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Volume 52 Number 5

Houston Geological Society





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The Bulletin Houston Geological Society

Volume 52, Number 5 January 2010

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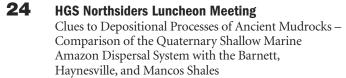
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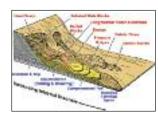


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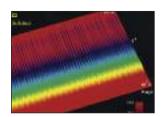
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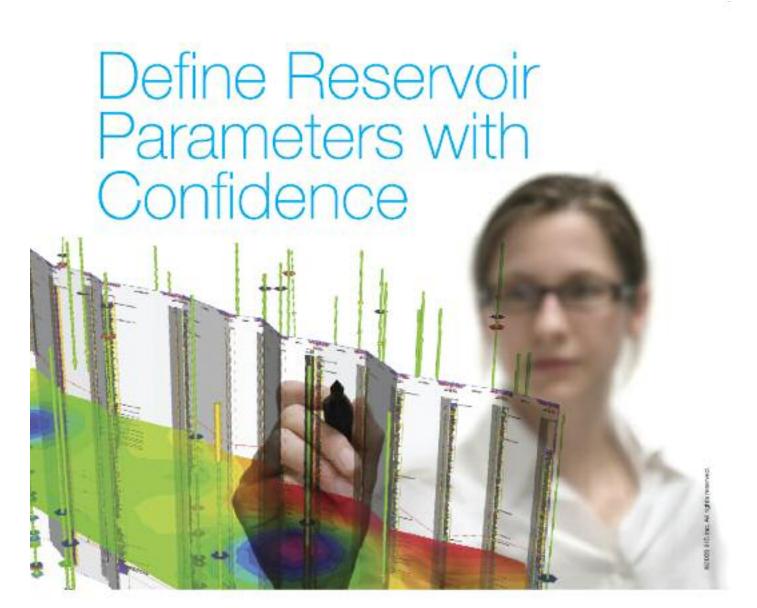
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Looking to maximize opportunities in today's volatile market?

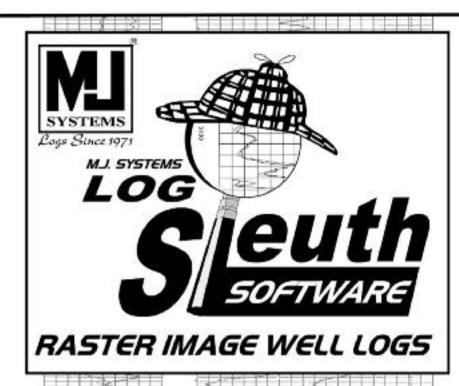
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2010: A Year of Opportunity

a clear, concise, and

convincing manner...

Tappy New Year! 2010 promises to be a great year for the HGS. I know that one of everyone's top New Year's resolutions is to attend more HGS talks and short courses. OK, well maybe not the top but certainly in the top 10...20?...100? Oh, come on! Work with me here! Like I was saying, right up at the top of everyone's list of things to do in 2010 is to attend more of the great talks the HGS puts on every month. I think one of the highlights this year will be the Mudstone Conference (Applied Geoscience Conference, or AGC) to be held February 8 - 9. In just three short years the Mudstone Conference has become the premier world conference on unconventional reservoirs. It attracts attendees from all over the United States and many foreign countries. If you have any interest in the Haynesville, Woodford, Marcellus, Bossier

or Eagle Ford shale or shale plays in general, this is one conference you can't afford to miss! Register early as it ALWAYS sells out!

In addition to the AGC there are a lot of excellent talks already scheduled for the spring. For example, the North American Exploration group is having a joint talk with the International Exploration group entitled "Sand-Prone Submarine Mass-Transport Deposits: Reservoir

Characteristics and Classification of an Underappreciated Deepwater Facies" by Lawrence D. Meckel-III. The Northsiders are presenting a talk entitled "Clues to Depositional Processes of Ancient Mudrocks - Comparison of the Quaternary Shallow Marine Amazon Dispersal System with the Barnett, Haynesville, and Mancos Shales" by Jim Rine. The Environmental Group is presenting a talk entitled "Municipal Setting Designations in Houston" by Richard Chapin. These presentations are in addition to the General HGS dinner meeting, "What's New in Seismic Imaging?" by John T. Etgen, and the General HGS Lunch meeting, "The Influence of High-Frequency Climate Variability on Paleoclimate Interpretation" by Marty Perlmutter. That incredible talk schedule is JUST for the month of January. In addition to learning new things and networking, each of these HGS talks is worth one hour of Continuing Education credits of the 15 hours which are required to keep your Texas P. G. license current. We are indeed fortunate to live in an area that can provide so many opportunities to learn. We simply need to take advantage of it.

2010 promises to be a year of opportunities and challenges. One of the challenges will be to find ways to make our prospects appealing

to both our partners and management in order to get them on the drilling schedule. In times when drilling funds are limited there can be a bit of competition even within the same company for those drilling dollars. This can work both for us and against us. On the plus side the competition may force us to do extra steps or conduct more research in order to enhance our prospect. This extra work helps us to understand the prospect better and that in itself makes us better as presenters. On the downside, geologists who are not the best presenters may see their prospects by-passed in favor of less qualified but better presented prospects. This of course is nothing new. It has been going on since the days of paper seismic sections and logs and the days when the E & P in a company's name stood for Exploration and Production, not Excel and PowerPoint. Presenting

is an aspect of our jobs that sometimes gets

... If our prospects are to ignored. We ask for training in a lot of areas but few of us ever ask for training in the fine art of live we must convey all presenting or preparing the presentation such as requesting a course in PowerPoint for example. we know about them in It's come a long ways since most of us first started using the current mainstay of prospect presentations. I know such things seem so mundane but in the end, whether presenting to management or potential partners, the

presentation is where the rubber meets the road. We have spent untold hours with our prospects. We think about them even when we aren't at work. They come unbidden into our heads at the most inopportune times. Who among us has not at one time or another dropped what we were doing to grab a piece of paper, a napkin, our daughter's homework, to scribble down a revelation that suddenly just popped into our heads? Our prospects are not just things to be put on drilling calendars. They are living breathing extensions of ourselves. They are the culmination of our current professional abilities and lives. We are excited when they are born, we celebrate when they are successful, we mourn and spend hours reflecting and asking why when they are not. Our prospects, successful or not, are a part of us. If our prospects are to live we must convey all we know about them in a clear, concise, and convincing manner, and we generally have just 30 minutes to an hour in which to do it. It is no longer enough to simply be proficient and keep current in the technologies that help us recognize and define our prospects. We must make ourselves proficient in presenting them. We owe them (and our long suffering families) that much, don't you think?

Here's wishing you a year of personal and professional success!

Think outside the computer screen.

Choose from over 50 exciting field seminars, short courses and online programs all designed with the goal of helping you explore and better understand the science of this industry. Please see the AAPG website for complete descriptions and registration information. Below are the highlights of courses coming up very soon. Make your plans now before seats get filled!

Short Courses:



Petroleum Exploration in Fold & Thrust Belts, Austin, TX



Practical Salt Tectonics, New Orleans, LA (with AAPG Annual Meeting)



Assessment of Unconventional Shale Resources Using Geochemistry, New Orleans, LA (with AAPG Annual Meeting)



Basic Well Log Analysis, Austin, TX

Online Courses:



Solar Energy Basics – A Renewable Energy Certificate Course



Biomass Energy Basics – A Renewable Energy Certificate Course

E-Symposium Series:



Horizontal Drilling for Geologists



Ultra Deepwater: Structure and Methane Hydrates



Creativity in Exploration

Field Seminars:



Field Safety Course for Field Trip Leaders, April 1-2, Houston, TX



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From the Editor



Barry Katz BJKatz.HGS@gmail.com

Creativity, Innovation, the Herd, and a Bubble

... geologists must be careful

of the so called "information

cascade" when observations

of the actions of others are

used to make the same

choice as the group...

any of us have seen the quote by Wallace Pratt, "Where oil Lis first found, in the final analysis, is in the minds of men." Others are familiar with the quote by Patrick Dickey that "Several times in the past we have thought we were running out of oil whereas actually we were only running out of ideas." Both of these quotes suggest that in order for a geologist to be successful, creativity must be part of the process. For those that may doubt this, consider the projected importance of unconventional resources in the oil and gas industry today. This rise in importance is a result of a number of innovations. First the

evolution of what is considered a viable hydrocarbon reservoir to include coal beds, tight low permeability sands, and gas shales and then drilling and completion processes including the common use of horizontal wells and hydraulic fracturing. These concepts and tools have transformed, at least, part of the industry. Advances in technology, such as 3D seismic, and more detailed reservoir studies have also been shown to increase production in conventional reservoirs in places such as the North Sea and west Texas.

Creativity and innovation clearly play a vital role in the advancement of our science and the industries we support. They lead to the development of new plays and the manner in which we explore and develop our resources. Unfortunately neither represents something that can be easily turned on at the command of management. The innovation process, by its very nature, is serendipitous, iterative, and non-sequential. Management can, however, provide for an environment that will foster creativity and innovation by providing sufficient resources as well as an understanding that creativity often marches to the beat of a different drummer and that timelines may deviate from the plan. Clearly when oil and gas prices are high, providing for such an environment and the necessary resources is easier than when prices are low and financial pressures exist. One could, however, argue that when prices are low and the system is stressed that is the time when there is the greatest need for creativity and innovative solutions to various exploration, production, and environmental problems attempting to maximize values and opportunities while reducing costs.

Creativity and innovation require a clear understanding of the problems before us, the technical foundations of our science, the necessary resources, freedom to think, and the necessary tools and equipment to experiment as well as an opportunity to fail without fear of retribution. There is also a need to be open-

minded and a willingness to examine all

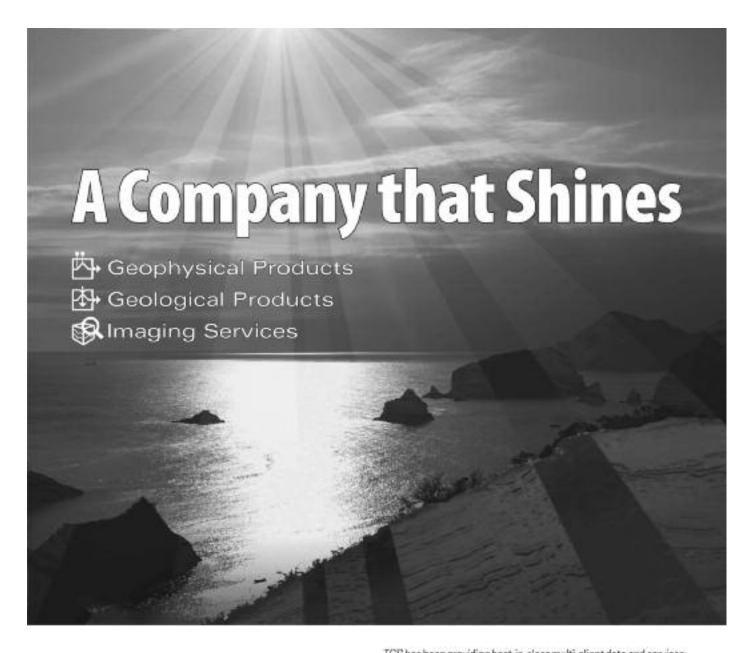
sides of the problem. Most importantly there is a need for thinking out of the box and a willingness to attempt as Rolf Smith suggests in The 7 Levels of Change "to do things that haven't been done" or "to do things that can't be done", or at a minimum" adapting things that others do".

Individual innovations need not be major to add value. Cumulatively, however, a number of small steps can greatly change the way we do business. In fact, truly innovative and

radical solutions may, at times, be questioned. Very often the longterm value of a new idea is difficult to assess and the return may not be seen for many years or may yield results in areas other than those originally intended. Furthermore, it may be someone other than the creator that takes full advantage of the idea, bringing value to society or the profession. In his book Dealers of Lightning: Xeroc PARC and the Dawn of the Computer Age Michael Hiltzik documents one of the better known examples where a group other than that of the innovators' takes full advantage of a series of inventions. He cites examples such as the mouse, the graphical user interface (GUI), and the laser printer where companies other than Xerox were able to more fully capitalize on innovation.

Not all new concepts and innovations are ultimately successful and lead to viable opportunities. With all new innovations and

From the Editor continued on page 9





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ideas, geologists must be careful of the so called "information cascade" when observations of the actions of others are used to make the same choice as the group observed. In this mode, decisions are made independently of the information available and one's understanding and knowledge. Such cascades can lead to bubbles which ultimately burst. In our business one may look to the Western Overthrust Belt where major discoveries in excess of 1.5 billion barrels of oil and 4.5 trillion cubic feet of gas were made in the 1970's. Explorationists attempted to expand these successes to all overthrust belts without considering that all occurrences of oil and natural gas are dependent on the same factors as in other tectonic settings. Significant investments were made in both acreage acquisition and drilling globally with only minor success and without considering the basics of the petroleum system. Realism ultimately set in and the bubble burst. Exploration reverted to more complete geologic assessments examining hydrocarbon charge, reservoir presence and quality, seal, and trap. One can only hope that over the past three decades we have learned something and that the shift toward unconventionals by so many large and small companies is more than an information cascade. The best decisions are based on a sound understanding of the science behind the different plays, remembering that oil and gas is found through rigorous observation, hard work, and study. It is important to remember that gas shales are complex petroleum systems, generalizations have limited application, and that the interchangeability of the different parameters used in their assessment has not been established.

Our science and the associated industries will continue to rely on innovation and creativity. But it is important to remember the thoughts of John Parker, "It takes facts to be able to deserve a concept just as it takes concepts to be reative."

Until next time...

Constitution and Bylaws Amendments Explained

By Steve Earle

couple of years ago, the Bylaws of the Houston Geological **1**Society were amended to allow for electronic balloting on amendments since voting through the website has become popular with a large number of our members. Unfortunately, the Constitution was not changed and a paper only ballot is still required. To remedy this situation, and to take a more comprehensive look at our key governing documents, an ad hoc committee was formed. I will attempt to explain the proposed changes and some rationale for them.

While there are a few changes meant to clarify or correct grammar, I will address those that are more substantive. First, we attempted to make voting procedures consistent for election of officers and for amendments to our constitution or bylaws. Voting would still be allowed by either paper or electronic ballot, but once these changes are approved, we could cover any issues that the membership needs to vote on with a single ballot. Some voting procedures in the Bylaws did not conform to current practice, so the changes would align voting requirements with how we actually do things. Refer to Article V of the Constitution and Articles III and VI of the Bylaws.

Article II, Section 9 of the Constitution changes how members are to be reinstated. The procedure currently specified simply does not work in practice and the proposed changes should streamline the process for past members to rejoin the Society. Section 7 covering expulsion of members was vague. We offer language to define when expulsion is allowed and a process for this to occur. Section 6 adds a requirement for Emeritus membership of ten consecutive years as an Active member prior to their application.

We propose adding Article III, Section 12 to the Constitution as a means to assure continuation of the Society in the event of a worst case scenario by providing for a special election. And in Article VI we add language to clarify the steps required before the HGS may be dissolved.

For the Bylaws, we have proposed a few changes. We believe Board meetings must continue to be open, but would allow the Board to meet in executive session only for discussion of highly confidential matters such as legal or personnel issues where an open session might compromise the Society's best interest. This is addressed in Article I, Section 2. We added Section 5 to Article IV allowing the Board to assess late fees; we do not expect the Board will assess a late fee unless an issue arises where the Society is being hurt by more than a few recalcitrant members. Finally, we added Article VII establishing priority of the Constitution.

I hope you will vote to approve these amendments to help strengthen governance of our Society. Let me conclude by thanking my committee members, Marsha Bourque, Paul Britt, Richard Howe, Bob Merrill, Jim Ragsdale and Ianthe Sarrazin, for their work on this project. ■

Constitution and Bylaws Amendments Explained continued on page 10

Constitution and Bylaws Amendments continued from page 9

HOUSTON GEOLOGICAL SOCIETY CONSTITUTION

ARTICLE I Name and Purpose

Section 1. NAME: This organization shall be named "Houston Geological Society". It shall be located at Houston, Texas.

Section 2. PURPOSE: The objectives of this society are: (1) to stimulate interest and promote advancement in the geosciences; (2) to disseminate and facilitate discussion of geological information; (3) to enhance professional interaction among geoscientists; and (4) to aid and encourage academic training in the geosciences.

ARTICLE II Membership

Section 1. CLASSES: The membership of this organization shall be made up of active, honorary life, associate, special, and emeritus members.

Section 2. ACTIVE MEMBERS: In order to be eligible for active membership, an applicant shall: (1) have a degree in geology or an allied geoscience from an accredited college or university; or (2) have a degree in science or engineering from an accredited college or university and have been engaged in the professional study or practice of earth science for at least five (5) years. Active members shall be entitled to vote, stand for election, and serve in an officer in the Society.

Section 3. HONORARY LIFE MEMBERS: The Executive Board may elect from time to time as honorary life members persons who have distinguished themselves in the science of geology, or who have contributed outstanding service to the success and welfare of this organization. Honorary life members shall also be considered active members, but shall not be required to pay dues.

Section 4. ASSOCIATE MEMBERS: In order to be eligible for associate membership, an applicant shall: (1) be involved with the application of the earth or allied sciences; or (2) be a full-time student enrolled in geology or in related sciences in an accredited college or university granting degrees in the earth sciences. An associate member who becomes eligible for active membership may apply for transfer to active membership, provided that the application is sponsored by one active member. Associate members will not be eligible to vote, to hold elected office, or to sponsor applicants for HGS membership but will have all other rights and privileges enjoyed by active members.

Section S. SPECIAL MEMBERS: The Executive Board may elect from time to time certain special members who shall be those deemed by the Executive Board to have benefited the profession of geology. Special members shall not be eligible to vote, to hold elective office, or to sponsor applicants for active or associate membership, but shall have all other rights and privileges enjoyed by active members.

Section 6. EMERITUS MEMBERS: A member, having attained the age of 65, and having been an active member of the Houston Geological Society for ten (10) consecutive years, may apply to the Membership Chairman for designation as an Emeritus member.

Section 7. EXPULSION: The Executive Board may suspend or expelliany member of any class for cause after an appropriate hearing before the full Board and upon a two-thirds majority vote of all the Board members. For cause may include, but is not limited to the following:

misrepresentation of the member's qualifications, or

conviction of any felony, or of any other offense, that the Executive Board finds related to the practice of geology; or

imposition of discipline by any professional licensing or registration board involving the suspension or revocation of the right to practice geology.

An accused member will be notified in writing of the hearing time and location and the charges against him. Such member has the right to defend himself against the charges and the right to attend the hearing and/or submit written statements.

Section B. TERMINATION FOR NON-PAYMENT OF DUES: When any member of any class, except honorary life, shall be in default in the payment of dues for a period to be set by the Executive Board, that membership is automatically terminated.

Section 9. REINSTATEMENT: Any member who has been terminated for non-payment of dues will automatically be reinstated by either payment by check of one years dues to the Office Manager of the Houston Geological Society, or by paying one years dues on the Houston Geological Society webpage".

ARTICLE III Officers & Executive Board

Section 1. OFFICERS: The officers of this organization shall be the President, President-Elect, Vice President, Secretary, Treasurer, Treasurer-Elect, Editor, and Editor-Elect. The tenure of the officers shall be one administrative year, except as noted otherwise below

Section 2. PRESIDENT: The duties of the President shall be to preside at all meetings, call special meetings, appoint such committees as are not provided for in the constitution, and jointly with the Secretary or the Treasurer sign all written contracts of the Society.

Section 3. PRESIDENT-ELECT: The President-Elect shall serve one year as such and shall assume the office of President the following year. The President-Elect will serve as a member of the Finance Committee and Deleted: and

Deletad: Upon application made to the Membership Chairman and filed with the Secretary, and following payment of dues plus a reinstatement foe determined by the Decuritive Roard, the Executive Board may, by a majority affirmative vote of the members of the Board, reinstate such furtier member to membership.

Deleted: Any member who has been terminated for non-payment of dues within a trie year period will be sufformatically ninetrated upon receipt of the delinquent dues and any late fees. After one year, such previous members must reapply same as for new membership. on the Board of Directors of the Houston Geological Society Memorial Scholarship Fund. This person will prepare to serve as President and, in the absence of the President, will assume the duties of that office. If the President is not able to complete the term, the President-Elect will assume that office for the remainder of the administrative year, and will also serve the following presidential term. In such an event, the office of President-Elect shall remain vacant for the duration of that administrative year. In the event the President-Elect is unable to complete the term of office, that person may not serve as President the following year.

Section 4. VICE PRESIDENT: The duties of the Vice President shall be to serve as Chairman of the Technical Program Committee and, in the absence of the President and President-Elect, to assume the duties of the President for no longer than the remainder of the administrative year.

Section 5. SECRETARY: The duties of the Secretary will be to keep the Minutes of all Executive Board meetings, to attend to all correspondence, and, when requested by the President, to co-sign all written contracts of the Society. The Secretary will assume the duties of the President in the absence of the President, the President-Elect and the Vice President for no longer than the remainder of the administrative year.

Section 6. TREASURER: The duties of the Treasurer shall be to handle all monies and, when requested by the President, to co-sign all written contracts for the Society.

Section 7. TREASURER-ELECT: The duties of the Treasurer-Elect shall be to assist the Treasurer, to become familiar with the details of the office of Treasurer, and to assume the duties of the Treasurer in the event the Treasurer is absent. The Treasurer-Elect shall serve for one year as such, and in the following year assume the office of Treasurer. In the event the Treasurer-Elect is unable to complete the term of office, that person may not serve as Treasurer the following year.

Section B. EDITOR: The Editor shall serve for one year and shall have general supervision and final authority in soliciting, accepting, and rejecting all material on technical subjects for publication in the Sulletin. The Editor shall appoint, replace, and re-appoint such volunteer managing editors, associate editors, or assistant editors from among the Society membership as may be required to accomplish the publication of the Sulletin.

Section 9. EDITOR-ELECT: The duties of the Editor-Elect shall be to assist the Editor, to become familiar with the details of the office of Editor, and to assume the duties of the office of the Editor in the event the Editor is absent. The Editor-Elect shall serve for one year as such and in the following year assume the office of Editor. In the event the Editor-Elect is unable to complete the term of office, that person may not serve as Editor the following year.

Section 10. EXECUTIVE BOARD: The President, President-Elect, Vice-President, Secretary, Treasurer, Treasurer-Elect, Editor, Editor-Elect, and four Directors shall constitute the Executive Board, also referred to at the Board in this occurrent. The Executive Board is the governing body of the Society, and among its duties shall be to receive and pass upon all applications for membership, to fill vacancies occurring within the Board, except as otherwise provided in these Articles, to conduct all business, and to supervise the affairs of this organization.

Section 11. DRECTORS: The duties of the Directors shall be to serve on the Executive Board and to assist the President in administrative duties. The tenure of directors shall be two years with two directors being elected each administrative year.

Section 12. CHAIN OF SUCCESSION: In the event the President, President-Elect, Vice President, and Secretary are all unable to fulfil their duties within an administrative year, then a Special Election will be held to fill all vicancies on the Executive Board.

ARTICLE IV Administrative Matters

Section 1. ADMINISTRATIVE YEAR: The administrative year shall be from July 1 of one year through June 30 of the following year. An annual financial report for each administrative year shall be made available to the membership on or before December 31 following the conclusion of that administrative year.

Section 2. RULES OF ORDER: The rules contained in the current edition of Robert's Rules of Order, Newly Revised, shall govern the Society in all cases to which they are applicable and in which they are not inconsistent with the Society's Constitution and By-laws and any special rules of order the Society may adopt.

ARTICLE V Amendments

Amendments to this constitution may be proposed at any time by resolution of the Executive Board or by petition signed by at least ten percent (10%) of the active members. Adoption of such amendments shall be by active belief in which approval is given by at least two-thirds of the total number of members voting. The proposed amendments to the Constitution and a ballot shall be delivered in both electronic and hardcopy to all members, and submitted to the Active members for vote using online ballot or paper ballot through the postal mail. Ballots must be received no later than forty five (45) days from the date that ballots are mailed and available through the HGS website.

ARTICLE VI Dissolution

A proposal to dissolve the Houston Geological Society may be put forward by either a two-thirds majority of the Goard or by petition signed by at least twenty five percent (25%) of the Active members of the Society. Such proposal requires a vote of the Active membership and passes only if at least two-thirds of

January 2010

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Constitution and Bylaws Amendments Explained continued on page

Constitution and Bylaws Amendments continued from page 11

those voting scree to dissolve the Society. Belloting is to be the same as for a constitutional amendment as provided in Article V. In the event this Society is dissolved and after all Society debts have been paid and met, all assets shall then be donated to the American Association of Petroleum Geologists Foundation, and/or to some other nonprofit geological activity qualifying under IRS Tax Code 501C (3), as designated by the Executive Board.

Delebed: at the time of dissolution

HOUSTON GEOLOGICAL SOCIETY BY-LAWS

ARTICLE I Society Meetings

Section 1. GENERAL MEETINGS: A meeting of the general membership shall be held at least once a month from September through May at an appropriate time and place selected by the Executive Board. By approval of two-thirds of the Executive Board present and voting, general meetings may also be held in June, July and/or August.

Section 2. EXECUTIVE BOARD MEETINGS: The Executive Board shall meet at least once a month throughout the year. These meetings shall be open for attendance by any member of the Society_except the Board may meet in executive session only to discuss issues of office personnel, legal matters, and by specific request of a member not on the Board.

ARTICLE II Membership

Section 1. APPLICATIONS: Applicants for active and associate membership shall submit an application, endorsed by one <u>Active</u> member, to the Membership Chairman for review and recommendation. The Membership Chairman shall forward the application to the Secretary, who shall place the application before the Executive Board. After action by the Executive Board, the applicant shall be advised of the Board's action. The names of new members shall be introduced to the Society by publication in the first available Bulletin following their election.

Section 2. AAPG MEMBERS: Applicants who are currently Active members of the AAPG will not require endorsement by an HGS member.

ARTICLE III Election Of Officers And Directors

Section 1. NOMINATING COMMITTEE: The Nominating Committee shall nominate two or more candidates for each elective office except Editor-Elect, for which position one candidate may be nominated. The committee shall submit to the President the names of the nominees, each of which must be an Active Member in good standing, for each office no later than January 1.

Section 2. ADDITIONAL NOMINATIONS: The candidates selected by the Nominating Committee shall be announced at the first General Meeting of the Society after January 1, at which time additional nominations may be made from the floor.

Section 3. PUBLICATION: The complete list of candidates shall be published in the April issue of the Bulletin.

Section 4. VOTING PROCEDURE: Voting shall be by secret ballot. The Ballot Committee shall mail ballots to all voting members no later than April 10 of each year. Members may vote by either mailed paper ballot, or by an online ballot procedure. To be counted, all ballots must be received in the Society office no later than May 10. Voting shall be by preferential ballot, and the candidate receiving the highest number of votes for each office shall be elected. In the case of candidates for Director, those receiving the first and second highest number of votes shall be elected.

Section 5. PRESENTATION OF NEW BOARD MEMBERS: The newly elected officers and directors will be presented to the Society at the first general meeting after the election. These new members should also attend the June meeting of the Board as observers.

ARTICLE IV Annual Dues

Section 1. DUES: The annual dues shall be determined by the Executive Board. A two-thirds majority vote of the Board is required to change the dues. The first dues notice shall be mailed June 1.

Section 2. STUDENT DUES: An associate member who is a full-time college student may pay one-half of the regular annual dues.

Section 3. EMERITUS DUES: An emeritus member shall pay one-half of the regular annual dues.

Section 4. DUES CHANGES: Upon a two-thirds majority vote of the Executive Board, annual dues may be changed by an amount not exceeding a cumulative twenty percent (20%) through any two successive administrative years.

Section 5. LATE FEES: Late fees, if any, shall be determined by two-thirds majority vote of the Executive Board.

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ARTICLE V

Section 1. STANDING COMMITTEES: Standing Committees shall include the Ballot Committee, the Finance Committee, and the Nominating Committee. Other Standing Committees may be established or abolished by the Executive Board. The President shall be responsible for all standing committees and may delegate responsibility for any standing committee(s) to a member of the Executive Board. Any committee member may be removed upon unanimous vote of the Executive Board members present. The annual terms of service for members of a committee shall terminate June 30 each year.

Section 2. BALLOT COMMITTEE: The Ballot Committee shall consist of not less than three members who shall preside, in accordance with these Bylaws, over elections of the officers and directors of the Society and any other matters requiring a vote of the general membership. No member of this committee may be a nominee.

Section 3. FINANCE COMMITTEE: The Finance Committee shall prepare and submit an annual budget and be responsible for an annual audit, and shall act as financial advisor to the Executive Board.

Section 4. NOMINATING COMMITTEE: The Nominating Committee shall consist of the last three available past Presidents, the most recent of whom shall be the Chairman of the committee. This committee shall annually nominate candidates for the Executive Board in accordance with these Bylaws.

Section 5. AD HOC COMMITTEES: The President may appoint from time to time ad hoc committees whose charge will be specified by the President at the time of such an appointment. The charge of such a committee should be narrowly defined and of finite duration, and upon its completion, said committee shall chase to exist.

ARTICLE VI Amendment to Bylaws

Section 1. Amendment to the Bylaws may be proposed by (1) resolution by the Executive Board, or (2) by petition signed by at least ten percent (10%) of the Active members. Proposed amendments to the Bylaws and a ballot shall be delivered in both electronic and hardcopy to all numbers, and submitted to the Active members for vote using either online ballot or paper ballot through the postal mail. Ballots must be received no later than forty five (45) days from the date that ballots are mailed and posted on the RGS websits. Amendment to the Bylaws shall be approved by online ballot or mail ballot in which approval is given by at least two-thirds of the total number of members voting.

ARTICLE VII Priority of Constitution

Section 1. In the event there is a conflict between the Constitution of the Houston Geological Society and these Bylaws, the Constitution will supersede the Bylaws.

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Deleted: Such proposed emendments to the Bylaws shall be submitted to the membership for a vote using online ballot and by postal mail.

Deletad: An amendment shall be ensaled to the active membership and published in the Sulfetin at least two weeks and not more than four works before a regularly scheduled meeting. Email and postal mail hallots must be returned within two weeks after the regular meeting.

The HGS Board will present the ballot to you in February for your approval or rejection of the proposed amendments to our governing documents.



Bring a non-member colleague with you to the next HGS meeting – share the networking and new ideas



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Westchase Hilton • 9999 Westheimer Social Hour 5:30–6:30 p.m. Dinner 6:30–7:30 p.m.

Cost: \$28 Preregistered members; \$35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.

Pre-registration without payment will not be accepted.

You may still walk up and pay at the door, if extra seats are available.

HGS General Dinner Meeting

John T. Etgen

What's New in Seismic Imaging?

...regional and temporal

variations in the phase

relationships between

sedimentary and

glacioeustatic cycles may

not be consistent with

basic assumptions about

stratigraphy...

 $\mathbf{F}^{\text{rom a geophysicist's perspective}}$, the better the seismic image, the easier it is for the geologists to do their job. So in a sense,

we are working hard to trivialize you! Of course in the hydrocarbon exploration and production business we're collectively always working on the frontiers: geologically, geographically, technically, scientifically, etc. So our ability to image and interpret things we want to understand is constantly challenged. Do recent geophysical trends have the potential to revolutionize the relationship between geophysical data and geological understanding and interpretation of the interior of the Earth? Maybe. I'll talk about these trends, which are the product of the incredible advances in computing power available for processing seismic data combined with clever thinking about how we collect seismic data.

For a variety of reasons, the deepwater region of the Gulf of Mexico is one of our favorite proving grounds for geophysical technologies. There, industry faces many technical challenges around developing subsalt reservoirs. A few years ago BP pioneered two new seismic acquisition methods that when coupled with advances in seismic processing have made substantial improvements in our understanding of these reservoirs. I'll show you some examples of these methods applied to BP assets. One of the keys to motivating these advances was the use of seismic forward modeling. The ability to simulate realistic synthetic data and test hypotheses has become a critical part of geophysical science. We have even come to the point now where the same technology used to simulate data to the best of our ability is being used to process the data we actually acquire in the field. The future holds not only more clever ways of acquiring data, but ways of acquiring a lot more data.

If you hang around geophysicists enough, you're certain to hear them discuss "seismic velocities". We need good estimates of the speed that waves propagate in the subsurface to apply our imaging methods. We take great pains to do this quickly and accurately. However, many of the methods we used in the past are based on

> substantial simplifications to the way waves propagate. Recently, a method called "Waveform Inversion" has been gathering a lot of excitement. Historically the velocity "models" that geophysicists have created were lacking in information content at intermediate scales. We could find sharp changes in velocity, because they give rise to reflection events. We could find very long wavelength trends in the speed of wave propagation through traveltime tomography. Variations in wave speed that were tens to a few hundred meters in scale were not recovered. When we can recover features with velocity expressions at those scales, the results are dramatic in terms of connecting geology to geophysics. I'll

show some examples of this technology and explore its potential for the future.

Biographical Sketch

JOHN T. ETGEN received a B.S. in geophysical engineering from the Colorado School of Mines in 1985 and a Ph.D. in geophysics from Stanford University in 1990. From 1990 through 1998 he worked for Amoco Production Research Company in Tulsa, Oklahoma. From 1999 through the present he has worked for BP as a Senior Scientific Advisor for seismic imaging. His



research interests include numerical wave propagation, seismic modeling and migration, and velocity estimation. In the spring of 2007 he took a sabbatical from BP and was a visiting associate professor at Stanford, supervising a research group in seismic imaging and teaching a seismic imaging class. In 2008 he and colleague Carl Regone were awarded the Virgil Kauffman Medal of the Society of Exploration Geophysicists for their work on wide-azimuth marine seismic.



HOUSTON GEOLOGICAL SOCIETY

Explore Our Connections

Applied Geoscience Conference (AGC) 2010 AGC of US Gulf Region Mudstones as

Unconventional Shale Gas/Oil Reservoirs

February 8-9, 2010

Hilton Houston North, Houston, TX
INDUSTRY/GOVERNMENT/UNIVERSITY
PERSPECTIVES FOR GULF COAST REGION
MUDSTONE / SHALE GAS/OIL RESERVOIRS

- Learn Mudstone System Characterization.
- See Practical Applied Methods for Mudstone Shale Reservoir Characterization.
- Hear new technical perspectives of the Haynesville, Bossier & Eagleford Shales.
- Apply these reservoir characterizations to Effectively Complete These Targets
- Focus with Shale Gas/Oil experts within the characterization fields of exploration geology, exploitation geology, geochemistry, nanno scale petrology, geomechanics, log analysis, & completions engineering

COMPREHENSIVE TECHNICAL PROGRAM SHALE HC CHARACTERIZATION EXPERTS:

Joe Macquaker Kevin Bohacs
MEMORIAL UNIVERSITY EXXONMOBIL

Gary Lash Nicholas Harris,
SUNY Fredonia COLORADO SCHOOL OF MINES

Roberto Suarez-Rivera Kitty Milliken TERATEK, Schlumberger TEXAS BEG / U of T

Rick Lewis Dan Jarvie
SCHLUMBERGER WORLDWIDE GEOCHEMISTRY
Jackie Reed Mike Conway
REED CONSULTING STIM-Lab

Richard Vessell Phil Martin
GEOSYSTEMS NEW CENTURY EXPLORATION INC.

Bob Bereskin Ursula Hammes
BERESKIN AND ASSOCIATES TEXAS BEG / U of T

AND ADDITIONAL INDUSTRY SPEAKERS



TECHNICAL PROGRAM COMMITTEE

Frank Walles

President, AAPG Energy Minerals Division St. Geol Advisor Unconventional Resources

DEVON ENERGY CORPORATION

Michael Van Horn, Vice President-Geoscience

NEWFIELD EXPLORATION COMPANY

Bruce Martin, Senior Staff Geologist SOUTHWESTERN ENERGY

Mike Cameron Corporate New Ventures
NEWFIELD EXPLORATION COMPANY

HGS Joint International and North American

Dinner Meeting

Westchase Hilton • 9999 Westheimer Social Hour 5:30–6:30 p.m. Dinner 6:30–7:30 p.m.

Cost: \$28 Preregistered members; \$35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.

Pre-registration without payment will not be accepted.

You may still walk up and pay at the door, if extra seats are available.

Lawrence D. Meckel, III Chief Geologist Woodside Energy (USA), Inc.

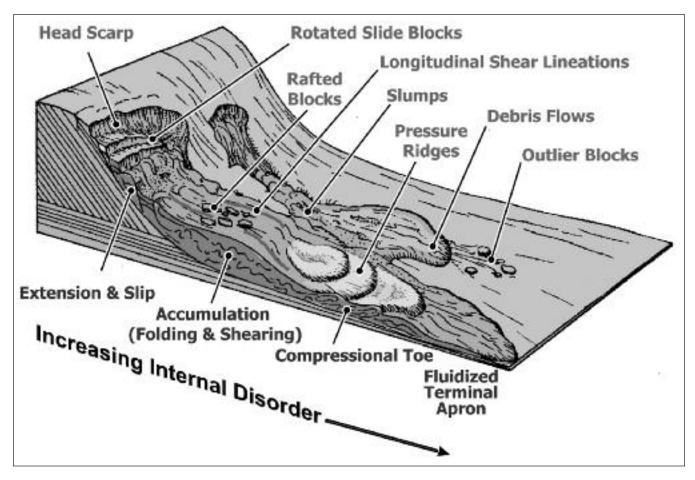
Sand-Prone Submarine Mass-Transport Deposits: Reservoir Characteristics and Classification of an Underappreciated Deepwater Facies

Sand-prone submarine mass-transport deposits (Figure 1) are deepwater deposits that have been underappreciated by geoscientists as reservoirs and as drilling hazards. Recent studies confirm that sand-prone mass-transport deposits are common in the deepwater stratigraphic record (Figures 2 & 3), and that they act as significant oil and gas reservoirs in major global hydrocarbon provinces such as the Gulf of Mexico, West Africa, and the North Sea (Figure 4). Furthermore, sand-prone mass-transport deposits

filled with locally overpressured gas or water in the shallow subsurface represent a shallow drilling hazard that warrants significant consideration in deepwater drilling programs.

Mass-transport deposits are defined as sedimentary stratigraphic successions that were remobilized after initial deposition but prior to substantial lithification, and transported downslope by gravitational processes as non-Newtonian rheological units

HGS Joint International and North American Dinner continued on page 19



Houston Geological Society Applied Geoscience Conference (AGC)

The Hilton Houston North Hotel, Houston, Texas

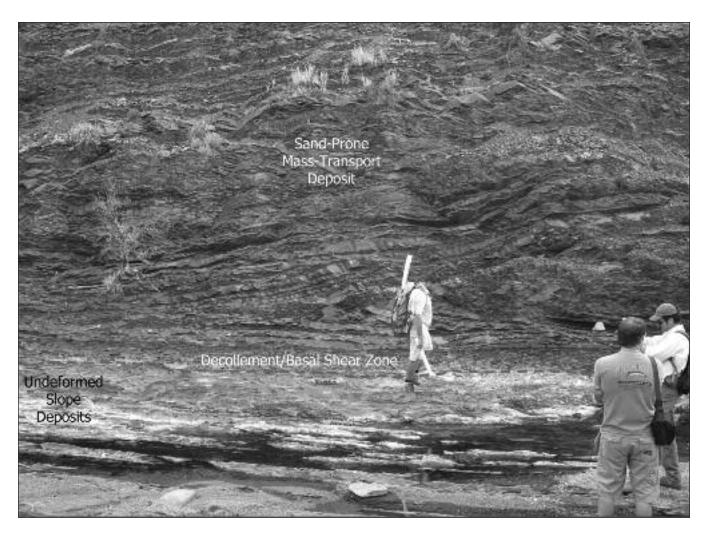
Monday February 8, 2010 Agenda

US Gulf Region Mudstones
As Unconventional
Gas/Oil Reservoirs

TECHNICAL PROGRAM CHAIRPERSONS:

Erank Wal	TECHNICAL PROGRAM CH. les, AAPG Energy Minerals Division President	AIRPERSONS: Michael Van Horn
TOTAL BOOK OF A COMMON	[1] [1] [2] [2] [3] [3] [4] [4] [4] [4] [4] [4] [4] [4] [4] [4	Senior Vice President-Exploration
Sr. Geol. Advisor Unconventional Resources DEVON ENERGY CORPORATION		NEWFIELD EXPLORATION COMPANY
DEVOIN EIN	IERGT CORPORATION	NEWFIELD EXPLORATION COMPANY
7:00 - 8:00	AM Registration - Atrium Hilton Houston North DRAFT PROGRAM	
8:00 AM	"Approaches to Mudstone Characterist	tics Leading to HC Productivity"
8:15 AM	"Sequence stratigraphy in fine-grained rocks	at the field to flow-unit scale: insights
	for correlation, mapping, and genetic contro Kevin Bohacs, Sr Hydrocarbon Systems Co	
9:00 AM	"Implications for Identifying Shale-Gas Ro Joe H.S. Macquaker, Professor, Memorial U	DOTATION TO CARRIED FORCE STREET WAS INVESTIGATED AND A THROUGH PROJECT OF THE AREA OF THE STREET, AND A STREET
9:45 AM	Break	
10:05 AM	"An Integrated Geological and Petrophysic	cal Study of a Shale Gas Play:
	Woodford Shale Permian Basin, West Texa Nick Harris, Professor, University of Alberta,	AND THE RESERVE OF A SECURITY
10:50 AM	"Processes and Controls on Shale-Oil/Con Daniel Jarvie, President, Worldwide Geochen	
11:40 AM	Buffet Luncheon - At	rium
1:00 PM	"Practical Applied Methods for Shale F	Reservoir Characterization"
1:10 PM	"Stratigraphic analyses of Shale Systems - The analytical techniques may be useful for chara Gary Lash, Professor of Geosciences, SUNY F	acterizing Gulf Coast Shale Systems"
1:55 PM	"Geochemical Parameters useful for impr Jackie Reed, Petroleum Systems Consultant,	
2:40 PM	Break	
3:00 PM	"Integrated Imaging and Analysis of Sedin Kitty Milliken, Jackson School of Geoscience	
3:45 PM	"Advanced porosity and permeability char Richard Vessell, Vice President Geology/Petro	
4:30 PM	Day I Summary Analysis - Technical Program) Chairs

HGS Joint International and North American Dinner continued from page 17



(non-turbulent, Bingham plastics or dilatant fluids). Individual mass-transport deposits may consist of one bed or many, and,

depending on the pre-existing stratigraphy that has been remobilized, mass-transport deposits may be sandprone or mud-prone.

As a practical limit, sand-prone mass-transport deposits are defined as having an effectively porous and permeable sand-to-shale ratio of at least 20 per cent. Exceptional cases of reservoir-prone mass-transport deposits include otherwise mud-prone mass-transport deposits with a single sand or sands in excess of 10 m thick, regardless of the sand-shale ratio of the overall mass-transport deposit. Porosities in these sands can be in excess

of 30%, and permeabilities can be on the order of several darcies. Outstanding production rates and ultimate recoveries are possible (Figure 4). However, production rates and ultimate recoveries are typically not as spectacular as in the best examples

because reservoir quality can be degraded by significant amounts of detrital or diagenetic clay and compartmentalization can

impact continuity of reservoirs.

...sand-prone mass-transport
deposits filled with locally
overpressured gas or water
in the shallow subsurface
represent a shallow drilling
hazard that warrants
significant consideration in
deepwater drilling programs...

Shallow water flow is not exclusive to mass-transport deposits. However, a review of the literature suggests it occurs far more frequently in mass-transport deposits than turbidites. In a significant number of cases, mass-transport deposits represent drilling hazards that can potentially pose significant health and safety risks, and also have the potential to require expensive sidetracks or casing programs to be implemented during drilling. In the most extreme cases, devastating damage to infrastructure or drilling operations may result from

inattention to these features, such as catastrophic well failure while drilling, or even destruction of subsea drilling templates.

HGS Joint International and North American Dinner continued on page 21

Houston Geological Society Applied Geoscience Conference (AGC)

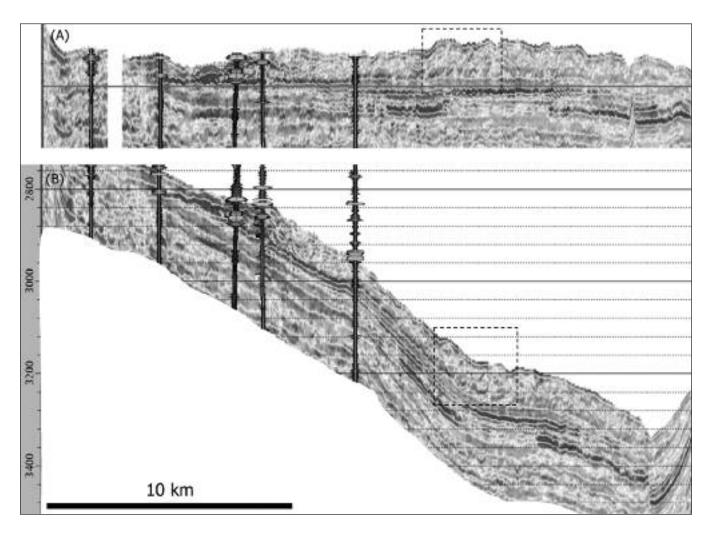
The Hilton Houston North Hotel, Houston, Texas

Tuesday February 9, 2010 Agenda

US Gulf Region Mudstones As Unconventional Gas/Oil Reservoirs

Mike Car	TECHNICAL PROGRAM CHAIRPERSONS: DRAFT PROGRAM Bruce Martin
Corporate I	New Ventures Senior Staff Geologist
NEWFIELD	EXPLORATION COMPANY SOUTHWESTERN ENERGY COMPANY
7:00 - 8:00	AM Registration - Atrium Hilton Houston North (with Breakfast Items: Juice/Coffee/Rolls)
8:00 AM	"US Gulf Region Mudstone Reservoir Characterization: Haynesville, Bossier, & Eagle Ford Shale Systems"
8:15 AM	"New insights into facies, depositional environments, sequence stratigraphy, and regional extent of the Haynesville Shale of East Texas and Louisiana"
	Ursula Hammes, Scott Hamlin, Jackson School of Geosciences, U. of Texas, BEG
9:00 AM	"An industry perspective on the Haynesville Shale Gas Play " Phil Martin President, New Century Exploration
9:45 AM	Break
10:05 AM	"A comparison of pore types of the Eagle Ford, Haynesville, Pearsall, & Austin Chalk - Mesozoic Resources Plays of the Gulf Coast." Randall Miller President, Integrated Reservoir Solutions Division, CORE LABORATORIES
10:50 AM	"The Eagle Ford Shale System - Regional Opportunity in Exploration" Industry Author Management Acceptance Pending
11:40 AM	Buffet Luncheon - Atrium
1:00 PM	"US Gulf Region Mudstone Systems: Based upon reservoir characterization - How do we complete effectively"
1:10 PM	"Reservoir characterization in mudstone-dominated sequences: implications for successful completions"
27/10/150	Bob Bereskin, Bereskin and Associates, Mary K Milner, Terra Tek - Schlumberger
1:55 PM	"Taking advantage of Heterogeneity in Shale Gas completions"
	Roberto Suarez Rivera, Rock Mechanics Specialist, Terra Tek - Schlumberger
2:40 PM	Break
3:00 PM	"Utilizing Log Integration methodology for understanding Shale Mechanical Attributes Rick Lewis, Technical Projects Leader, Schlumberger Oilfield Services, Oklahoma City
3:45 PM	"How to design better completions within the softer shales of the Gulf Coast"
	Mike Conway, President Stim-Lab, a Division of CORE LABORATORIES
4:30 PM	Conference Summary Analysis - Technical Program Chairs

HGS Joint International and North American Dinner continued from page 19



Conservative estimates indicate that at least \$200 million US had been spent through 2002 (when costs were substantially lower than at present) in mitigating and remediating shallow water flow issues in deepwater wells in the Gulf of Mexico alone. Cost estimates for remediation and mitigation since 2002 have not been published, but are likely to be much higher. To some degree, this statement is tempered by the fact that most companies now employ dedicated shallow water flow teams to address this issue.

These observations suggest that these remobilized sands may be a more significant component of deepwater hydrocarbon systems than has been generally acknowledged. However, the term 'mass-transport deposit' has a disparate, and often confusing, usage in peer-reviewed literature, and no criteria exist to help differentiate sand-prone mass-transport deposits from superficially similar turbidite systems. The purposes of this presentation are therefore twofold:

(1) To propose a classification of mass-transport deposits that focuses specifically on depositional process, and that explicitly includes the potential for mass-transport deposits to contain sands, as observed in numerous cases.

(2) To provide quantitative and qualitative criteria to aid practitioners in differentiating sand-prone mass-transport deposits from mud-prone mass-transport deposits and sand-prone turbidite systems at regional to reservoir scales. The criteria for differentiation, which are based in large part on the author's personal experience and observations, are necessary because a comprehensive summary of recognition criteria for reservoir-prone mass transport deposits has not been published previously.

Differentiation is important in the case of sand-prone systems because turbidites and mass-transport deposits have fundamentally different reservoir properties and require very different exploration, appraisal, and development strategies. Key differences between the two types of deposits are useful, but not foolproof, predictors of reservoir properties (i.e., petrophysical character, spatial distribution, and lithologic nature) away from well control, especially if 3D seismic data are available to help constrain lateral variations in facies. Furthermore, identifying and characterizing sand-prone mass-transport deposits accurately in the subsurface allows better prediction of reservoir

HGS Joint International and North American Dinner continued on page 23

Applied Geoscience Conference (AGC)

US Gulf Region Mudstones as

Unconventional Shale Gas/Oil Reservoirs



The Houston Geological Society presents an Applied Geoscience Conference focusing upon mudstone system characterization to improve exploitation of US Gulf Region Mudstone "Shale Gas/Oil" Reservoirs

This Applied Geoscience Conference (AGC) has four half day sessions:

Monday, February 8

AM Session: Understanding Mudstone Characteristics leading to HC Productivity

PM Session: Practical Applied Methods for

Shale Characterization

Tuesday, February 9

AM Session: US Gulf Region Mudstones: Reservoir Characterization of Haynesville, Bossier, & Eagleford Shales

PM Session: US Gulf Region Mudstone Systems Based upon reservoir characterization, how do we complete effectively?

15 Credit Hour Certificate (1.5 C.E.U.) will be earned with attendance Limited seating - so register early!

Registration Deadline of February 2, 2010

February 8-9, 2010

Hilton Houston North Register http://www.hgs.org/en/cev/1056/ or call (713) 463-9476 Attendance is limited -Register early to obtain a seat!

Two (2) Day Conference Fee **HGS Members** U.S. \$ 550.00 by Jan 15, 2010 U.S. \$580.00 Jan 15, 2010 - Feb. 2, 2010 Non - HGS Members U.S. \$ 600.00 by Jan 15,2010 U.S. \$630.00 Jan. 15, 2010 - Feb 2, 2010 Cancellations are subject to \$100,00 cancelation fee No Refund after January 15, 2010

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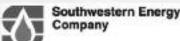






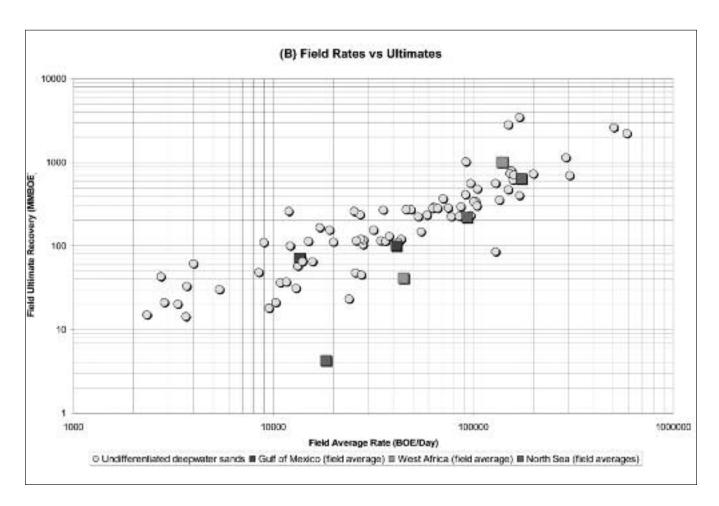








HGS Joint International and North American Dinner continued from page 21



performance, which in turn facilitates better hydrocarbon field development plans. These implications are especially important given ever-increasing costs associated with the development of deepwater fields.

This presentation uses personal observations, as well as published examples from producing fields, the seafloor and shallow subsurface, outcrops, and flume tank experiments to illustrate specific criteria that aid in the recognition of sand-prone mass-transport deposits in the subsurface. Many of the criteria used to identify sand-prone mass-transport deposits are also valid for identifying deepwater channels and/or injected sands. None of these criteria is sufficient by itself to distinguish between a mass-transport deposit and a turbidite system. However, in aggregate, the criteria are sufficiently diagnostic to identify mass-transport deposits that are likely to be reservoir-prone, and have a reasonable probability of discriminating them from other genetic units.

Biographical Sketch

DR. LAWRENCE D. MECKEL, III (Trey) is the Chief Geologist of Woodside Energy (USA), Inc. Previously, he was the Coordinator of Reservoir Modelling and Geoscience Technology at Woodside Energy Ltd. in Perth, Australia. He specializes in integrated

depositional systems analysis, sequence stratigraphy, risk assessment, reservoir characterization, and compartmentalization issues.

With Woodside, and previously with Shell International E&P, Dr. Meckel has been involved in research, exploration, development, and production projects in the Gulf of Mexico, West Africa,



Australia, New Zealand, Malaysia, West of Shetlands, and South America, as well as onshore developments on the Texas Gulf Coast and the Anadarko Basin.

Dr. Meckel received a Ph.D. in Earth Sciences from the Swiss Federal Institute of Technology (ETH-Zürich), an M.A. in Geology from The University of Texas at Austin, and a B.A. with Honors in Geology from Williams College in Massachusetts.

Among his numerous papers and presentations, he won the New Orleans Geological Society's 2002-2003 Best Paper Award. He was the convenor of a 2009 AAPG Hedberg Research Conference on deepwater foldbelts, and is chairing a session on unstable continental margins at the 2010 AAPG Annual Conference in New Orleans.

Luncheon Meeting

Crowne Plaza Hotel - Greenspoint (former Sofitel) 425 North Sam Houston Pkwy E

Social 11:15 AM, Luncheon 11:30 AM

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Clues to Depositional Processes of Ancient Mudrocks – Comparison of the Quaternary Shallow Marine Amazon Dispersal System with the Barnett, Haynesville, and Mancos Shales

key to prediction of depositional facies in sandstones, carbonates, or siliceous mudrocks is an understanding of the

processes forming these deposits. Past studies of modern mud environments coupled with recent laboratory flume investigations (Schieber and Yawar, 2009) show that mud is a dynamic sediment controlled by many of the same lateral, traction transport processes that affect coarser sediment particles.

In this presentation, a portion of the 1600-km-long shallow water Amazon dispersal system (ADS) is utilized to illustrate the sedimentary processes that form many of the sedimentary structures found in the strata of the Barnett (Mississippian), the Haynesville (Upper Jurassic), and the Mancos (Cretaceous) shales in the U.S. Some large-scale depositional facies patterns found within

> the ADS are also compared with similar patterns within the Mancos.

> Examination of small scale characteristics, shows that laminations and scour features found in the subtidal to intertidal sediments of the ADS are formed by fluidized mud pushed by longshore

currents (Rine and Ginsburg, 1985). In the deepwater Barnett, similar features are created by high density flows driven by gravity (Loucks and Ruppel, 2007). The high degree of bioturbation found in the Haynesville Shale can be found in the more distal

> offshore edge of the coastal ADS mud wedge or in the nutrientrich ebb-tidal deposits of the adjoining coastal estuaries. Regarding the Mancos Shale, on the small scale ADS strata associated with migrating mud

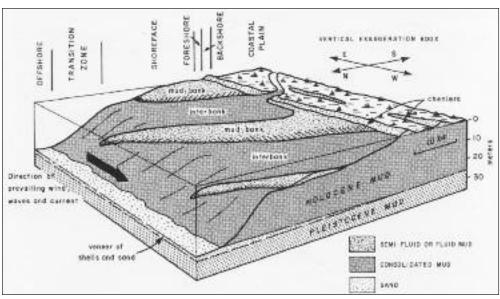
banks contain sedimentary structures that resemble the laminated and scoured "hyperpycnites" of the Mancos as described by Bhattacharya and MacEachern, (2009). When comparing the Mancos

Shale with ADS sediments on a depositional-facies-scale, the ADS offers a good analogue for

Northsiders Luncheon

continued on page 27

...mud is a dynamic sediment controlled by many of the same lateral, traction transport processes that affect coarser sediment particles...



Block diagram showing relative distribution of depositional facies along the coast of Suriname in South America. The typical mud bank is 50 to 60 km long, 10 to 20 km wide, and up to 5 m in relief. Along the coast and inner shelf of Suriname coast, these mud banks migrate 1.5 km annually. From Rine and Ginsburg, 1985.



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HGS Northsiders Luncheon continued from page 24



Aerial view of exposed mud bank at low tide showing surface flow features within the fluid mud. Approximate width of view is 500m.

depositional facies patterns found in the Mancos of east-central Utah where swallow carbonates, shelf sandstones, and fine-grained distal delta deposits are juxtaposed (Pattison et al, 2009; Chan, 1992). Within the Quaternary sequence of the ADS, variations in sediment input from the Amazon River combined with fluctuations in sea level create a depositional facies pattern that is dominated by fine-grained sediments but also contains significant deposits of sand and even lenses of carbonates. Similar facies patterns present in the Mancos of eastern Utah can also be explained by similar sedimentary processes that have lateral transport of mud sediments as a critical component.

Citations:

Bhattacharya, J.P. and MacEachern, J.A., 2009, Hyperpycnal rivers and prodeltaic shelves in the Cretaceous Seaway of North America: Journal of Sedimentary Research, V. 79, p. 184-209.

Schieber, J. and Yawar, Z., 2009, A New Twist on Mud Deposition -Mud Ripples in Experimental and Rock Record: The Sedimentary Record, v. 7, n. 2, p. 4-8.

Pattison, S.A.J, Taylor, K.G., and Macquaker, J.H.S., 2009, A shore-tobasin transect through the Mancos Shale mud belt: sedimentological control on lithofacies variability in unconventional hydrocarbon plays, Book Cliffs, Utah: Field Trip No. 18 Guidebook, Society for Sedimentary Geology (SEPM), American Association of Petroleum Geologists Annual Convention and Exhibition, 7-10 June 2009, Denver, CO, 168 p.

Loucks, R.G. and Ruppel, S.C., 2007, Mississippian Barnett Shale: Lithofacies and depositional setting of a deep-water shale-gas succession in the Fort Worth Basin, Texas: American Association of Petroleum Geologists Bulletin, v. 91, n.4, p. 579-601.

Chan, M.A., 1992. Oolitic ironstone of the Cretaceous Western Interior Seaway, East-Central Utah: Journal of Sedimentary Petrology, v. 62, n. 4, p. 693-705

Rine, J.M., and Ginsburg, R.N., 1985, Depositional facies of a mud



Isolated coarse-grained sandstone body is within the shelfal portion of the Mancos Shale, Middle Mountain to Floy Wash region of the Book Cliffs, east-central Utah. This trough cross-bedded sandstone contains mudstone clasts, shell debris, fish teeth, bone fragments, and marinebored wood fragments (Pattison et al, 2009). Photo is from Stop 12, AAPG Field Trip No. 18.

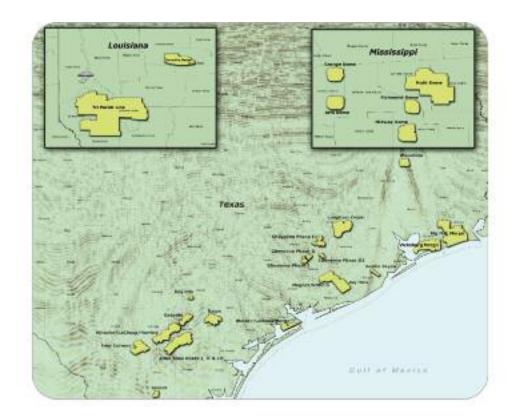
shoreface in Suriname, South America: A mud analogue to sandy nearshore marine deposits: Journal of Sedimentary Petrology, v. 55, p. 633-652.

Biographical Sketch

JIM RINE began his geology career in 1973 at the Rosenstiel School of Marine and Atmospheric Sciences (U of Miami) where he studied under the carbonate expert R.N. Ginsburg. At Ginsburg's prompting, Jim examined the muddy coastline of Suriname in northeast South America and down drift of the world's largest river, the Amazon. Ever since his early observations of the Amazon dispersal



system, Jim has been impressed with the capabilities of shallow marine processes to move large volumes of sediment. While at Cities Service Research in Tulsa where Rine was part of a team researching shallow marine sandy sediments along the east coast of the US, he documented that significant shallow marine sedimentation is also occurring in the relatively sediment starved setting of the eastern North America continental shelf. Since Jim's early marine geology work, he has done numerous field studies of petroleum bearing rocks from the jungles of Colombia to the deserts of eastern Pakistan. Rine has also published a number of hydrogeology papers based on a decade of research at the U of South Carolina. During the last five-plus years Jim has returned to fine-grained sediment studies in Houston as a principal geologist and geologic advisor within the Sedimentology Group at Weatherford Laboratories.



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Dinner Meeting

Richard ChapinCity of Houston

Municipal Setting Designations in Houston

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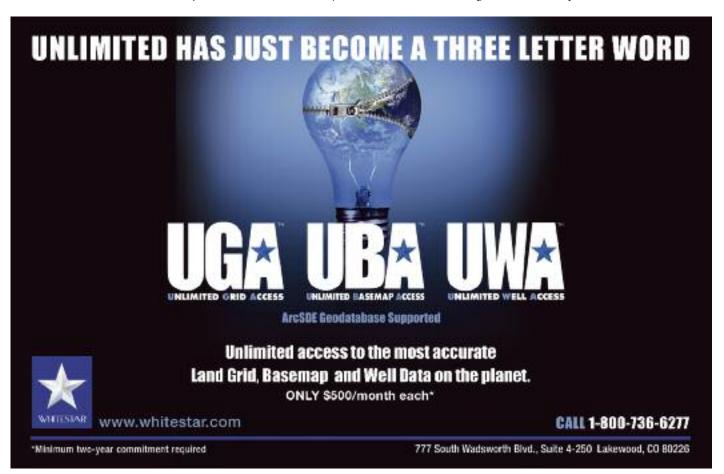
Biographical Sketch

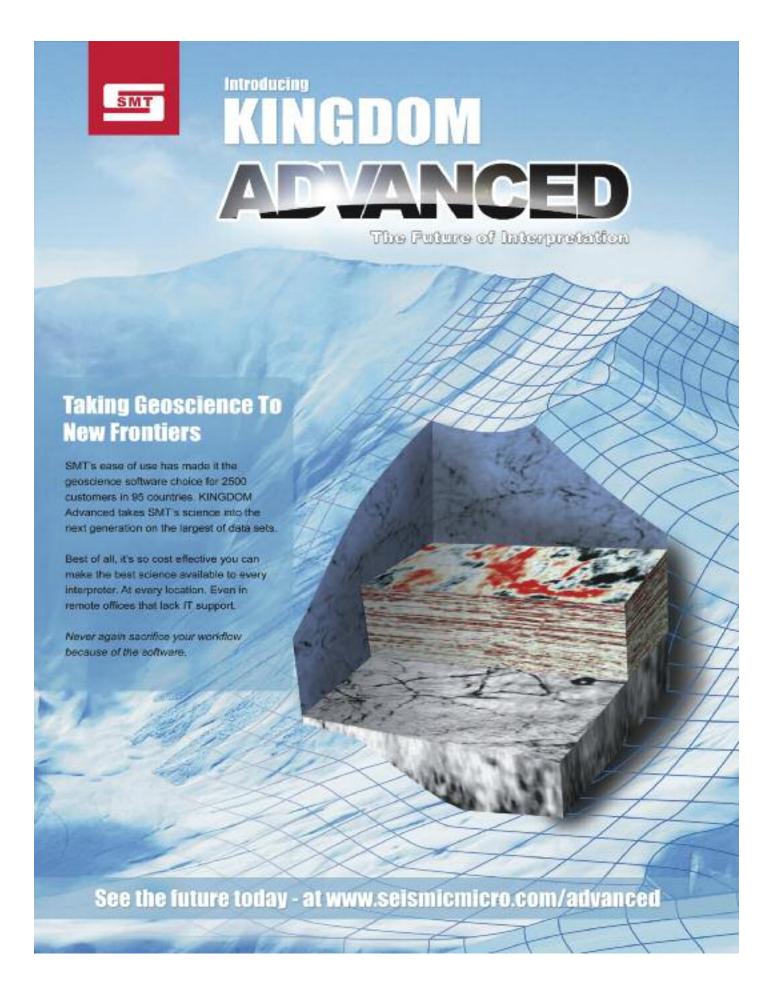
RICHARD CHAPIN works for the City of Houston as a Senior Project

Manager in the Planning Branch of the Public Works and Engineering Department. Richard is currently responsible for the City's Municipal Setting Designation (MSD), Total Daily Maximum Load (TMDL), and Municipal Separate Stormwater Sewer System (MS4) programs. He has over 30 years of water quality, remediation, and geologic experience. Prior to joining the City in 2008, Richard worked as an



environmental regulation expert for a major international chemical manufacturer. Chapin has helped sites across the country with issues dealing with stormwater, waste water, potable water, NPDES, Spill Prevention Control and Countermeasures (SPCC), Publicly Owned Treatment Works (POTW), and groundwater contamination investigations and cleanups.





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Martin Perlmutter

Chevron Energy Technology Company Houston, TX

The Influence of High-Frequency Climate Variability on Paleoclimate Interpretation

Inderstanding past long-term climate states and their higher—record of climate cycles is easily recognized and measured. In frequency variability can play an important role in helping to forecast future climate changes. The insolation cycles which drive high-frequency climate variability and their interference patterns have been mathematically resolved for the last 50 Ma. Inferences can be drawn on these patterns back through at least the Paleozoic. However, different regions of the Earth have different climatic responses to the same insolation cycles and

Pole to Pole Insolation Cycles

Northern Hemisphere: Summer Solstice

...regional and temporal variations in the phase relationships between sedimentary and glacioeustatic cycles may not be consistent with basic assumptions about stratigraphy...

other areas, it's more difficult because the climate does not change much or perhaps stratigraphers who interpret climate ignore changes to sedimentary delivery systems and environments of deposition caused by the specific climate response. They don't recognize preservation bias caused by climate cycles so they fail to include the phase relationship of sediment supply and sea- or lake-level cycles. These issues can cause paleoclimatolo-

record the changes differently. In some locations, the stratigraphic gists to misinterpret the actual temporal scales of climate change

Seasonal insolation can vary up to 30%

Insolation

Kilojoules/m²iday x 10⁻³

because they are looking for similar stratigraphic responses to the same climate cycle in areas

Orbital Cycles

Eccentricity



Obliquity



Martin Perlmutter, 2009 - 2010, AAPG Distinguished Lecture

Paleoclimate: Largest Changes are

Seasonal & at the Scale of Precession

(Perlmutter and Plotnick, 2002)

(Calculated from Berger, 1978)

Pole-to-pole insolation plotted at the Northern Hemisphere summer solstice for a 1.5 My interval. Precession-scale insolation cycles can change seasonal heating within a hemisphere by up to 30%. Insolation calculated from equations in Berger (1978). Figure from Perlmutter and Plotnick, 2002.

Insolution sampled in increments of St latitude every 2 kgr.

Precession controls about

93% of the variation

mate analyses and interpretations are resolved only for mean annual conditions for time intervals ranging from 0.1 to 1 my. However, the greatest insolation changes occur seasonally at the scale of precession (~20 kyrs) during periods of high eccentricity. Similar to the conditions

that just don't preserve

Presently, most paleocli-

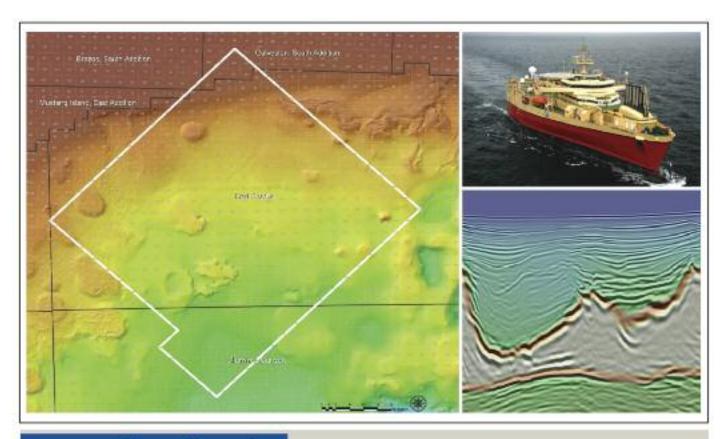
them the same way.

winter in the other at **HGS General Luncheon**

that cause summer in

one hemisphere and

continued on page 33



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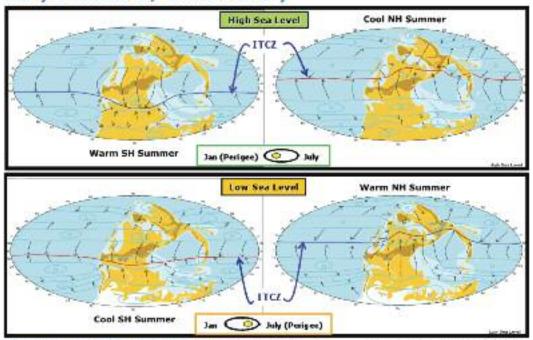
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Precession-Scale Climate Interpretation of the Early Permian w/ Glacioeustasy



Nartin Perlmutter, 2009 - 2010, AAPG Distinguished Lecture

After Perlmutter & Piotnick, 2003

Relationship between precession-scale paleoclimate states and glacioeustasy for the E. Permian. High sea level is associated with intervals with warm southern hemisphere summers. Low sea level is associated with cool southern hemisphere summers. The time between these end member states can be a short as 10 kyrs. Note that cool northern hemispheres summers occur during times of warm southern hemisphere summers and cool southern hemisphere summers occur during the times of warm northern hemisphere summers. Figure from Perlmutter and Plotnick, 2003.

HGS General Luncheon continued on page 34

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the same time in the earth's orbit, precession cycles cause northern and southern hemisphere insolation to be about 10,000 years out of phase. Hot summers and cold winters in one hemisphere correspond to mild summers and mild winters in the other. The pattern reverses itself over a precession cycle so that similar climatic successions in opposite hemisphere, and their associated sediment yield cycles, will be 10,000 years out of phase, as well. These changes occur regardless of whether the earth is in a greenhouse or an icehouse state.

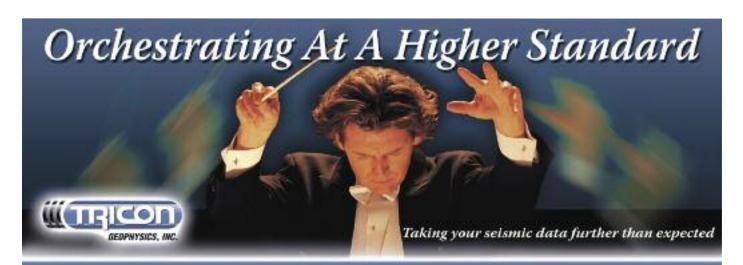
Until the Plio-Pleistocene glaciations, when they occurred, were unipolar. Under this condition, precession-scale eustasy tended to track the insolation cycle of the glaciated hemisphere. Consequently, similar climatic successions in opposite hemispheres would have had sediment yield cycles with distinctly different phase relationships to glacioeustasy. Such differences would not exist in an ice-free world. The regional and temporal variations in the phase relationships between sedimentary and glacioeustatic cycles may not be consistent with basic assumptions about stratigraphy and may impact how we interpret the causes and frequencies of the stratigraphic cycles themselves. This talk is a discussion of how these issues affect our understanding and interpretation of paleoclimate.

Biographical Sketch

MARTIN PERLMUTTER has 28 years of industry experience, including 25 years with Chevron and Texaco, as a research scientist, explorationist, and team leader, and 3 years at Argonne National Lab as research leader for oil and gas technology. He received his B.S. and M.S in Earth Science from Stony Brook University and a Ph.D. in Marine Geology from the Rosenstiel School of Marine &



Atmospheric Science at the University of Miami. His career has led him to develop expertise in reservoir prediction, basin analysis, cyclostratigraphy, and paleoclimate. Dr. Perlmutter has evaluated more than 30 basins on 5 continents and performed mega-regional studies in North America, South America, Africa, and Asia. He has 25 scientific publications. Recent professional activities include co-chairing sessions at AAPG and SEPM on paleoclimate variability and its impact on exploration, being the industry representative to the National Research Council's Panel on Paleoclimate, and acting as adjunct professor at the University of Illinois in Chicago. Presently, he is an AAPG Distinguished Lecturer.



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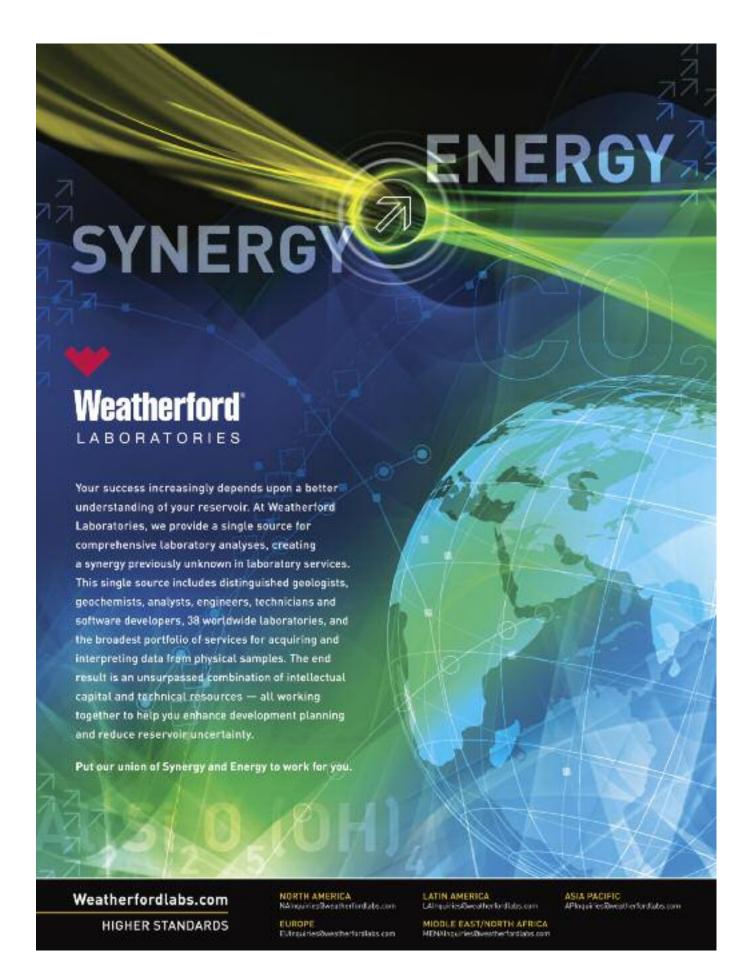
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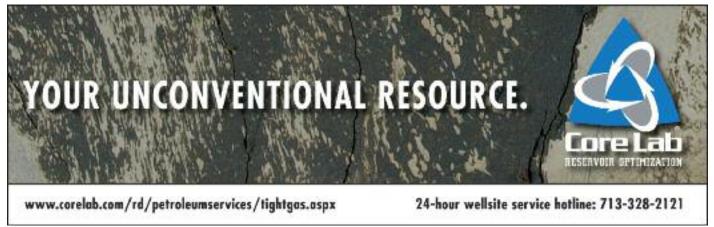
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3	4	5 HGS Board Meeting 6 p.m. HGS Office	6
10	HGS General Dinner Meeting "What's New in Seismic Imaging?" John T. Etgen, Westchase Hilton Page 15	12	13
17	18 HGS Joint International and North American Dinner Meeting "Sand-Prone Submarine Mass-Transport Deposits: Reservoir Characteristics and Classification of an Underappreciated Deepwater Facies" Lawrence D. Meckel, III, Westchase Hilton Page 17	19 HGS Northsiders Luncheon Meeting "Clues to Depositional Processes of Ancient Mudrocks" Crowne Plaza Hotel Page 24 HGS Environmental & Engineering Dinner Meeting "Municipal Setting Designations in Houston" Black Lab Pub Page 29	20
24	25	26	HGS General Luncheon Meeting "The Influence of High-Frequency Climate Variability on Paleoclimate Interpretation" Martin Perlmutter, Petroleum Club Page 31



		GEOEVENTS
Thursday	Friday	Saturday

	1	2
7	8	9
14	Deadline for Submission to the March Bulletin	16
SIPES Luncheon Meeting "Update on Implementation of the Modernization of SEC Oil & Gas Reporting Requirements" John Lee, Petroleum Club Page 49	22	23
28	29	NOW you can make your reservations on-line at www.hgs.org



Upcoming GeoEvents

February 8-9, 2010

Applied Geoscience Conference US Gulf Region Mudstones as Unconventional Shale Gas/Oil Reservoirs *Houston*, *TX Page 16*

March 2-4, 2010

APPEX 2010 London, England

April 11-14, 2010

AAPG Annual Convention & Exhibition New Orleans, Louisiana

April 22-23, 2010

Modeling Sedimentary Basins and Their Petroleum Systems Geological Society *London*, *England*

May 3-6, 2010

Offshore Technology Conference *Houston, TX*

May 16-18, 2010

AAPG Southwestern Section Meeting *Dallas*, *TX*

May 22, 2010

HGS Guest Night – Houston Science Museum, Houston, TX

June 8-10, 2010

Applications of Reservoir Fluid Geochemistry, AAPG Hedberg Research Conference Vail, CO

June 13-16, 2010

AAPG Rocky Mountain Section Meeting *Durango*, CO

July 4-8, 2010

Australian Earth Scoences Convention Canberra, Australia

September 8-9, 2010

9th African Conference – Africa: A Multi-faceted Promise *Houston*, *TX*

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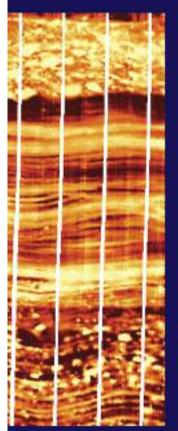


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DAY-E: STRUCTURAL INTERPRETATION fracture analysis. Analysis of boreflots images in increased wide, fracts stress analysis. Sedimentological interpretation of boreflots image and dipreser data, district and carbonate rocks. Comparison of measurement resolution EWO density. EWO reliability, wholese CEPP, Wheline high-resolution reliability. Surface recognition, reliability, measurement danky uncertainties. PRACTICAL EXERCISES.



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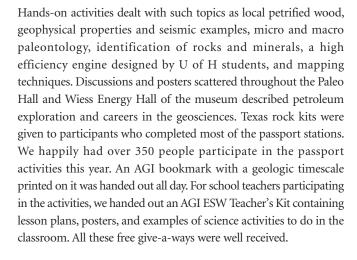
HGS Earth Science Week 2009

By Martha McRae, Jennifer Burton and Inda Immega

n Saturday, October 10, 2009, HGS sponsored the Family Energy Festival Day at the Houston Museum of Natural Science as part of Earth Science Week. Earth Science Week is one of HGS's annual outreach events to promote the importance of earth sciences to the public.

Activities for the day centered around an Energy Passport event held in the main Paleo Hall of the Houston Museum of Natural Science (HMNS). Over 60 volunteers from several local earth science societies, local colleges, HMNS volunteers, and individual geoscientists helped setup and man "passport" stations with hands-on educational activities. These volunteers helped answer geoscience questions from the public and participating Boy Scouts for most of the afternoon. Participating societies this year included Houston Geological Society, Houston Museum of Natural Science, Houston Gem and Mineral Society, Geophysical Society of Houston, Gulf Coast Section of SEPM, National Association of Black Geologists and Geophysicists, and the University of Houston College of Technology. A special thanks to

the many volunteer students, instructors, and professors from San Jacinto Community College. With the volunteers' help, our Earth Science Week event this year was a big success. Thank you!



Again this year the weather did not cooperate with our planned field trip to Bolivar Peninsula, so it was postponed until spring. Check on the HGS website for a new scheduled date and updates for the trip. Kristie Bradford with Lonestar College will be leading the trenching and current demonstration portion of the field trip. Dr. Armacost from Lamar University will be discussing the impacts of Hurricane Ike on coastal bird species. Dr. Owen and Dr. Westgate from Lamar University will have aerial photos to aid the geoscience discussion on the impact of Hurricane Ike on the region. Dr. Immega with the HMNS will discuss coastal processes.





HGS Earth Science Week 2009 continued on page 43



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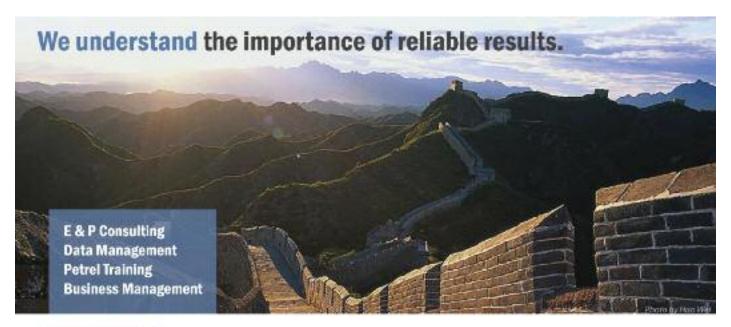








HGS Earth Science Week 2009 continued on page 45



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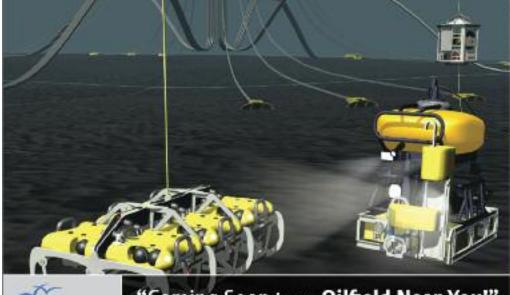
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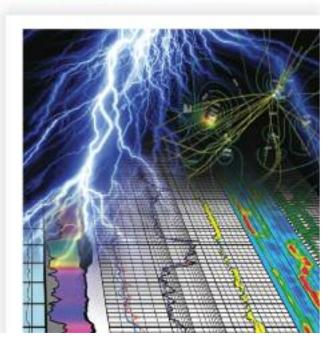
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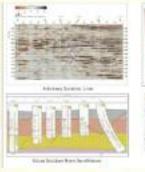


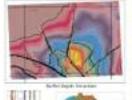


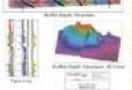
HGS Earth Science Week 2009 continued on page 47

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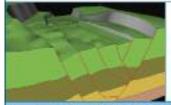
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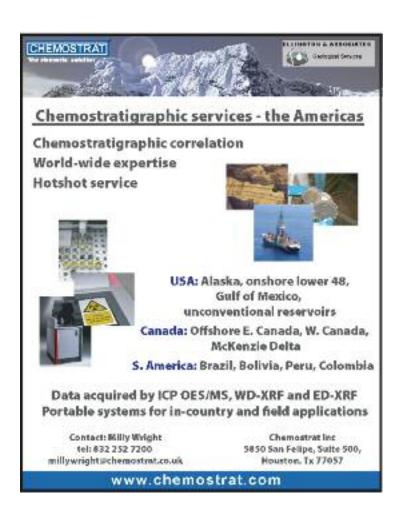
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SIPES Luncheon Meeting

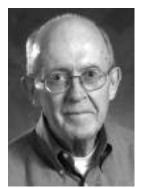
Update on Implementation of the Modernization of SEC Oil & Gas Reporting Requirements

John Lee, Texas A&M University

The modernized Securities and Exchange Commission (SEC) rules for reporting oil and gas reserves are in effect for all filings with the SEC on or after January 1, 2010. These rules, issued in late 2008, are more flexible than previous rules, but that flexibility introduces new interpretation problems for filers. To assist with the transition from the old rules to the new rules, the SEC issued guidance on both technical and accounting issues in October 2009. In addition, the Financial Accounting Standards Board (FASB) issued a proposal in September 2009 to bring disclosures standards in SFAS 69 into accord with the SEC's modernized rules.

This presentation will include discussions of the SEC and FASB guidance, including any new guidance that might be issued up to the time of the presentation. Issues to be discussed include guidance on proved undeveloped reserves generally, the "five-year" rule for development of PUDs disclosed by the filer, "reliable technology," and determination of "current costs."

Biographical Sketch



JOHN LEE holds the L.F. Peterson Endowed Chair and is a Regents Professor of Petroleum Engineering in the Harold Vance Department of Petroleum Engineering at Texas A&M University. He specializes in petroleum reserves and evaluation, unconventional gas resources, and petroleum reservoir engineering.

Dr. Lee received B.ChE, M.S., and Ph.D. degrees in Chemical Engineering from the Georgia Institute of Technology. He spent 15 years with ExxonMobil, leading teams on reservoir studies, and joined the Texas A&M faculty in 1977. While at A&M, he also worked with S.A. Holditch & Associates, petroleum engineering

consultants, from 1980 to 1999, specializing in reservoir engineering aspects of low permeability gas reservoirs. He served as an Academic Engineering Fellow with the

U.S. Securities and Exchange Commission from October 2007 to December 2008. As an SEC Fellow, he coordinated the technical aspects of the SEC's modernization of oil and gas reporting regulations.

He has received numerous awards from the Society of Petroleum Engineers, including the Anthony Lucas Medal, the DeGolyer Medal, and Honorary Membership. He is a member of the U.S. National Academy of Engineering and the Russian Academy of Natural Science.

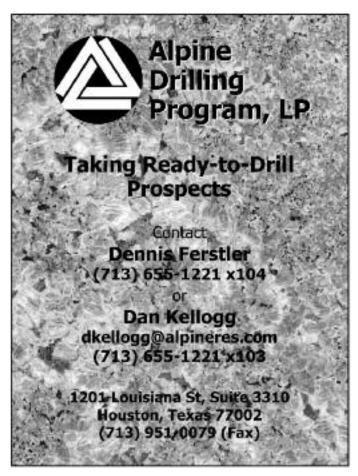
Thursday, January 21, 2010

Houston Petroleum Club in the Discovery Room, 800 Bell St. (downtown Houston). Social 11:15 AM, Luncheon 11:45 AM

Reservations Required: Make reservations by telephone (713-651-1639), fax (713-951-9659), website (www.sipes-houston.org), or e-mail bkspee@aol.com to B. K. Starbuck-Buongiorno by 12:00 noon on Tuesday preceding the meeting. You can now sign up for the meeting online at www.sipes-houston.org, but payment is still required by regular mail or at the door.

Cost: \$30 for SIPES Members and Chapter Affiliates who register by 12:00 Noon Tuesday; \$35 for new registrations at the door. The price for guests,

non-members and walk-ins is \$35. No-shows will be billed.



The Houston Geological Society Continuing Education Committee Presents



Risk and Uncertainty Analysis for Unconventional Plays

Sponsored by Hamilton Engineering, Inc. Tuesday 2-Feb-10 9:00 AM to 4:00 PM CST

Speaker: Gary P. Citron, PhD, Managing Partner, Rose & Associates, LLP

This course, designed for geoscientists and engineers, provides a comprehensive treatment on the description, characterization and valuation of tight gas, shale and coal bed methane plays.

Beginning with practical definitions and formational processes, this course describes the techniques to probabilistically estimate the resource potential, risk and value of staged investment programs to profit from unconventional resource plays. The first part of the course deals largely with the main types of resource plays, and the main geologic attributes as concerns to grade the potential to be commercially successful.

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The second part of the course continues with the flow regimes of these reservoirs; how to model their performance with type curves associated with the geological heterogeneity; major assessment processes and valuation techniques to best achieve your strategies.

Course Outline

- Part I: Introduction
 - 1. What are Unconventional accumulations?
 - a. Types: Tight gas, CBM, Shale gas,
 - b. Characteristics and Locations of major areas of interest in NA
- 2. Consequences of differences in unconventional plays
- 3. Primer/refresher on Statistics, the language of Uncertainty

• Part II: Tight Gas Characteristics and Assessment

- 1. Historical perspective
- 2. Paradigm shift of understanding
- 3. Requirements for a Tight Gas accumulation
- 4. Volumetric and Chance Assessment
- 5. Exercise

• Part III: CMB Characteristics and Assessment

- 1. Definition of Coal, formation and description
- 2. How it is different
- 3. Langmuir equation: elements of uncertainty
- 4. Volumetric and Chance Assessment
- 5. Exercise

• Part IV: Shale Gas Characteristics and Assessment

- 1. Mechanisms of Formation and Exploitation history
- 2. Volumetric and Chance Assessment
- 3. Exercise

• Part V: Reservoir Flow in Coals and Shales

- 1. Multiple Flow regimes
 - a. Desorption
 - b. Ficke's Law
 - c. Diffusion
 - d. Darcy flow
- 2. Impact of permeability

• Part VIII: Play Assessment

- 1. Play definition and Framing
- 2. Planning the Work and Pilot Designs
- 3. Assess future potential
- 4. Analogs and type curves
- 5. Economic modeling highlights

SPEAKER GARY P. CITRON, PHD (BS, Geology, State University of New York at Buffalo; MS & PhD in Geology, Cornell University). After a twenty year career as a geoscientist, manager, and internal consultant for Amoco exploration business, Gary joined Pete Rose's consulting firm in February 1999, which focuses on the field of prospect and play risk analysis. Gary became Pete's first Partner in Rose & Associates, LLP in 2001 and assumed the role of Managing Partner in 2003.

In his last assignment at Amoco, he worked with exploration teams worldwide for four years, helping them assess prospect component ranges and associated chance factors. Dr. Citron has developed expertise in consensus building in risk assessments and performance tracking. He also coordinated the yearly post appraisal of the drilling program which helped institutionalize learning throughout the exploration business. In 1999 he was selected by the AAPG to serve in their Visiting Geologist Program. While at Amoco, Dr. Citron actively mentored younger geoscientists on prospect measurement.

In 2001, he received the best paper award from the AAPG's Division of Professional Affairs, and again in 2007 he was honored for delivering a 'Top Ten Oral Presentation' at the AAPG annual convention in Long Beach. Gary remains active in the AAPG House of Delegates, and continues to serve on committees for the AAPG and the SPE. He is a Texas State certified and licensed Geologist who has authored or co-authored more than a dozen publications, and has been an invited and honored speaker for the SIPES, Geological Society of London, AAPG, SPE and SEG.

For more information about this event, contact HGS Office 713-463-9476 • office @hgs.org

Date: Tuesday, February 2, 2010 • Time: 9:00am – 4:00pm Location: Houston Research Center • 11611 West Little York Road • Houston Texas 77041 USA Please make your reservations on-line through the Houston Geological Society website at www.hgs.org

Galveston Island Field Trip: One Year After Ike

By Dr. Michelle J. McMahon

On November 1, 2009, fair weather and calm seas met the participants of the field trip of the joint Association of Earth Science Editors and Houston Geological Society on Galveston Island led by Dr. John Anderson, the Maurice Ewing Professor of Oceanography at Rice University. The day was an engaging mix of coastal geology and Galveston history and politics, punctuated with humorous snippets of local lore.

The trip began with a tour of the historical district of Galveston, which barely survived the devastating 1900 hurricane, the event that prompted construction of the 6.7-mi- (10.4-km-) long,

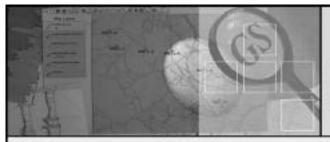
5.2-m- (17-ft-) high seawall that protects the east end of the barrier island today. After the 1900 hurricane, homes behind the seawall were raised 1.5 m (5 ft), which unfortunately was not high enough to protect the Victorian, Edwardian, and modern structures from the 3-m (10-ft) Hurricane Ike storm surge in September last year.

The drive along Ferry Street leading to the Bolivar Ferry parallels a 3-m (10-ft) high Army Corps of Engineers levee, the highest elevation on the island.

Galveston Island Field Trip continued on page 53







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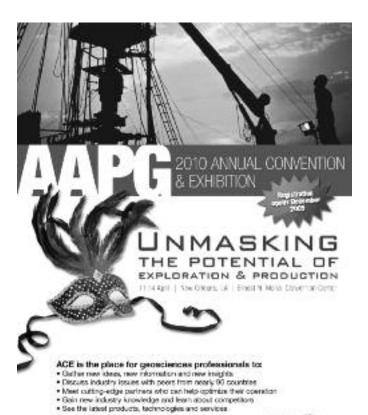
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Galveston Island Field Trip continued from page 51_

The opposite side of the street is lined with low-lying, singlestory homes that were submerged to the rafters during Ike. Accompanied by gulls, brown pelicans, and breaching dolphins, a ferry ride across to and back from Bolivar Peninsula introduced the participants to the Galveston Harbor, Intracoastal Waterway, and Houston Ship Channel. Spurred on by Dr Anderson's presentation, the group discussed dredging, beach nourishment, and wetlands restoration and conservation. Back on dry land, the critical balance between sea level, subsidence, and sediment budget was introduced.

A subsequent driving tour of the Galveston Seawall culminated in a stop at the western end. This portion of the seawall, heavily damaged during Ike, has since been repaired. The effect of the seawall on the littoral drift of sediment was examined; the comparison of the position of the "protected" coastline and the unprotected beaches to the west was dramatic. Standing on the lip of the repaired seawall, Dr. Anderson addressed the potential perils of a 30 billion dollar "Ike Dike" proposal, which would extend the current seawall 24-32 km (15-20 miles) westward to San Luis Pass and 64 km (40 miles) eastward along the Bolivar Peninsula to High island. Massive floodgates would also be constructed to "protect" Galveston Bay.

After moving west through examples of unbridled beach

development replacing the stable ridge and swell terrain, the group had lunch in the bayside community of Jamaica Beach. The topics of the importance of coastal wetlands, beach and bay development, beach nourishment practices, and the impact of straw bales and geo-tubes on storm surge were debated. After lunch, geohazard maps of Galveston Island were presented, and comparisons were made between the effect of the storm on older homes elevated to 2-4 m (7-13 ft) with shallow pylons and newer homes with elevations of 4-5 m (13-17 ft) and wider pylons anchored in the Beaumont (clay) Formation. Farther west, the group passed

older houses with shallow pylons suspended in Brazos River deltaic sands; the force of the Ike winds had caused the unconsolidated sands to liquefy, toppling the homes.

Just east of San Luis Pass, the appropriately named "Baywater" development sits precariously atop Hurricane Alicia (1983) washover fan deposits located in the center of coastal wetlands. Ph.D. candidate Davin Wallace shared a portion of his research, addressing the sand budget of the transgressive Follets Barrier Island (west of San Luis Pass) and summarized his research





results in the broader context of the Northern Gulf of Mexico sediment budget and coastal current patterns.

As the bus drove north back to Houston through the refinery town of Freeport, the participants reflected on a spectacular autumn day filled with abundant insights into Texas coastal processes and policies. You can learn more in Dr. Anderson's book, The Formation and Future of the Upper Texas Coast: A Geologist Answers Questions about Sand, Storms and Living by the Sea (2007, TAMU Press).

HGS/PESGB 9th International Conference on African E&P

Africa: A Multi-faceted Promise

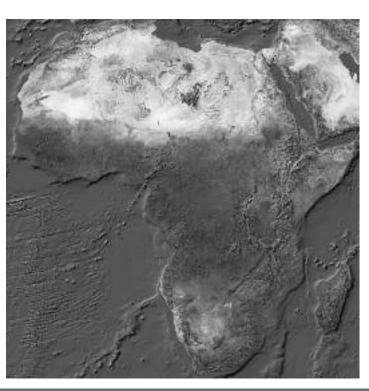


Houston, 2010 **September 8-9, 2010**

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Note change of dates from previous announcement!

Plan to attend this event during the week before the AAPG Int'l Convention in Calgary.



This annual conference has become established as the primary technical E & P conference on Africa. Scheduled for 8-9 September 2010 in Houston, a two-day program of talks is planned along with technical posters and exhibits from sponsoring companies. Opening reception will be Tuesday evening September 7th.

PES&GB

The conference series, organized by members of the International Group of Houston Geological Society (HGS) and Petroleum Exploration Society of Great Britain (PESGB) covers all aspects of African E&P, with particular emphasis on new ideas for plays and prospects, the geology of the continent and its conjugate margins, and application of emerging technologies.

Technical Contributions and Sponsorships are welcomed now.

Submit topics as soon as possible for consideration of the Technical Committee to Africa2010@att.net. Abstracts (~200 words) are due no later than 31 March. The program will be finalized by end April.

For sponsorship opportunities or exhibit space, please contact David Schwartz DSchwartz@fugro.com .

Special thanks to Fugro Gravity & Magnetic Services for again sponsoring the CD of Proceedings.

Pre-registration will be available from April, further details will be appear in the HGS Bulletin, PESGB newsletter and websites.

Conference Committee for 2010 includes Al Danforth, Ian Poyntz, Martin Cassidy, Dave Schwartz, Justin Vanden Brink, Tarek Ghazi and Claudia Lopez (Houston), Ray Bate and Duncan Macgregor (London).

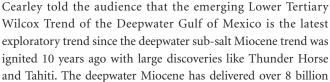
November General Meeting – A Member's View

By Linda Sternbach

James Cearley, of Chevron, delivered an outstanding talk to HGS Monday, November 9, on the scope and potential of the deepwater Wilcox oil play. HGS President Elect John Tubb was pleased to announce the the crowd that turnout for the evening totaled nearly 200 geoscientists, according to Treasurer Elect David Meaux. Vice President Art Donovan welcomed James Cearley, General Manager of Gulf of Mexico Deepwater Exploration for Chevron North America



Exploration and Production Co. and introduced him as a featured speaker.



BOE to date, and the Lower Tertiary Trend has delivered over 3 billion BOE so far, with much of the trend yet to be explored. The Lower Tertiary Wilcox is a 300-mile-long, primarily subsalt, trend in the ultra-deep water targeting some of



the oldest and deepest clastic reservoirs yet developed in the Gulf of Mexico. In the Wilcox trend, the oil fields discovered to date have been very large with significant pay thickness. However, these discoveries have flow rate challenges created by lower permeability rocks and low mobility hydrocarbons.

Cearley discussed some of the geological surprises found by the Wilcox drilling including strange gumbo and rock inclusions inside salt, overturned beds and repeat sections of the Lower Tertiary above the main target, and the incredible challenge of drilling wells with up to 12 strings of casing in 8000 feet of water. The HGS audience actively participated in a question and answer session with Cearley after the talk.





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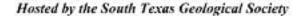


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By celebrating our successes, facing our challenges, and learning from the research results of our peers, we are paid back many fold by sharing ideas and experiences among our professional community. So come and share your experiences! Suggest a session topic, present an oral paper or a poster, learn about the latest ideas and technologies in our field. Come to San Antonio and enjoy the Gulf's own geoscience convention!

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- ✓ Organic 'Shales' of the Gulf Coast Controls on Reservoir Quality and Producibility
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- ✓ Integration of Seismic Geomorphology and Wellbore Data Case Studies
- √ New and Evolving Technologies Impact on Commerciality
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- ✓ Carbon Sequestration Risks, Opportunities, and Implications for EOR
- ✓ Alternative Energy Solutions The Role of Geoscience
- ✓ Water for a Growing Region Geology, Water Quality and Resource Management
- ✓ Geologic Training and Education Preparing for the Crew Change

HOW TO SUBMIT:

Abstracts (not more than 250 words) should be submitted for review online or via email to the technical program chair. Papers should have application to Gulf Coast and Gulf of Mexico geology. Include your full mailing address, telephone and FAX numbers, email address, and whether you are submitting for **oral** or **poster** or **either** (preferred).

Submit abstracts by February 1, 2010 as instructed on the website www.gcags2010.com

Notification of acceptance by March 1, 2010. All presenters, both oral or poster, must submit either a paper (10-12 pages) or an extended abstract with key figures for review by **April 16, 2010** for inclusion in the <u>Transactions</u>. Full instructions for authors will be posted at www.gcags2010.com.



ABSTRACT DEADLINE: FEBRUARY 1, 2010!

Questions or ideas for the technical program should be directed to:
Dr. Mary Feeley Dr. Alan Dutton
Technical Program Chair GCSSEPM Co-Chair
281-654-3588 210-458-5746
missy, feeley@exxonmobil.com alan.dutton@utsa.edu



Government Update

Henry M. Wise, P.G. and Arlin Howles, P.G.

If you'd like the most up-to-date Texas rules, regulations, and governmental meeting information we direct you to the HGS website to review The Wise Report. This report, which comes out as needed, but not more often than once a week, offers the most up-to-date information that may be of interest to Texas geologists.

AGI Government Affairs Monthly Review (October 2009)Climate Change Legislation Passes Despite Boycott

The debate on the Kerry-Boxer climate change bill in the Senate, officially referred to as the "Clean Energy Jobs and American Power Act" or S. 1733, ramped up in mid-October. Environment and Public Works (EPW) Committee Chairwoman Barbara Boxer (D-CA), and co-sponsor of the bill, steered the bill out of committee on November 5, 2009 after three comprehensive hearings during the last week of October.

The Republicans on the committee staged a boycott of discussions on the bill because they wanted to get a detailed cost analysis from the Environmental Protection Agency (EPA) first. Boxer did not want to delay the bill any longer on a redundant request, so after three days of trying to reach a compromise the committee voted 11-1 in favor of the bill without considering amendments by either party. No Republican committee members were present for the vote breaking a tradition of having at least two minority party members as part of any quorum for committee votes. The one vote against the bill came from Senator Max Baucus (D-MT) who felt his amendments needed to be addressed. Among the 80 amendments submitted by Democrats, Baucus' amendment would decrease the emissions target from a 20 percent reduction to a 17 percent by 2020.

The latest version of the Kerry-Boxer climate bill is 959 pages in length and was released to the public on October 30, 2009. The bill is separated into two major divisions: "Authorization For Pollution Reduction, Transition, and Adaption" and "Pollution Reduction and Investment." The first division includes titles for greenhouse gas (GHG) reduction programs, research, transition and adaptation. The second division outlines the "cap-and-trade" scenario, or the benchmarks for carbon dioxide reductions, the GHG registry systems, and the offsets program. The bill calls for a 20 percent reduction of GHGs compared to 2005 levels by 2020 and an 83 percent reduction by 2050.

To reduce GHG emissions, the bill looks to carbon capture and sequestration (CCS), which includes finding geological storage sites and developing demonstration projects, plus advanced nuclear energy, water efficiency, energy efficiency, renewable energy, and natural gas. The research covers advanced energy and drinking water adaptation. Water is also covered in the adaptation programs which provide safeguards for natural

resource conservation and additional programs for floods, wildfires, and coastal adaptation.

The newest version includes one major addition. It limits the Environmental Protection Agency (EPA)'s power to regulate GHGs by making sure congressional emission caps preempt EPA's ability to moderate emission under the Clean Air Act. The addition also gives EPA more power over large industrial emission sources than the Waxman-Markey bill in the House. EPA has been flexing its regulatory power already in regard to those large point sources, issuing a rule on October 30, 2009 to force sources emitting more than 25,000 tons of carbon dioxide equivalents to constrict emissions.

The Democratic majority is trying to get a Senate-approved measure passed before the Copenhagen climate summit in December. Besides the Kerry-Boxer bill, other portions of the a full climate change bill are awaiting votes in the Finance Committee and the Agriculture, Nutrition, and Forestry Committee.

Senators John Kerry (D-MA), Lindsey Graham (R-SC) and Joe Lieberman (I-CT) are also working outside of the committees to find solutions to garner the 60 votes needed for passage. Senators Graham and Kerry wrote an op-ed for the NY Times in mid-October calling for more offshore oil and gas drilling and greater incentives for nuclear energy. Their plan will likely be on the discussion table as these provisions could garner more support from Republicans and some Democrats.

With the number of controversies and compromises still to be tackled, it is unlikely the bill will reach the Senate floor before Copenhagen or even by the end of this year. While the continued uncertainty about congressional actions on climate change would be a significant disappointment for the Administration and the international community, President Obama has indicated that he will make climate change legislation a top priority once health care reform legislation is completed.

The full text of the Kerry-Boxer bill is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:S1733: The Kerry-Graham op-ed in the NY Times: http://www.nytimes.com/2009/10/11/opinion/11kerrygraham. html

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Congress Concerned About Access To Domestic Minerals

An earmark to protect rare earth element mines and bills to promote access to molybdenum-99 isotopes show a growing concern in Congress over the dearth of domestic access to mineral resources.

The shortage of rare earth minerals prompted Appropriations Committee Ranking Member Jerry Lewis (R-CA) to add an earmark to the House Defense appropriations bill (H.R. 3326) for \$3 million to help reopen a California rare earth mine. According to Lewis the controversial funds were necessary for Molycorp Minerals, owned in part by Goldman Sachs, to quell national security concerns. This appropriations bill is still awaiting conference committee approval.

Rare earth minerals have seen their value balloon in recent years, thanks to their utilization in high technology military devices and renewable energy applications like hybrid batteries and wind turbines. The growing interest in supply stems from progressively tighter restrictions on export from China, the world's single dominant producer. China controls the vast majority of supply for all 17 rare earth elements, including up to 99 percent for some elements such as Terbium. After four years of decreasing permits for export, China's Ministry of Industry and Information Technology (MIIT) has reportedly submitted a recommendation to the Chinese administration to further tighten exports. Amid global concern though, MITT responded that a ban would never be enforced.

On a different, but related issue, there is growing concern in the U.S. about the supply of molybdenum-99, which is needed for medical imaging. The U.S. stopped production of the isotope, which is a fission product of highly purified uranium-235, partly out of concerns about nuclear weapons proliferation and partly out of concerns about nuclear waste disposal. Earlier this year, a reactor in Canada used to produce the isotope broke down, nearly crippling American supplies. The American Medical Isotopes Production Act of 2009 (H.R. 3276) would promote developing U.S. production of molybdenum-99, according to its sponsor, Congressman Ed Markey (D-MA), to ensure a stable and consistent supply of the isotope for cancer scans and brain imaging in American health care facilities.

The molybdenum isotope concern has also been addressed in the National Defense Authorization Act for Fiscal Year 2010 (H.R. 2647) which became public law this month. In addition, H.R. 2647 requires the Defense Science Board to study and report on the extent to which military capabilities are impacted by supplies and the potential shortage of rare earth minerals.

The full text of H.R. 3326 is available from Thomas: http://thomas.loc.gov/cgi-bin/query/z?c111:h3326: The full text of H.R. 3276 is available from Thomas: http://thomas.loc.gov/cgi-bin/query/z?c111:h3276: The full text of H.R. 2647 is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:HR2647:

House Authorizes \$10 Million For Americaview

The House approved a bill to establish a national cooperative geospatial mapping program. The National Land Remote Sensing Outreach Act (H.R. 2489) authorizes \$10 million annually for an AmericaView program at the U.S. Geological Survey (USGS) in fiscal years 2010 through 2019.

The program goal is to disseminate imagery from satellites and airplanes for education, research, assessment, and monitoring purposes across the nation. It is based on the current AmericaView project that started as a partnership between the USGS Earth Resources Observation and Science (EROS) Center and a consortium of universities that expanded the use and distribution of satellite data and imagery. The bill would create a consolidated program at the USGS.

A companion bill (S. 1078) was voted out of committee in the Senate in August, but is awaiting full Senate approval.

The full text of the two bills is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h.r.02489: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:s.01078:

Solar R&D Bill Passes House

The Solar Roadmap Technology Act (H.R. 3585), introduced by Representative Gabrielle Giffords (D-AZ) in the House Science and Technology Committee, passed the House on October 22 and awaits approval in the Senate. The bill would allocate \$2.25 billion from fiscal years 2010 to 2015 for solar research and development projects. It also would create a "Solar Technology Roadmap Committee" of Department of Energy (DOE) appointed experts, a third of which will be solar industry representatives. It also mandates that by 2012, 30 percent of the DOE funding for solar research, development, and demonstration (RD&D) is consistent with the roadmap recommendations, and is ramped up to 75 percent by 2015. Energy Secretary Steven Chu will be in charge of awarding grants to carry out the solar programs and providing awards to industry for solar manufacturing RD&D.

More information about the H.R. 3585 bill is available from Thomas at:

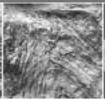
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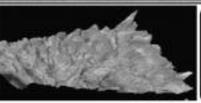
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GSL-SEPM International Research Conference Salt Tectonics, Sediments and Prospectivity











This international conference brings together academic and industrial geoscientists to discuss recent advances in understanding halokinetic processes and to explore the links between salt tectonics, sediments and hydrocarbons.

Key Note Speakers include:

Ian Davison (GEO International Ltd); Kate Giles (New Mexico State University, USA); Mike Hudec (Bureau of Economic Geology, University of Texas, USA); Hemin Koyi (Uppsala University, Sweden); Ben Kneller (University of Aberdeen, UK); Webster Mohriak (Petrobras); Brad Prather (Shell); Mark Rowan (Rowan Consulting, Colorado, USA); Simon Stewart (Heriot-Watt University, UK); Bruce Trudgill (Colorado School of Mines, USA); Bruno Vendeville (University of Lille, France)

January 20-21, 2010 Burlington House, London, UK

For further information about this conference, please contact: Steve Whalley, Event Co-ordinator +44 (0)20 7432 0980 or email: steve.whalley@geolsoc.org.uk



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House Bill Aims To Provide \$250m For Clean Tech Start Ups

Representative Glen Nye (D-VA) introduced the Small Business Early-Stage Investment Act of 2009 (H.R. 3738) to allocate \$250 million for a Small Business Administration program designed to provide grants to small and early stage companies in clean technology.

Despite the growth in interest for clean technology, lending in the sector has been hit hard by the recession. Studies show that investment fell by over half throughout the past year. Proponents of the bill noted the potential economic benefit to be unleashed by the investment.

The funds will be administered through established venture capital firms. This system was commended by supporters in business and government for the potential efficient and effective investment that can be made by professionals. The strict stipulations of the bill, however, may prove to be an issue in the venture capital community. A mandate to spend the fund within five years may be too quick as many capital venture funds last 10 or more years. The stipulations for experience and fund success could also prevent talent laden young firms from participating in the program.

The full text of H.R. 3738 is available from Thomas: http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h.r.03738:

Measure Proposes A New Oil And Gas Leasing Agency

The Minerals Management Service Reform Act (H.R. 3736) has been introduced by Government Reform Committee Ranking Member Darrell Issa (R-CA) to remove the Minerals Management Service (MMS) from the Department of the Interior (DOI) and make it an independent agency. MMS, which oversees oil and gas royalty payments, would become an independent federal agency with a director appointed by the President. Issa argues that this will allow for more effective oversight by Congress.

House Natural Resources Chairman Nick Rahall (D-WV) disagrees and introduced a bill of his own (H.R. 3534) that would consolidate the energy programs of both the Bureau of Land Management (BLM) and MMS into one office at DOI in charge of onshore and offshore oil and gas leasing. Rahall says this bill will also give more authority to DOI's inspector general.

Secretary Ken Salazar agrees that an office is needed within DOI to collaborate between BLM and MMS, but it is yet to be seen how to best set up and carry this out.

More information about the H.R. 3736 bill is available from

Thomas at:

http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h3736:

More information about the H.R. 3534 bill is available from Thomas at:

http://thomas.loc.gov/cgi-bin/bdquery/z?d111:h.r.03534:

NSF Releases New Vision For The Geosciences

The National Science Foundation (NSF)'s Advisory Committee for Geosciences (AC-GEO) released GEO Vision: Unraveling Earth's Complexities through the Geosciences, a new long-term strategy document for the Geosciences Directorate (GEO). AC-GEO found the top challenges for the geosciences in the future to be: understanding and forecasting Earth system behavior, reducing vulnerability and sustaining life, and growing the geoscience workforce. The report shows that geoscientists are well-suited to bring the insight needed to address the pressing issues facing the Earth.

AC-GEO believes the NSF is the only research agency in the U.S. with the breadth and capability to understand the broad challenges in Earth systems to protect resources, environment, energy supplies, human health and the economy. The recommendations for GEO involve maintaining fundamental and interdisciplinary geoscience research, conducting ground-breaking research, communicating the science to the public and policymakers, engaging K-12 students, and coordinating within NSF and with other agencies. The report highlights several key research areas for GEO, including natural hazards, ocean acidification, gas hydrates, EarthScope, the Ocean Observatories Initiative, atmospheric observations, and Earth science literacy.

This vision document reflects four years of work by AC-GEO, and replaces the 1999 document NSF Geosciences Beyond 2000. The updated GEO Vision incorporates new science, new technology, and new opportunities for GEO.

The GEO Vision document is available for download from NSF: http://www.nsf.gov/geo/acgeo/geovision/start.jsp

BLM Work With Advocacy Groups Potentially Illegal

Bureau of Land Management (BLM) employees have been accused of being "less than objective" when working with environmental groups over the National Landscape Conservation System (NLCS). After a complaint was filed that NLCS directors interacted with advocacy groups in inappropriate ways, the Department of the Interior (DOI) Inspector General (IG) investigated the relationship between the non-governmental organizations (NGOs) and the federal employees. The report states that the communications between the NGOs and NLCS

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"created the potential for conflicts of interest or violations of law." This has Senator John Barrasso (R-WY) and Representative Rob Bishop (R-UT) demanding reform and review of employee conduct.

The BLM employees have been accused of making and editing brochures and fact sheets for the National Wildlife Federation (NWF) that were later used for lobbying materials. NLCS Director Elena Daly replied that BLM officials were only helping to double-check facts to ensure that the public got accurate information. Another top official said they were unaware that the brochures would be used to lobby for congressional support.

Upon receiving the findings from the IG, the U.S. Attorney's Office said BLM will not be prosecuted because "the law covering 'lobbying with appropriated monies' has no criminal sanctions." BLM has 90 days to give a written response detailing its future actions due to these findings.

To download a PDF of the full IG report, go to: http://www.eenews.net/public/25/12636/features/documents/2009/10/05/document_gw_01.pdf

EPA Caught Up In Mountaintop Mining Considerations

The Environmental Protection Agency (EPA) announced on October 16, 2009 that it will retroactively revoke the permit given

to Spruce No. 1 Mine in 2007 by the U.S. Army Corps of Engineers (USACE). The EPA says Spruce No. 1, the largest mountain-top removal coal mine in Appalachia, violates the Clean Water Act giving it the right to veto the USACE permit. EPA is calling for improvements to be made to the mine in order to reduce the environmental and water quality impacts. In addition, last month EPA announced that 79 pending mountaintop removal mine permits will be delayed for more intensive review.

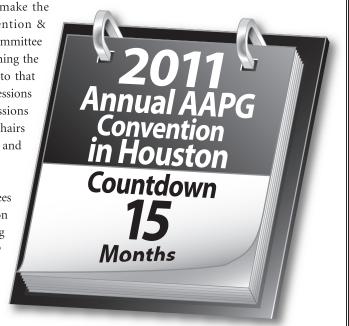
Although these actions by EPA have been applauded by environmentalists, not everyone is happy about them. Senator Jay Rockefeller (D-WV) said these events prove that the Obama administration is anti-coal and added that there is no possible way to clean up the climate without clean coal. The EPA stated that they are "committed to supporting coal mining in Appalachia, but only if it is done in a manner that complies with environmental laws."

Beyond just environmental laws, the EPA is being asked to consider social justice in its decisions. A coalition of advocacy groups argues that low-income communities are disproportionately burdened by the consequences of mountaintop removal. The Sierra Club and the rest of the coalition groups say mountaintop mining destroys opportunities for "positive economic growth" in safer, healthier, and better paying jobs.

Countdown to AAPG

We have gained additional outstanding committee chairs including Denise Stone (Consultant) as Sponsorship Chair.

We are actively seeking volunteers to assist all of our committees and we hope that will join our team as we lay the foundation for the 2011 convention. If you are interested in volunteering please contact Steve Levine (General Chair) steve.d.levine@ conocophillips.com, Marsha Bourque (General Vice Chair) m22799@yahoo.com, Linda Sternbach (Technical Program Chair) linda.sternbach@gmail.com or Carl Steffensen (Technical Program Vice-Chair) steffeck@bp.com.



Jason Bostic of the West Virginia Coal Association argued that "if it wasn't for the coal industry...there would be no economic activity." Many industry groups agree with this sentiment. The Sierra Club commissioned a study, however, that found that the mountaintop mining "eliminates jobs, drains state budgets, and destroys the region's potential to generate clean energy." In addition, the report states that banning mountaintop mining would have very little effect on the price of electricity. The Sierra Club would like the government to reopen its 2003 environmental assessment of mining practices and take social justice and long-term economic impacts into consideration.

State Surveys Get \$17.79 Million In DOE Geothermal Grants

Energy Secretary Steven Chu dedicated up to \$338 million in American Recovery and Reinvestment Act (or stimulus) funds for geothermal research, exploration and development grants. In addition, Chu announced that a coalition of 40 state geological surveys led by the Arizona Geological Survey (AZGS) will gather state-specific data for the new National Geothermal Data System (NGDS) using the Geoscience Information Network (GIN). The GIN is a program between the Association of American State Geologists (AASG) and the U.S. Geological Survey to integrate geological databases into an accessible, online format.

In the grant announcements, AZGS will receive \$17.79 million of the funds over three years on behalf of the coalition to populate the NGDS. Most of the other projects announced are also expected to contribute their data to the NGDS.

For more information on the announcement and projects funded, go to the DOE website:

http://www1.eere.energy.gov/geothermal/news_detail.html?news_id=15589

For more information on the GIN data, visit: http://www.usgin.org

Study Ties Drought To Population, Not Climate Change

A Columbia University study found that the drought that overwhelmed the Southeast from 2005-2007 was nothing out of the ordinary. By studying data from tree rings, computer models, and weather instruments, the drought was found to be pretty standard and even mild compared to other droughts even in the recent past. Despite the normalcy of the drought, it forced many states to declare water usage restrictions and file lawsuits against other states over water. Columbia reported that the resulting water shortages were due to population growth and bad planning rather than climate change.

There were 6.5 million people in Georgia in 1990, and now there are 9.5 million people. That is almost a 50 percent increase in only 17 years. The population is still growing and little has been done to reduce consumption or increase storage of water. Although it was much drier in the 19th century, it had less of an effect due to the small population.

Most climate models have actually predicted that as temperatures rise, rainfall will increase in the Southeast, but this will come with an increase in evaporation. Richard Seager, a climate modeler at Lamont-Doherty Earth Observatory at Columbia, says the best one could hope for is for the two to balance out and that "climate change should not be counted on to solve the Southeast's water woes."

Member News

GEORGE DEVRIES KLEIN has published a new book entitled, *ROCKNOCKER: A Geologist's Memoir*, about his experiences as a geologist.

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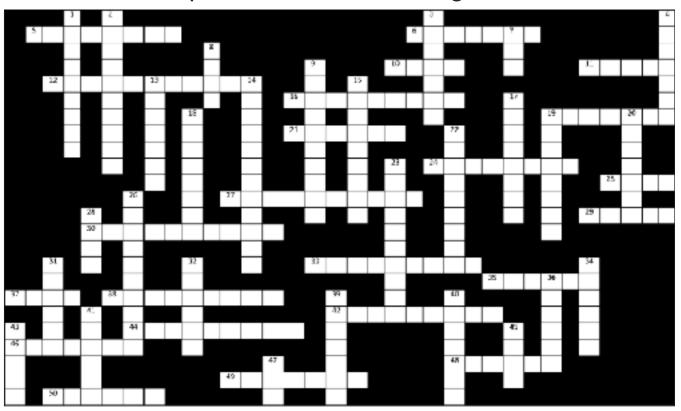
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January Crossword of Geologic Terms



The HGS Board is offering a \$50 gift card to the first correct and completed crossword received by the HGS Business Office prior to the mailing of the February issue.

Across

- 5 Composed of plant remains, commonly algae, deposited in anaerobic environments
- 6 Ridge with sharp summit and steep slopes
- 10 Degree of metamorphism
- 11 Treeless grassy plain of temperate regions
- 12 Polished surface from friction along fault plane
- 16 Bright green copper mineral
- 19 Capable of being easily split
- 21 Pyroclastics
- 24 Diabase
- 25 Red form of corundum
- 27 Process of disintegrating sedimentary rocks in order to extract and concentrate acid insoluable microfossils
- 29 Soft, fine-grained limestone
- 30 Process at or near the surface
- 33 Magnetic variety of natural iron oxide
- 35 Broad continuous alluvial slope
- 37 Low glacial ridge
- 38 Glauconitic sand
- 42 Science that deals with global water

- 44 Gradual extension of land
- 46 Mouth of a stream
- 48 Variety of plagioclase
- 49 Paired sedimentary laminae
- 50 Subordinate lithostratigraphic unit

Down

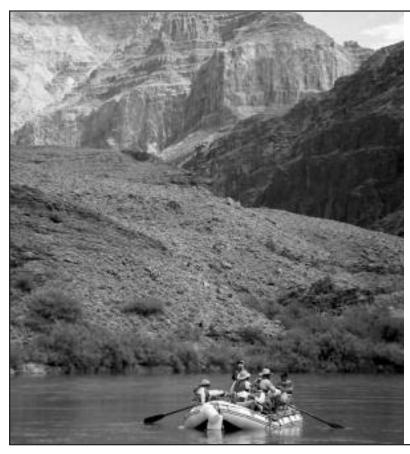
- 1 Rising of cold, nutrient-rich water
- 2 Dense even-textured siliceous sedimentary rock
- 3 Originating at the same time
- 4 Ridge of unsorted, unstratified glacial drift
- 7 Small coastal island
- 8 Small dam in a stream
- 9 Second period of the Cenozoic era
- 13 Green form of beryl
- 14 Crust or coating formed on a rock surface
- 15 Large, discordant plutonic mass
- 17 Stage of development that a stream has reached its maximum efficiency
- 18 Aquatic organisms that drift
- 19 Underlying side of the fault

- 20 Aquatic animals that live within the bottom sediment
- 22 Lower Cretaceous
- 23 General supervisor of operations on drilling rig
- 26 Pertaining to the heat of the Earth
- 28 Coral build-up
- 31 Strongly foliated crystalline rock
- 32 Treeless arctic plain
- 34 Valueless part of an ore

- 36 Feldspar-rich sandstone
- 39 Long, narrow beach ridge
- 40 Small-scale cyclone
- 41 Single-celled plant with silica frustules
- 43 A surface or fracture or parting in a rock
- 45 Small point of land attached to the mainland
- 47 Small cavity in rock, usually lined with crystals of a different composition

December Crossword Puzzle Answers

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June 2010 Grand Canyon Geology Field Trip

Experience the majestic beauty of the Grand Canyon as we raft the mighty Colorado River and examine some of the finest classical geology exposures in the world. Reservations are now being taken for the 2010 Grand Canyon Geology Field Trip through the HGS website. Trip runs June 13-21, beginning and ending in Las Vegas. Estimated cost is \$3000. A \$300 deposit will secure your spot on this popular field trip. Please contact Steve Earle at 713-328-1069 with any questions, or email him at steve.hgseditor@gmail.com



HGS Bulletin Instructions to Authors

Full Color Ads Now Available All materials are due by the 15th of the month, 6 weeks before issue publication. Abstracts should be 500 words or less; extended abstracts up to 1000 words; articles can be any length but brevity is preferred as we have a physical page limit within our current publishing contract. All submissions are subject to editorial review and revision.

Text should be submitted by email as an attached text or Word file or on a clearly labeled diskette in Word format with a hardcopy printout to the Editor.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator, Canvas or CorelDraw. Files should be saved and submitted in .eps (Adobe Illustrator) format. Send them as separate attachments via email or CD if they are larger than 1 MEG each, accompanied by figure captions that include the file name of the desired image. DO NOT EMBED them into your text document; they must be sent as separate files from the text. DO NOT USE POWERPOINT, CLIP ART or Internet images (72-DPI resolution) as these do not have adequate resolution for the printed page and cannot be accepted. All digital files must have 300-DPI resolution or greater at the approximate size the figure will be printed.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 1 MB) or on CD or zip disk.

Advertising

The Bulletin is printed digitally using QuarkXPress. We no longer use negatives or camera-ready advertising material. Call the HGS office for availability of ad space and for digital guidelines and necessary forms or email to ads@hgs.org. Advertising is accepted on a space-available basis. Deadline for submitting material is 6 weeks prior to the first of the month in which the ad appears.

Random Inside (Black & White)					Page 2 (B&W)	Inside Front Cover (Full Color)	Cover	Back Cover	Calendar Back (Full Color)	Calendar Page (Full Color)
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Effective June 1, 2009 you can now have your company logo picture posted on the Website. To have an ad posted, you must provide us with the graphic and give us the URL it should link to when clicked.

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Application to Become a Member of the Houston Geological Society

Qualifications for Active Membership

- Have a degree in geology or an allied geoscience from an accredited college or university; or
 - Have a degree in science or engineering from an accredited college or university and have been engaged in the professional study or practice of earth science for at least five (5) years.

Qualifications for Associate Membership (including students)

- Be involved in the application of the earth or allied sciences.
- Be a full-time student enrolled in geology or in the related sciences.

Apply online at www.hgs.org and click on Join HGS

Annual Dues Expire Each June 30. (Late renewals – \$5 re-instatement fee) Annual dues are \$24.00; full-time students and emeritus members pay \$12.00.

Mail this application and payment to: Houston Geological Society 14811 St. Mary's Lane, Suite 250 • Houston, TX 77079-2916 Telephone: 713-463-9476 Fax: 281-679-5504 Payment method: □ Check, □ VISA, □ MasterCard, □ American Express, □ Discover Card # Expiration Date: □ Card I.D. □	(Card I.D. – 3 or 4 digit number on front or back of card)
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Houston Petroleum Auxiliary Council News

Winona LaBrant Smith, HGS Liaison

It came as no surprise that the December Christmas Luncheon at Lakeside Country Club was a smashing success. The Kingsmen Chorus' performance will be long remembered as well as their Director, John Devine. Lakeside was beautifully decorated for the holidays and the food was delicious.

The next event will be on Monday, February 13, 2010. Our Game Day Luncheon is always a function you will regret if you do not attend. It is to be held at the Junior League Tea Room, 1811 Briar Oaks from 10:00am - 2:00pm. Our incredible Daisy Wood, chair, with her committee, Linda Dobbins, Kathy Duncan, Linnie Edwards, June Harrison, Suzanne Howell, Kathi Hilterman, NormaJean Jones, Georgeann Massell, Lois Matuszak, and Suzy Stepanek will host this event. SaraNan Grubb will coordinate an informal style show for the upcoming rodeo.

In the month of December, HPAC began introducing to our readers our cultural garden of exciting members who are involved in all walks of life and make HPAC a stimulating and diversified organization. Marti Lund is the member we are highlighting this month. Her life experiences have taken her down many adventurous paths. She graduated from Mt. Sinai Hospital School of Nursing as a Registered Nurse and received a Bachelor of Science degree from U of H after moving to Houston. She worked for 10 years as a surgical nurse at Hermann Hospital specializing in opthamology with Dr. Richard Ruiz but also doing other types of surgery including emergency cases with Dr. Red Duke (what an exciting experience that must have been!). She was a member of the Duchesne Academy of the Sacred Heart Board of Trustees for several years and is still active in Duchesne alumni work and is helping to edit a book comemorating the 50th anniversary of the school. This accomplishment is an incredible feat! She is on the Board of the Houston Junior Forum and has chaired numerous committees and events for HJF and their various service projects helping older adults and children and providing scholarships. Marti coordinated spouse activities for the 2002 AAPG Convention Chaired by her husband, Jeffrey Lund. The Women's Activities was so well organized that it will be remembered for many years. Between her world travels and residing overseas, Marti is knowledgable on many varied subjects. Again, please plan to attend some of the HPAC events where you will have the opportunity to meet members like Marti Lund!

Geologists, please encourage your spouses to join HPAC, where they will have the opportunity to meet other wives whose husbands are Geologists, Geophysicists, Engineers and Landmen. They will participate in stimulating programs, delicious lunches and friendly fellowship.

For your convenience, a HPAC membership form is included below. If you have any questions, please contact Winona LaBrant Smith at 713-952-2007.

News from Geo-Wives

Programs thru December!

By Lois Matuszak, Geo-Wives President

On Thursday, January 7, 2010, Geo-Wives will have a downtown Bus Tour of the Underground Shops. Lucette Rieger will conduct the tour and also take us to some of the downtown buildings.

Geo-Wives will take a bus from the Memorial Drive Presbyterian Church at 11612 Memorial Drive. Be there at 8:45 a.m.

Lunch to Be Announced. Cost of the tour is \$10.00.

Lunch is extra. The bus will depart at 9:00 a.m.

Make your reservations with First Vice President, Jackie Smith, at 713-771-5427 or email her at smithjandj@msn.com. ■

You are invited to become a member of

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2009–2010 dues are \$20.00 Mail dues payment along with the completed yearbook information to **Carol Gafford**, 13323 Misty Hills Drive, Cypress, TX 77429

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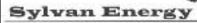
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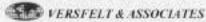
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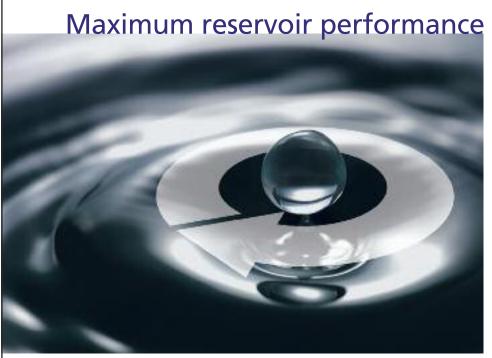
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