _____ Society _____

Enclosed Registration Fee _____ Will Pay at Door _____

Please make checks payable to **SPE** and return to Tammy Worden by March 14, 2006

Tammy Worden
On Assignment Engineering
22260 Haggerty Rd, Suite 160
Northville, MI 48167
Ph: (248) 735-9688 Fax: (248) 735-9689
E-mail: tammy.worden@onassignment.com

Reservoir Surveillance via Modern Gravity Methods

by
Jerry Brady, BPX Alaska

Abstract:

The lecture will show how gravity can be used as a deep reading surveillance tool to monitor fluid movements that result in density changes deep within the reservoir. The fluid movements can be observed far away from all boreholes. The first part of the lecture will discuss the passive physics of gravity and will establish basic concepts and vocabulary.

The second part of will focus on how to apply these principles to reservoir surveillance. Examples will show both surface and borehole gravity surveys; how they are currently being used in reservoir surveillance; and what their potential value is for the future. Gravity methods are particularly useful when production results in changes in formation density, and when surveillance by seismic means is impractical, for reasons caused by subsurface or surface features or cost. The Gas Cap Water Injection Project at Prudhoe Bay, Alaska demonstrates the world's first application of surface gravity for reservoir fluids monitoring. Beyond this surface application, borehole gravity surveys have the potential to revolutionize the way we monitor and produce both vertical and horizontal wells. They have the ability to monitor fluid movements up to a few hundred feet into the formation with good spatial resolution. This can provide us with the potential to map fluid entry points, and to adjust the production and/or the injection of a well to better manage a waterflood or an EOR program before breakthrough of gas or water.

Biography for Jerry Brady

Finally the lecture will wrap up with a brief discussion of the developments in permanent surface and downhole sensors. New technology is now available to overcome current limitations on instrument size and stability.

Jerry L. Brady is currently a petroleum engineer for BP, and based in Anchorage, AK. In this position, he uses unique 4-D surface gravity method for monitoring the gas cap waterflood project. This method which he helped to initiate, has eliminated the need for surveillance monitor wells at a cost saving of \$2-3 million (US) per well. The method includes waterflood mass distribution, mass balance and flood front detection.

Prior to joining BP, Jerry worked for ARCO which was subsequently merged into BP. He holds eighteen patents covering production technology and has authored thirty-two professional society papers covering this and a variety of other technologies, including production log interpretation, downhole gas separation and re-injection, gravity methods, and cement formulations and reactions.

Jerry Brady holds a B.S. degree in Petroleum Engineering from Montana College of Mineral Sciences and Technology, a B.S. degree in Electronic Technology from Northern Montana College, and post-baccalaureate work at University of Southern California. He is a member of SPE, Society of Well Log Analysis and Society of Exploration Geophysicists . In 2000, he was honored with the Engineer of the Year for Alaskan SPE Society and then for all Alaskan Engineering Societies.

MBGS April Meeting at WMU Core Lab

by Robb Gillespie

The April 5th MBGS meeting will take place at the Core Lab at WMU in Kalamazoo. Instead of a formal speaker and presentation we will have tours of the new facilities, a short presentation about available data bases on the net, student posters and BBQ dinner. This will be an informal opportunity for the geological community and others interested in geology to acquaint themselves with the facilities and services offered by the WMU Core Lab. Since this is a University facility, it will be a soft-drink only zone

We are extending the invitation to any students that would like to put up a poster at the core lab. It is not required that this be 'new work' but is an opportunity for students to present some products which can be shared at this event.

Michigan Geological Repository for Research and Education

Map and Directions to 5272 W. Michigan Avenue, Kalamazoo, MI 49006--(269) 387-8633



From the South or North

From US 131, take exit #36B/Stadium Drive onto Stadium Drive—go 0.4 miles. Turn right on S. 11th Street—go 0.1 miles. Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan Avenue. Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

From the East or West

Take I-94, exit to US 131 North - go 2.5 miles and take exit 36B onto Stadium Drive toward Oshtemo - go 0.5 miles
Turn right on S. 11th Street—go 0.1 miles
Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan.
Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

From Rood Hall, Western Michigan University

Drive west on W. Michigan about 2 miles to S. Drake Road
Turn left on S. Drake Road—go 0.2 miles
Turn right on W Michigan Avenue—to 0.3 miles and arrive at 5272 W. Michigan.
Our driveway is the last one before the US 131 overpass on the right, through the fence gates. Our building is the largest one in this fenced area.

PARMA SANDSTONE ALONG INTERSTATE-94 NEAR JACKSON

By Dave Baxter



Above is the only remaining exposure of Parma Sandstone, **at a very dangerous spot** just north of west-bound I-94, about one-mile east of the US-127 interchange heading to Lansing. The vertical features in the right-hand of this view were caused by the teeth of an MDOT backhoe during construction of the interstate. The sandstone is very soft, friable, and fresh surfaces can often be crumbled with hands and fingers. [GPS Coords. = N42° 16.343' W84° 24.175']

Editors note: Dave strongly advises against attempting to view this site in person due to the present danger of traffic on I-94. This outcrop was 'freshened' a bit approximately 15-20 years ago when construction work on the exit exposed some new surfaces.



This view looks easterly and appears to show a cut-&-fill channel leading from the left-center, which then climbs upward further east. This sandstone was once considered either a basal unit of the Pennsylvanian Saginaw Formation, or the uppermost unit of the Mississippian Michigan Formation, or possibly the capping sandstone member of the Bayport Formation.