

# On the Rocks



*A Newsletter of the Michigan Basin Geological Society*

**2002-2003 Number 8**

[www.mbgs.org](http://www.mbgs.org)

**March 2003**

## EVENTS

**March 19, 2003:** Joint MBGS-SPE Meeting. *Note the date change.* The speaker is Christopher "Kip" Pratt. His topic is: "Underbalanced Drilling: The Past, The Present and The Future"

**April 9, 2003:** MBGS meeting; The scheduled speaker will be AAPG Distinguished Lecturer G. Michael Grammar. His presentation will cover: "Predicting the Distribution and Geometry of Platform Carbonate Reservoirs - Insights from the Integration of Modern and Outcrop Analogs"

**May 11-14, 2003:** AAPG 88<sup>th</sup> Annual Meeting Salt Lake City, Utah. The theme is: "Energy-Our Monumental Task".

**May 14, 2003:** Joint MBGS-SPE Meeting in Traverse City, Michigan

**September 6-10, 2003:** Joint Technical Conference; "Taking a Closer Look", 2003 AAPG Eastern Section Meeting - 2003 SPE Eastern Regional Meeting, Pittsburgh, Pennsylvania. See [aapg-spe-2003.org](http://aapg-spe-2003.org).

**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>.

Texas Board of Professional Geoscientists Website: <http://www.tbpg.state.tx.us>.

Kansas Geological Society Library project website: <http://www.rfwgeolibrary.com>.

The **Roadside Geology of Michigan Map** will be available this Fall from Mountain Press.

# **MBGS-SPE Meeting**

**March 19, 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 \$30.00/member \$10.00 Student (includes dinner)

**Topic: " Underbalanced Drilling: The Past, The Present  
and The Future"**

By  
Christopher "Kip" Pratt  
Shell Canada Limited in Calgary, Alberta.

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 March 14, 2003

Send to: Frank Kuri  
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27725 Stansbury Blvd. Suite 200  
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## **University Talks and Seminars Websites**

Western Michigan University,  
[www.wmich.edu/geology/SeminarGeos.html](http://www.wmich.edu/geology/SeminarGeos.html)

Michigan State University,  
[www.glg.msu.edu/news/lectures.html](http://www.glg.msu.edu/news/lectures.html)

University of Michigan, Turner Lecture Series,  
[www.geo.lsa.umich.edu/announce/turner02b.html](http://www.geo.lsa.umich.edu/announce/turner02b.html)

Michigan AIPG Section website: [www.aipg-mi.org](http://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. 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](mailto: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.

# Underbalanced Drilling: The Past, The Present and The Future

**Kip Pratt**  
*Shell Canada*

## **Abstract**

Underbalanced drilling operations (UBD) involves drilling a portion of the wellbore at fluid pressures less than that of the target formation. Over the past two decades, the UBD technology has evolved significantly as it can benefit drilling in terms of increasing ROP (reduced well cost); reducing formation damage (increased productivity); limiting lost circulation problems; reducing differential sticking; providing formation testing/evaluating while drilling; and picking TD from production rate or first water influx. To date, out of over 15,000 wells drilled under “so called” UBD conditions in North America, only approximately 9000 wells were drilled with truly underbalanced conditions over the entire planned depth/length and during the completion. Worldwide, the percentage of wells drilled through the payzone and completed underbalanced is considerably less.

A variety of techniques of UBD have been employed relevant to different applications, such as: air drilling and use of air hammers; flow drilling; gas injection (via drill string; parasite string; inner string); mist; and foam drilling. Another new technology also uses many of the UBD techniques and equipment; mud cap drilling or pressured mud cap drilling can be used to reduce the problems with lost circulation. Depending on the application and availability, gases such as air, deoxygenated air created through membrane separation or exhaust gas recompression, vitrified air, cryogenic nitrogen and natural gas have been injected in order to achieve UBD conditions.

This presentation will provide a historical overview of the UBD technology, and will examine the different state-of-the-art strategies, which can be applied to carry out successful and profitable UBD operations. Examples of increased ROP, increased production and picking TD from inflow performance will be reviewed. In addition, relevant features of a number of successful UBD and mud cap drilled projects will also be reviewed including the equipment associated with on land as well as offshore UBD operations.

## **Biography**

Christopher A. (Kip) Pratt is a Drilling Engineering Advisor at Shell Canada Limited in Calgary, Alberta. Since joining Shell Oil in 1966, he has been involved with the development and implementation of novel drilling technologies for Shell group on a worldwide basis. He developed safety systems, BOP configurations, surface fluid handling systems for drilling a 30% sour gas well underbalanced, involved in Shell Canada’s first horizontal well and the first SAGD wells drilled from surface which used a tracking system that was first proposed by him. He initiated the first use of the mining percussion hammer in deep oilfield applications. Over the past 18 years his focus has been on underbalanced drilling. Many of his projects have been adapted by a joint industry/government committee as part of the Industry Recommended Practices for drilling critical sour gas wells underbalanced. Kip is an active member of the SPE, The Petroleum Society of CIM, ASME, CADE and a registered professional engineer in the Province of Alberta in Canada.

## Fall Field Trip Survey

I am pursuing the possibility of a MBGS Field Trip to Killarney Provincial Park. Consequently, I need input on your reaction and likely attendance to what I propose before I get into the serious part of this. Here are the salient points:

- \* Killarney is a spectacular park with high white quartzite ridges with 200-300m of local relief with crystal clear lakes between the ridges.
- \* It is part of the Huronian Supergroup between the Sudbury Impact and the Grenville Front.
- \* Hiking and canoeing would be part of the fun.
- \* It would be some time after bug season through the Fall colors.
- \* The field trip would start Friday evening and conclude Sunday late afternoon.
- \* We will be guided by someone from the Ontario Geological Survey.
- \* Killarney is 165 miles east of the Soo.

Please let me know what you think? Thanks,

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## Notes from the President

The December 2002 issue of AAPG's "The Correlator" arrived early February, 2003. This newsletter of the AAPG's Division of Professional Affairs" had a couple of items that may be of interest.

1 -- For you consultants --The article< "Protecting Your Work Product and Reputation", by G. Warfield ("Skip") Hobbs, contained suggestions and examples of how a Petroleum Geologist may use their contract with clients to help protect themselves from being included in lawsuits against the clients by investors, etc. Examples of some exact contract wording used by Mr. Hobbs, and his permission for others to use them are included. The wording may be of use to consultants in other areas of expertise also.

2 -- Geologists wanting to practice in Texas and Utah.---- Both states are now requiring that geologists are registered in their state. Texas will grandfather applicants until 7/31/03, Utah until 12/31/03. Written exams will be required after those dates. Check with each state for details.

Milt Gere  
MBGS President