April 2006

MGS Luncheon Meeting Schedule for April 2006

Thursday, March 30,
MGS Luncheon, "Overpressure, Hydrocarbon Entrapment, Seafloor Venting, and Slope Stability: The Dynamic Flow Regime Beneath the Seafloor", AAPG Distinguished Lecturer, Peter Fleming, Elks Club, 11:45 am, $11.00.

Wednesday, April 26,
MGS Luncheon, "Linked Mechanical and Chemical Processes in the Diagenesis of Sandstones", AAPG Distinguished Lecturer, Kitty Millikin, Elks Club, 11:45 am, $11.00.

TO RSVP FOR MEETINGS: Call Colleen Duffy , 406-252-7921.

MGS HOME PAGE: http://www.montanags.org

MGS EMAIL: mgs@wtp.net

a note from the editor …

It all began innocently enough last September, when the outgoing MGS Treasurer (yours truly), reported to incoming President Jon Reiten that the MGS had managed to spend about $ 6,000 more than it took in during our 2004-2005 fiscal year. Based on the society's current treasury that gave the MGS a life expectancy of about three years.

Why were we losing so much money? Well, as it turns out there were several reasons and perhaps things weren't as bad as they first appeared (non-recurring expenses, etc.). However, one problem that did pop-up was that there wasn't very good coordination between who was paying dues and who was receiving the Newsletter. Having just completed my tenure as society treasurer I was aware that the MGS had received something less than 200 dues checks for 2005. So I was surprised when I sent out my first Newsletter to discover that there were over 300 names on the mailing list! With the encouragement of the Executive Committee I spent the next few months sending out postcards reminding people of past due dues. Although many members responded, many didn't, and in the end I was surprised by the number of postcards that were returned by the Post Office marked "undeliverable"; meaning that not only were we sending newsletters to non-paying members, but some of those newsletters weren't even being delivered.

Well, I am happy to report I think we have it all sorted out now. The mailing list for March was down to 214, and included 12 honorary members, 182 regular members, 1 student member and 19 complimentary copies. A geographic breakdown shows we have 137 Montana members, with 106 of them in Billings, and 58 out-of-state members. Historically, I think this puts our membership close to an all time low. With this in mind, the MGS has decided to embark on a membership drive, the details of which will be announced later this year. In the meantime, if you know someone who would benefit from being a member of the MGS, copy the Membership Application on page 7 and send it to them.

In the process of figuring out whether or not the MGS could afford to send out a monthly 8 page newsletter I determined the following: the total cost of each Newsletter is about $1.80 (surprised?). This includes production costs, materials, printing, handling and mailing. We mail out 10 newsletters per year, skipping July and August. At an annual dues rate of $20, there is $2.00 per member left over to cover the cost of the various complimentary copies we send out. So to keep the Newsletter a "break-even" proposition we really do need to pay attention to our mailing list! As a result, if you didn't get a Newsletter this month (or last), it's probably because you didn't pay your dues. Or as the great contemporary philosopher, Jimmy Buffet, once said, "if the phone doesn't ring, it's me." Starting this fall the MGS will begin mailing a single dues notice to each member. Those who fail to respond by January 31 will be dropped without further notice.

And speaking of phone calls, the MGS is also in the process of refining the "Call Around List" used by Colleen Duffy. If you live in the Billings area and are not on the list, but would like to be, please contact the editor. However, be aware that even if you are on the list, Colleen will make only one attempt to contact you. If your line is busy, or no answering machine picks up, she does not call back. In the near future (next year?), once we compile a comprehensive e-mail list of the membership, we may decide to dispense with the "Call Around" entirely.

And finally, this is April, so don't be fooled by anything you might read in here...

"QUOTE OF THE MONTH"

"My experience is that petroleum geology is so simple, it's almost stupid."

~ an anonymous minerals geologist overheard at a cocktail party in Denver, circa 1982

THIS DAY IN HISTORY

April 1

On this date in 65,500,000 B.P.E. the Cretaceous Period officially came to an end. In a widely heralded event, long anticipated and anxiously awaited by placental mammals and marsupials the world over, reptiles of the ruling Dinosauria Class peacefully relinquished the reins of power at exactly 12:00 noon EST. A small, rodent-like, mammalian representative commented that, "We all had a great time during the Mesozoic, but if you liked the Maastrictian, wait 'til you see what we have planned for the Paleocene!"

Sadly, a gala scheduled for that evening, celebrating the start of the Paleocene Epoch of the Tertiary Period, had to be postponed when a massive meteorite impacted the northern Yucatan Peninsula. The impact filled the atmosphere with debris, caused global firestorms, massive earthquakes and tsunamis only hours before the event was to begin. Surviving members of Mammalian Class promised that the event would be rescheduled, but, alas, it never was.

PRICES

March 14, 2006

NYMEX CRUDE OIL
$63.10/bbl

NATURAL GAS SPOT
$7.167/MMBTU
HENRY HUB
source: *www.wtrg.com*

Happy Birthday, Wanda !!!

Wanda Fooca, world famous tectonophysicist, who devoted her life to defining plate tectonic interactions in the Pacific northwest, was born on April 1, 1929, in Cape Disappointment, Washington

- The Corner for Continuing and/or Remedial Education -

(The Word of the Month Club – use it three times and it's yours to keep!)

***Definitions:* petroleum exploration**

Sand Bed Methane – the radical concept that light hydrocarbons can be trapped in intergranular porosity within siliciclastic rocks (e.g. -sandstones). Exploitation of this type of deposit involves drilling into the sand bed and allowing subsurface pressure to force the hydrocarbons to the wellbore. Sand bed methane deposits do not involve desorption, cleats or extensive de-watering, and in many cases fracture stimulation is not required. abbr.: SBM; also see "cutting-edge technology".

Abstract:

Overpressure, Hydrocarbon Entrapment, Seafloor Venting, and Slope Stability: The Dynamic Flow Regime Beneath the Seafloor

AAPG Distinguished Lecturer
Peter Fleming
Pennsylvania State University, University Park, PA

Sedimentation, overpressure, fluid flow, seafloor venting, and submarine landslides are intimately related. Sandstone buried rapidly by low permeability mudstone has a characteristic pressure regime: the sandstone has a hydrostatic pore pressure gradient whereas the bounding low permeability mudstone can have a lithostatic pressure gradient. This simple behavior drives a myriad of exciting geological processes. In the deepwater Gulf of Mexico, reservoir pore pressures at the crest of the Popeye Genesis minibasin equal the least principal stresses and fluids are venting today. Mud volcanoes, gas hydrates, and biological communities overlie this leak point. In the Ursa Basin, Pleistocene sedimentation from the ancestral Mississippi River was so rapid that we find overpressure within a few meters of the seafloor. Permeable sand bodies transmitted this pressure laterally and these pressures contributed to large submarine landslides. The coupled study of stratigraphy and hydrodynamics can be used to predict pressure, estimate trap integrity and migration pathways, predict slope failure, and design safe and economic drilling programs

NEW AND RETURNING MEMBERS

Jackson Riley

Jackson is a consulting geologist with his own company, Riley Wellsite, based in Park City, Montana. He has a Bachelor's degree in geology from Rocky Mountain College.

Delbert Schneider

Del is a geologist with Pason Systems USA. He lives in Kalispell, has BS in geology from Montana State and is a member of the NDGS.

Oh Canada …, just remember…

35.29 cubic feet equals one cubic meter and one MCF equals 28.34 cubic meters.

Rocky Mountain Geology

The latest issue of the journal Rocky Mountain Geology (vol. 40, no.2) is now available. Two of its four articles are additions to the on-going series in memory of D. L. Blackstone, Jr. In one of these, Mederos and co-authors discuss geometry, timing and continuity of the Rock Springs Uplift and Douglas Creek Arch. From a combination of geophysical and stratigraphic evidence, the authors conclude that the uplifts were initiated in the Late Cretaceous and do not reactivate pre-existing structures. The paper by T. G. Plymate and co-workers discusses the petrology, geochemistry, and geochronology of Proterozoic rocks in northern Colorado. The authors describe seven distinguishable granitoid bodies that were emplaced in high-grade metamorphic host rocks during two periods of magmatism about 300 M.Y. apart.

A final article is by the eminent Walcott biographer Ellis Yochelson. In this entry in the continuing series "Profiles of Rocky Mountain Geologists," Yochelson focuses on Charles Walcott's work in the Rockies and adjacent parts of the west. For more information please contact Brendon Orr (307) 761-0868 or e-mail at borr@uwyo.edu.

(*from the* Wyoming Geological Association Newsletter)

BOB AND SWEDE'S EXCELLENT ADVENTURE

"Don't worry Swede, we'll just have them skid the rig and start over … but this time try to keep the water-loss below ten.**"**

(The event pictured above is fictional – any resemblance of the characters to persons living or otherwise is entirely intentional).

Photo courtesy of the RMAG and Argonaut Oil.

Letters to the Editor *(no joke here, people really do send letters to the editor!)*

The State of the Union Address by President Bush has inspired me to investigate domestic ethanol production as a partial substitute for fossil fuel.

The first question: Can ethanol supply more energy than that required to produce it?

A joint research paper from the USDA and DOE, by Hosein Shapouri *et al*, considers this in minute detail, including such energy inputs as those required to make the steel used in the farm machinery needed to plant and harvest the corn. Fertilizer, herbicides and pesticides are all included. The conclusion is that the resulting ethanol can provide 2% to 10% more energy than that needed to produce it. Barely worth the effort, especially if the production energy is from fossil fuel which we are trying to avoid.

Claims are made that ethanol production can give 1.67 times the energy required to make it. This includes "by-product credits" for such products as cattle feed from the corn mash and fertilizer value of the corncobs and husks which are plowed back into the ground during harvest. These are useful for increasing corn production but are not substitutes for petroleum products. The basic relationship of (ethanol energy out)/(total energy in) remains close to unity. The process is useful for petroleum replacement only if driven by other sources such as wind, solar and nuclear. Ethanol could then be viewed as a means of converting these other sources into a portable form.

The area problem: How much land will this use?

The Iowa Corn Promotion Board claims an acre of land can produce 183 bushels of corn kernels with each bushel making 2.7 gallons of ethanol with an energy content of 11,600 BTU/lb. With appropriate conversion constants this is an energy density of 39 million BTU per acre. To give meaning to this number let's compare it to the annual national transportation consumption of 28 quadrillion BTUs. It would take over a million square miles of corn production to meet this need. To put this in perspective, if the nine top corn producing states were devoted entirely to ethanol production it would supply less than half of the transportation energy needs and leave other needs unmet such as home heating and industrial production. The disruption in food supply and other commerce make this clearly unworkable.

The greatest handicap of biofuel generation is that the output only occurs once per year, with few exceptions. The area power density stated above, averaged over a year, is 0.3 watt per sq. meter. Wind and solar power are intermittent but average 100 times more.

Conclusion - Ethanol will remain a small contributor to fossil fuel replacement.

Ken Shamordola
Engineer (retired)
Nipomo, CA

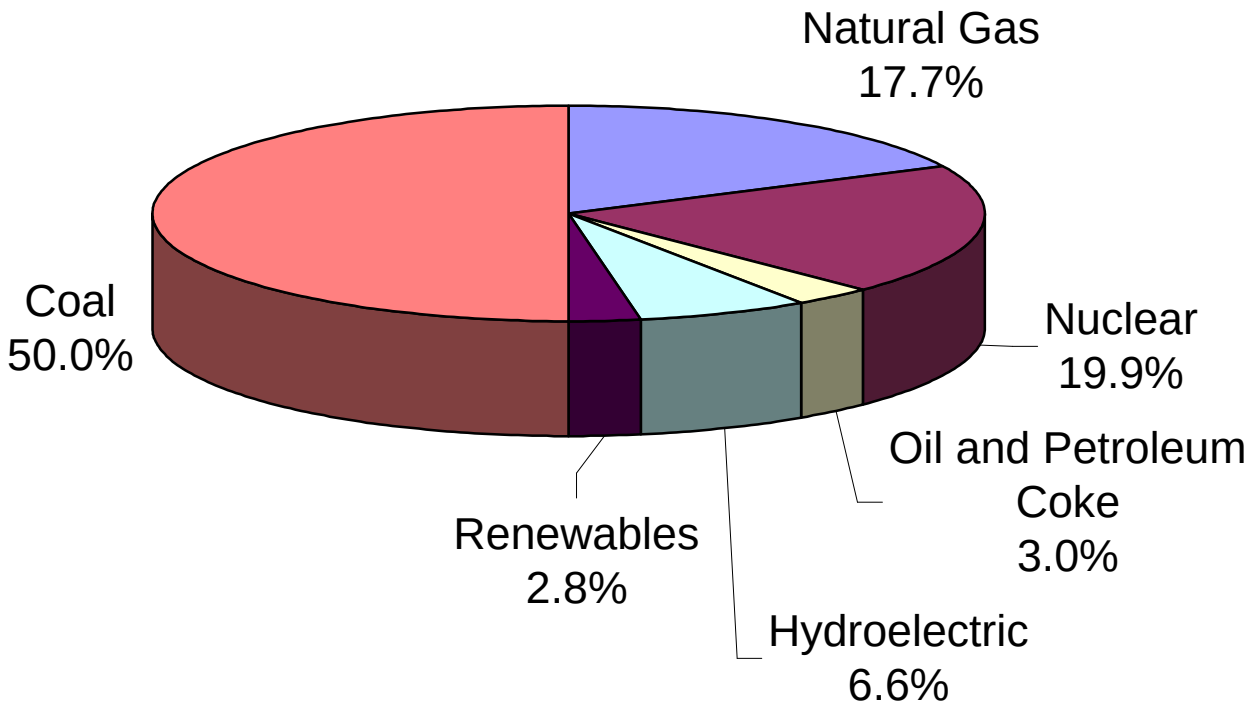
Abstract:

Linked Mechanical and Chemical Processes in the Diagenesis of Sandstones

AAPG Distinguished Lecturer
Kitty Millikin
Jackson School of Geosciences
The University of Texas at Austin
Austin, Texas

Cathodoluminescence imaging has served to reveal previously unrecognized linkages between brittle processes and cementation in a wide variety of diagenetic settings. Because nucleation of quartz cement is highly localized on pre-existing quartz substrates, fracture processes enhance the potential for quartz cement emplacement by creating favorable surfaces. This phenomenon is observed in the context of burial compaction, in deformation bands, in quartz-rich fault gouges, and in tectonically-produced transgranular fractures. In each case the amount of quartz cementation is greater than the amount that would occur in the absence of fracturing. In turn, the quartz cementation imparts changes in the mechanical properties of sandstones. The conceptual framework that emerges from these observations is one in which mechanical and chemical properties of sandstones evolve in concert. Reservoir quality assessment in rocks that have experienced a protracted history of diagenesis requires approaches that explicitly acknowledge the genetic links between chemical and mechanical processes.

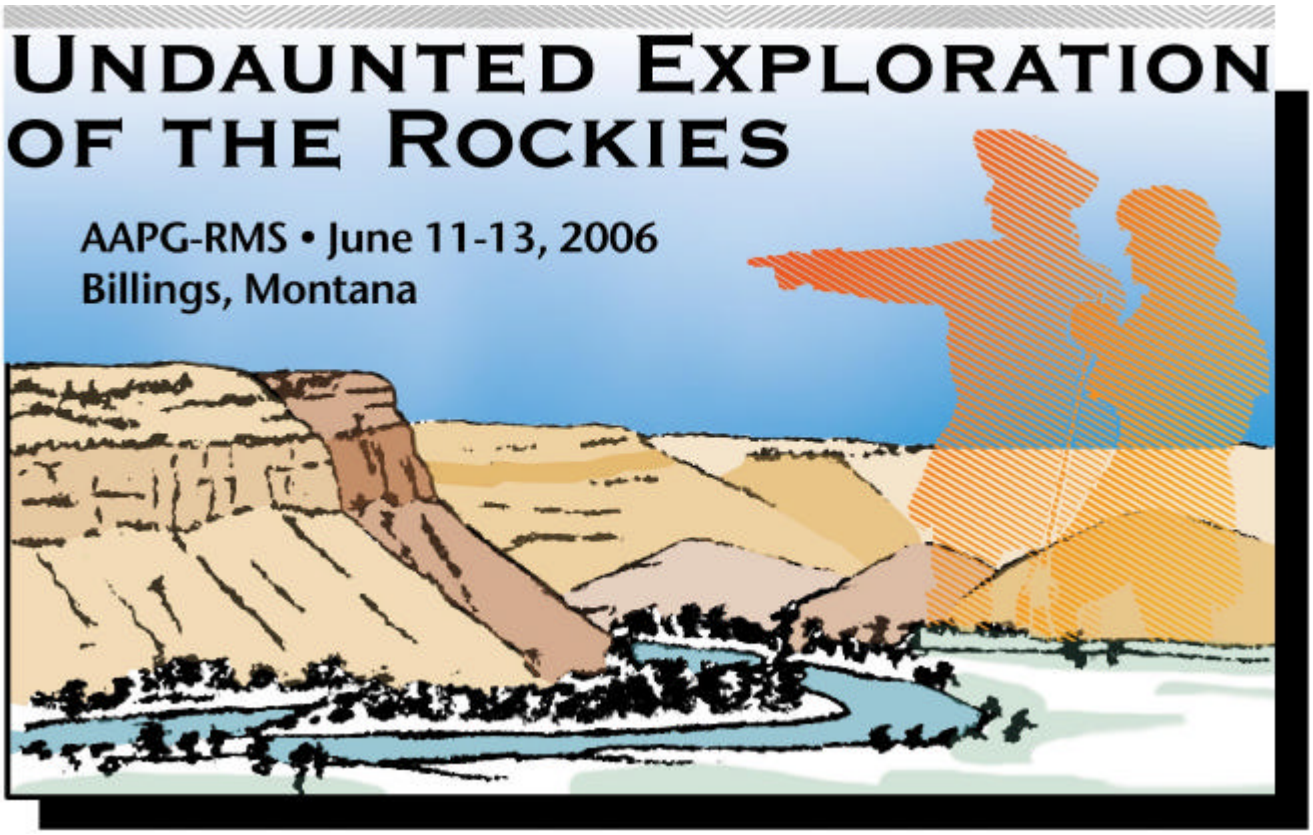
National Electric Generation by Fuel Source - 2004 (U.S. Dept. of Energy - EIA)



REMINDERS

April 9-12	**AAPG Annual Convention,** Houston, Texas, for more information contact the AAPG Convention Dept. (918) 560-2617 or aapg.org/houston.
April 20-23	**International Oil History Symposium,** "Wildcatters of the Plains", Wichita, Kansas, contact Petroleum History Institute – www.petroleumhistory.org.
May 7-9	**14th Annual Williston Basin Petroleum Conference and Prospect Expo,** Minot, North Dakota, contact North Dakota Petroleum Council (701) 223-6380.
May 7-11	**AAPG Pacific Section Meeting,** Anchorage, Alaska, detailed information and registration is available at http://anchorage2006.com.
May 8-10	**Geological Society of America, Cordilleran Section Meeting,** Anchorage, Alaska, detailed information and registration is available at http://anchorage2006.com.
May 17-19	**Geological Society of America, Rocky Mountain Section Meeting,** Gunnison, Colorado, detailed information and registration is available at http://www.geosociety.org.
June 11-13	**AAPG Rocky Mountain Section Meeting,** Billings, Montana, detailed information and registration is available at http://www.montanags.org.

Submission Deadline for the MGS Newsletters is the **10th** of each month. Submit requests to Bob Schalla, *ras@mcn.net*, 656-1647 or Lisa Reinschmidt at *l.reinschmidt@worldnet.att.net*, 406-248-7026.



MEMBERSHIP APPLICATION

Please Print

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EMAIL ADDRESS, NEEDED FOR MEMBERSHIP DIRECTORY UPDATE AND AID IN LUNCHEON CALL-AROUND

COMPANY

POSTIONS/TITLE

☐ COMPANY MAILING ADDRESS (NOTE:Please check preferred mailing address)

COMPANY CITY, STATE, ZIP

COMPANY PHONE FAX

☐ HOME ADDRESS

HOME CITY, STATE, ZIP

HOME PHONE SPOUSE

SCHOOL/DEGREE/YEAR

SCHOOL/DEGREE/YEAR

SCHOOL/DEGREE/YEAR

AAPG AFFILIATION

OTHER PROFESSIONAL AFFILIATIONS

DUES: $20 regular members, $7.50 students

Please fill out form and return with dues to:

Montana Geological Society Box 844, Billings, MT 59103

MGS PUBLICATIONS

MGS - NRGDC Northwestern Geologic Service Sample Logs (MT,ND, SD)
Over 2500 sample logs on CD-ROM (regional sets also available) ---------- $2500.00
2000 Guidebook: *Northern Montana & the Montana/Alberta Thrust Belt(2 vol. set)*
50th Anniversary Symposium ---------- 125.00
1998 *8th International Williston Basin Symposium* ---------- 55.00
1998 *Core Workshop guide for Williston Basin Symposium* ---------- 30.00
1997 *Big Horn Symposium Guidebook* ---------- 50.00
1997 MGS-TRGS Field Conference Guide:
The Edge of the Crazies: Where the Mountains Meet the Plains ---------- 25.00
1996 AAPG Rocky Mountain Section Meeting *Expanded Abstracts Volume* ---------- 25.00
1995 Guidebook: *Seventh International Williston Basin Symposium* ---------- 100.00
1993 Guidebook: *Energy & Mineral Resources of Central Montana* ---------- 54.00
1991 *6th International Williston Basin Symposium* ---------- 55.00
1991 Guidebook: *Geology & Horizontal Drilling of the Bakken Formation* ---------- 50.00
1991 Field Trip Guides; *Beartooth Mountains* ---------- 7.50
Sequence Stratigraphy of the Eagle ss at Billings ---------- 7.50
1989 Guidebook: *Geologic Resources of Montana* ---------- 80.00
1986 Guidebook: *Geology of the Beartooth Uplift and Adjacent Basins* ---------- 45.00
1985 Symposium: *Montana Oil & Gas Fields* ---------- 55.00
1978 *Economic Geology of the Williston Basin* ---------- 100.00
1971 *Catalog of Stratigraphic Names* ---------- 10.00
1969 Guidebook: *Economic Geology of Montana* ---------- 8.50
1951 *BGS 2nd Annual Central Montana Field Conference* ---------- 12.50
1950 *BGS 1st Annual Field Conference* ---------- 12.50

PHONE ORDERS: Doretta Brush (406) 259-8790
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S & H charges are not included in prices. Add $6 US shipping or $12 Canada shipping for each book ordered. For 1985 guidebooks, add $15 US shipping or $25 Canada shipping. Inquire for other foreign shipping charges.