



On the Rocks

A Newsletter of the Michigan Basin Geological Society

2011-2012 Number 3

www.mbgs.org

November 2011

MBGS-SPE Joint Membership Meeting, Monday, November 7, 2011: The November meeting will be a joint meeting with SPE held at Christi's Bistro, Lansing Michigan, 5:00 to 6:00 PM – Social Hour, 6:00 PM – dinner, presentation after dinner, Cost (includes dinner): \$30.00 (Students \$20). The speaker is Mr. Samuel O. Osisanya, (University of Oklahoma) presenting, "Practical Approach to Solving Wellbore Instability Problems." Refer to location information in the newsletter.

Notes from the editor:

- MBGS will award two or more scholarships of up to \$1000 to students conducting research in geology related to the Michigan Basin. Candidates should complete and submit the Michigan Basin Geological Society scholarship application form. If you have questions or need applications forms, please call or email Tom Hoane at 517-241-3769 or hoanet@michigan.gov.
- It's that time of year again....the Michigan Basin Geological Society dues are due. Please take a moment to update your information and mail in your 2011-2012 dues. A form is provided in the newsletter. Thanks!!
- MBGS has rock kits available for members. These kits are great for use at children's festival/demonstrations and talks. First come, first serve. Contact Tom Hoane @ hoanet@michigan.gov.
- MBGS has a core display available for use that visually demonstrates permeability/porosity. There are posters available for use with the core display. Contact Mark Wollensak at wollensak@voyager.net to reserve this great educational tool.





MBGS – SPE Meeting

Monday, November 7, 2011

Location: Christie's Bistro
Located in the Lexington Lansing Hotel
925 South Creyts Road
Lansing, Michigan 48917
(517) 323-4190
5:00 to 6:00 PM – Social Hour
6:00 PM – Dinner
Presentation after Dinner
Cost (includes dinner): \$30.00 (Students \$20)

“Practical Approach to Solving Wellbore Instability Problems”

Samuel O. Osisanya
The University of Oklahoma

Executive Meeting starting at 4:30 PM at Claddagh Irish Pub, Lansing
Please contact Thomas Godbold by if you have any questions
Thomas Godbold E-mail: tgodbold07@gmail.com.

SPE Dinner Meeting Reservation

Name: _____

Number Attending: _____

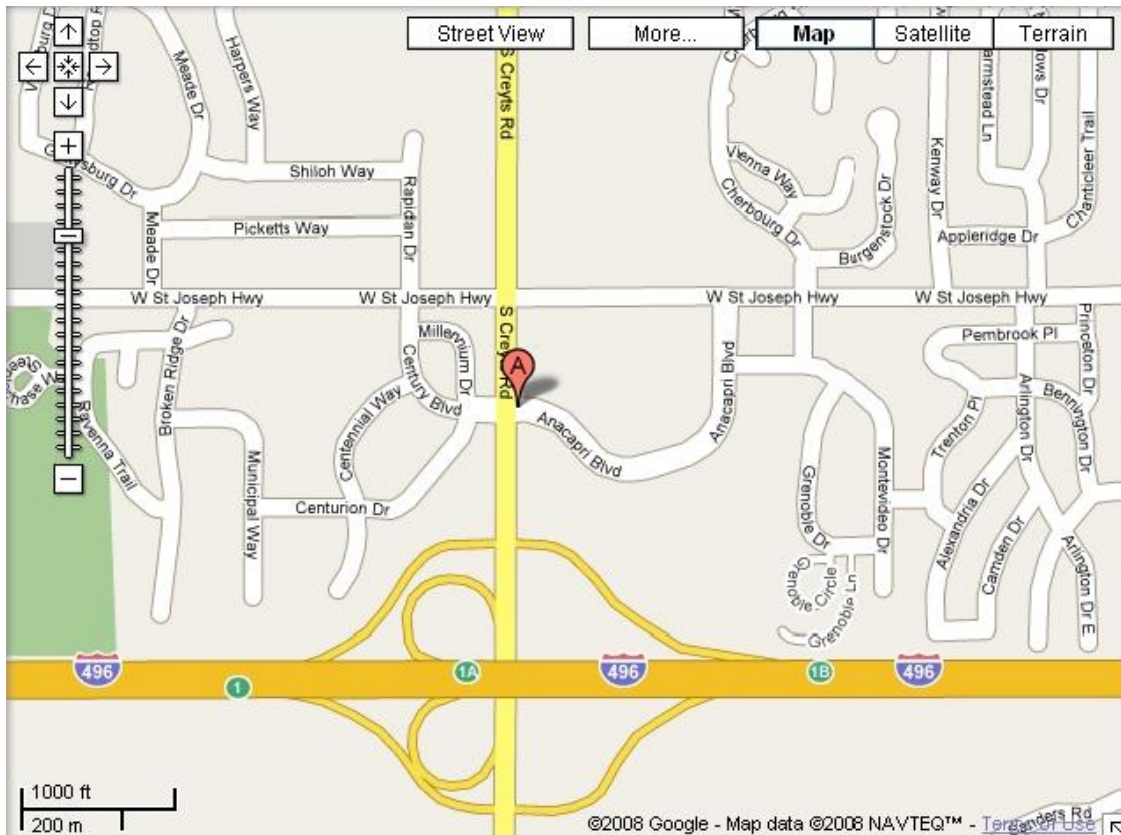
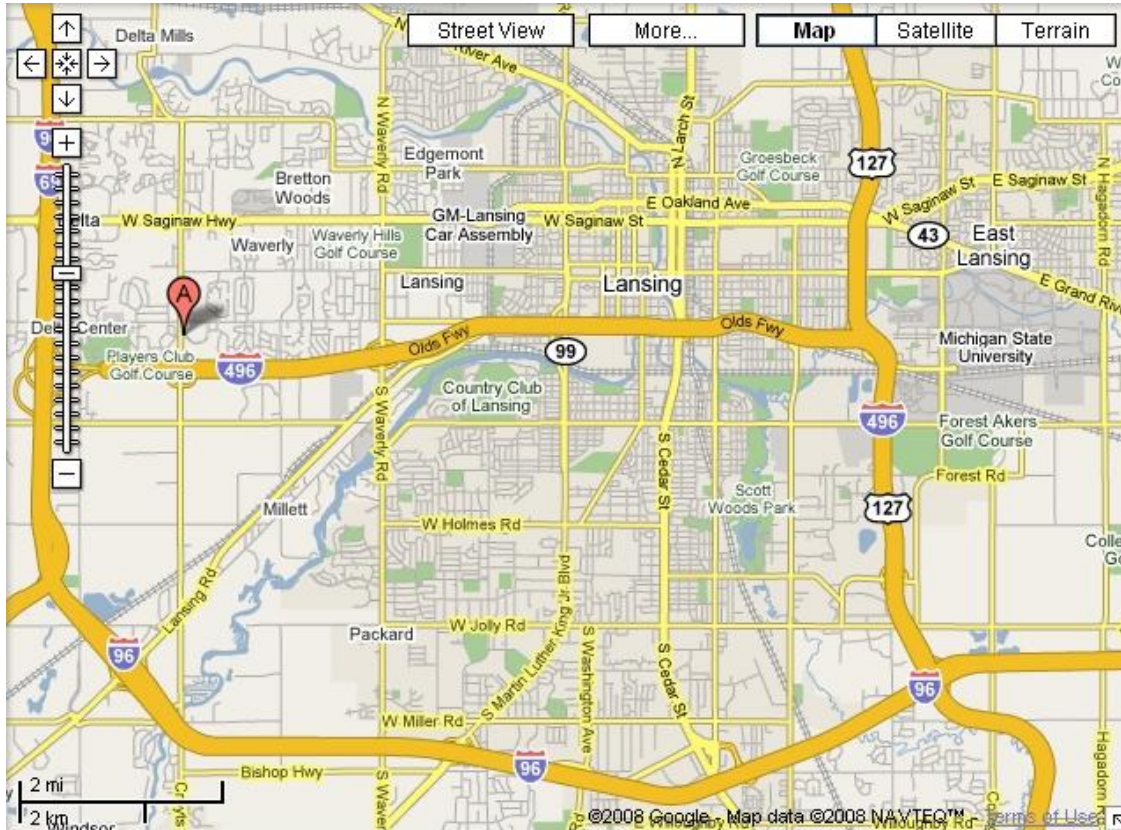
*NOTE: Please pay at the door to avoid lost mail/checks.

Please RSVP by November 3rd.

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Troy, MI 48098
tel: 248-205-4544
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Christie's Bistro
925 South Creyts Road
Lansing, Michigan 48917





Society of Petroleum Engineers Distinguished Lecturer 2011 Lecture Season

Practical Approach to Solving Wellbore Instability Problems



Samuel O. Osisanya
The University of Oklahoma

Abstract: Wellbore instability is recognized when the wellbore diameter does not stay the same as the diameter of the bit that drilled it. Maintenance of a stable wellbore is of primary importance while drilling. Non-productive time associated with wellbore instability translates to massive well costs. There are three main interrelated mechanisms that can cause wellbore instability: mechanical, rock-drilling fluid interaction and man-made (poor drilling practices). One or more of these mechanisms may contribute to an unstable borehole depending on the type of formation and the geologic area being drilled.

Mechanical wellbore instability is basically a contest between the strength of the in-situ rock and the stresses induced on it while it is being drilled. Key parameters causing mechanical instability are orientation and magnitude of in-situ stresses, rock strength and properties and drilling practices. Most of the rock-drilling fluid interaction leading to wellbore instability takes place in the shale layers. Shales make up more than 75% of drilled formations and cause more than 90% of wellbore instability problems. Shale acts as a leaky membrane that allows for the generation of osmotic pressure difference between the water in the shale and the drilling fluid. Shale formations are capable of absorbing water from oil-based mud (OBM) as well as from water-based mud (WBM). The man-made factors that cause wellbore instability include inadequate mud pressure, poor hole cleaning, drilling string vibration and surge/swab pressures. The presentation will discuss the causes and prevention/mitigation of these mechanisms.

There are various wellbore instability ongoing research works. These include the development and understanding of rock mechanics models, improvement and visualization through real-time monitoring, and development of synthetic water-based mud (WBM) to match the shale stabilizing characteristics and high-temperature stability of a non-aqueous fluid. The presentation will show that mitigation and prevention of wellbore instability involves excellent well planning, real-time monitoring and sound drilling practices.

Biography: Samuel O. Osisanya has been an Associate Professor at the Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma in Norman, Oklahoma, USA, for 18 years, teaching well construction technology. He has authored and co-authored more than 84 technical papers and supervised more than 55 graduate students. Osisanya was a recipient of the prestigious NSF Faculty CAREER award in 1995 and selected in 2000 as NSF ambassador to middle schools in Oklahoma during NSF 50th Anniversary celebration. He has served on several SPE drilling and completion committees. He has been a review panelist for the NSF-GRFP for the last 5 years. Osisanya had experience with Gulf, Shell-BP and Mobil. He has taught in-house short courses for major companies, including ExxonMobil, NNPC, Saudi Aramco, PDVSA, Ecopetrol and Schlumberger. He was voted the 1994, 2002 and 2004 outstanding PE professor of the year at OU and selected as the 2006-2007 Most Inspiring Faculty of the student athletes at OU. He was recognized by NExT-Schlumberger in May 2008 and April 2010 as outstanding virtual faculty instructor. Osisanya holds a BS degree (first class) from University of Ibadan, Nigeria, and MS and PhD degrees from University of Texas, Austin, USA, all in petroleum engineering.

UPCOMING EVENTS

- **November 1, 2011** – Deadline for MBGS Grant Application – information in newsletter.
- **November 3, 2011** – Ohio Geological Survey Meeting, Development of the Shale Plays and Disposal of the Oilfield Wastes in Ohio By Tom Tomastik ODNR Division of Mineral Resources Management, Worthington Ohio, www.ohgeosoc.org
- **November 15, 2011** – Deadline AIPG Michigan Section Grants. The application forms can be found on the Section website at <http://mi.aipg.org/awards.htm> or by contacting Jason.lagowski@arcadis-us.com. Completed applications are due by November 15, 2011.
- **December 1st, 2011**, MI-AIPG Meeting, Webbers' Inn, Ann Arbor, MI, <http://mi.aipg.org/>
- **February 6, 2012** – SPE Meeting, Sources of Productivity Impairment in Openhole Completions by Richard Hodge, www.michigan.spe.org
- **May 10, 2012** – Drilling and Completion Activities Related Rock Mechanics by Francisco Henriques Ferreira, www.michigan.spe.org
- **April 18, 2012** - Michigan Oil And Gas Association (MOGA) and the Northern Michigan Chapter of the American Petroleum Institute (API) 10th Annual Michigan Petroleum Conference, <http://www.michiganoilandgas.org/2012PetroleumConference.aspx>



The MBGS September 2011 Marquette field trip participants are receiving their assignments and brief overview from Dr. Robb Gillespie prior to being released at Lighthouse Point, Marquette. The rocks consist of the Archean Northern Complex.

2011-2012 MBSG Officers

The Executive Committee meeting minutes are available on our website at

www.mbsg.org

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Orders for publications should be prepaid in U.S. Funds and addressed to:
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Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, 2000, \$15

- The Stratigraphy of Manitoulin Island, Ontario, Canada, June 19-20, 1954
- The Devonian and Silurian Rocks of Parts of Ontario, Canada and Western New York, June 22-23, 1951
- The Traverse Group of the Northern Part of the Southern Peninsula of Michigan, June 16-17, 1949
- The Devonian Strata of the London-Sarnia Area, Southwestern Ontario, Compiled by Erwin C. Stumm, Lewis B. Kellum and Jean Davies Wright, June 9-10, 1956
- The Ordovician Rocks of the Escanaba-Stonington Area, Led by R. C. Hussey, June 2-3, 1950
- The Niagara Escarpment of Peninsular Ontario, Canada, June 18-19, 1955
- Lower Paleozoic and Pleistocene Stratigraphy Across Central Wisconsin, Compiled by C. E. Prouty, Led by L. M. Cline, J. L. Hough and R. F. Black, 1960
- Classic Silurian Reefs of the Chicago Area, by Donald G. Mikulic and Joanne Kluessendorf, June 27, 1998
- Geology of Central Ontario, Canada, 1965

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, 2001, \$15

- Copper Country Field Trip, Michigan, June 20-22, 1947
- Geology of Mackinac Island and Lower and Middle Devonian, South of the Straits of Mackinac, June 12-14, 1959
- Tectonics, Structure and Karst in Northern Lower Michigan, August 1983
- Geology of the Pictured Rocks, Upper Peninsula, Michigan, July 11-13, 1991

Historical CD #3: Six out-of-print publications from 1948, 1952, 1990 - 1995, 2001, \$15

- Pleistocene and Early Paleozoic of the Eastern Part of the Northern Peninsula of Michigan, June 18-21, 1948
- Stratigraphy and Structure of the Devonian Rocks in Southeastern MI and Northwestern OH, June 20-21, 1952
- Lower Ordovician and Upper Cambrian of Wisconsin, May 10-12, 1990
- Guidebook to the Precambrian Geology and Metallogeny of the Central Upper Peninsula of Michigan September 12-13, 1991

Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968 and 1970, 2004, \$15

- Silurian Rocks of the Northern Peninsula of Michigan, 1957
- Cambrian Geology of Parts of Dickinson and Iron Counties, Michigan, June 1958
- Geologic Features of Parts of Houghton, Keweenaw, Baraga and Ontonagon Counties, Michigan, May 19-21, 1961
- Correlation Problems of the Cambrian and Ordovician Outcrops Areas, Northern Peninsula of Michigan 1967
- The Geology of Manitoulin Island, June 1968
- Devonian Strata of Alpena and Presque Isle Counties, Michigan 1970

Historical CD #5: Five out-of-print publications from 1971, 1989, 2001, and Oil & Gas Fields Vol. 1 & 2, 1969 & 1992, 2006, \$50

- Oil & Gas Fields Symposium, Volume 1, April 1969, 200 pp., maps, illus., second printing with updates
- Oil & Gas Fields Manual of the Michigan Basin, Volume 2, 1992, 520 pp., maps, illus.
- Glacial Geology of Southwestern Michigan, 1989, 53 pp. by A. Kehew, L. J. Schmaltz, and W. T. Straw
- Geology of the Lake Erie Islands and Adjacent Shores, 1971, 65pp., maps, illus. by Jane L. Forsyth
- Glacial Geology of Southwestern Michigan, Landforms of the Lake Michigan Lobe, Southwestern Michigan, 2001, AAPG Eastern Section Meeting Field Trip, 32 pp., maps, illus. by A Kehew and A. Kozlowski

Historical CD #6: Six out-of-print publications from 1946, 1953, 1963, 1966, 1978 & 1987 plus the Richfield Challenge, 1952 & Tom Knapp's MS Thesis, 2007 \$15.

- Guidebook for Ordovician Stratigraphy of the Cincinnati, Ohio and Richmond, Indiana Areas, June 12, 13, 1953 by W. H. Shideler and B. T. Sandefur
- Guidebook for Ontario Geological Excursion to Kettle Point – Owen Sound- Waubaushe, June 21, 22, 23 1946 by W. A. Roliff, C.S. Evans and J.F. Caley
- Guidebook for the Stratigraphy of the Silurian Rocks in Western Ohio, May 31-June 2, 1963 by C. H. Summerson, Jane L. Forsyth, Karl V. Hoover and J. R. Ulteig
- Guidebook for Cambrian Stratigraphy in Western Wisconsin, May 21, 22, 1966 by Merideth E. Ostrom
- Geology of the Manitoulin Area, Special Papers #3, September 29, 30 and October 1, 1978 by J. T. Sanford and R. E. Mosher
- Middle Devonian Cratonic Carbonates and Shales in Southwestern Ontario, November 14, 1987 by Bruce Wilkinson
- The Richfield Challenge, A Review of the Richfield Developments in Michigan, 1952 by Gordon H. Hautan
- A Theory of Rogers City and Dundee Relationships in Central Michigan, Masters Thesis, 1947 by Tom Knapp

(NEW) Historical CD #7: Six out-of-print Field Guidebooks from 1962, 1969, 1977, 1980, 1985 & 1988, \$15

- Silurian Rocks of the Southern Lake Michigan Area, 1962, James H. Fisher, Chairman, MBGS Annual Field Conference
- Studies of the Precambrian of the Michigan Basin, by Harold B. Stonehouse, 1969
- The Geology of the Marquette District: a Field Guide By F. W. Cambray, 1977
- Ordovician and Silurian Geology of the N. Peninsula of Michigan, 1980, R.B. Votaw, 40 pp., illus., maps
- Special Paper #4: Ordovician and Silurian Rocks of the Michigan Basin and its Margins, 1985 K.R. Cercone and J.M. Budai (eds.), 96 pp., illus.
- Upper Keweenawan Rift-Fill Sequence, Mid-Continent Rift System, Michigan, 1988, P.A. Daniels and R.D. Elmore, M.S. Wollensak, ed., 150 pp., illus., maps

OTHER SPECIAL OFFERS

- **Historical CD Set - # 1 – 7 (detailed above) for a special purchase price of \$95**
- **NE Lower Peninsula Geological Field Conf., 2004, T. Black, M. Wollensak, On CD \$10**
- **Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, \$4**
- **Robert E. Mosher Geological Studies** A lifetime of geological research on Silurian Rocks with John T. Sanford. The disks are organized chronologically and include field work in North America and Europe. 2007, 2 CDs \$35.

Michigan Basin Geological Society Dues Notice

Please fill out this form when paying your dues for 2011-2012. Dues are \$25.00 for active member and \$10.00 for students.

Name _____

Address _____

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Amount enclosed _____

Send Newsletter by e-mail _____ or Mail _____ @ address above

Make check payable to: MBGS

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1748 Danby Lane SE
Grand Rapids, MI 49506



GEOLOGY SCHOLARSHIPS AVAILABLE

The Michigan Basin Geological Society will award two or more scholarships of up to \$1000 to students conducting research in geology related to the Michigan Basin. The scholarships will be awarded in December. Candidates should complete and submit the Michigan Basin Geological Society scholarship application form. If you have any questions or need application forms please call or e-mail Tom Hoane at 517-241-3769 or hoanet@michigan.gov

Submit applications by November 1, 2011 to:

*Thomas Hoane
Michigan Basin Geological Society
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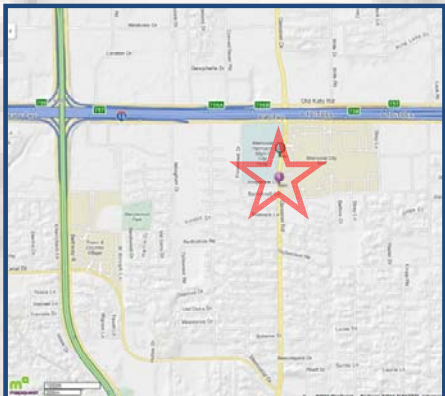
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