



# PBS-SEPM NEWSLETTER



March, 2011

PBS-SEPM 2010-2011

**Mar 15: PBS-SEPM  
Lunch Meeting, 11:30  
am, Midland Center.**

**Speaker:** Geo. B. Asquith,  
**Topic:** Log Analysis: Devonian Woodford Gas-Bearing Shale, Oklahoma”

**May 13-15, PBS-SEPM,  
Spring Field Trip  
entitled:**

Paleozoic mounds stratigraphic architecture in the Sacramento Mountains: implications for reservoir characterization. Xavier Janson, Ph.D., BEG, Univ of Texas, Austin

**June 9-12: PBS-SEPM  
Young Professionals  
and Intern Field Trip.,  
Dr. Emily Stoudt and Dr.  
Robert Trentham, UTPB**

**Aug 2, PBS-SEPM  
Core Workshop, Midland Center, 11:30  
Lunch.** Geology of the Capitan Shelf Margin: The Gulf PDB-04 Core, Paul (Mitch) Harris, Chevron Energy Technology, San Ramon, CA

**June 5-7, SWS AAPG,  
Annual Convention.  
Ruidoso, NM,  
“Renaissance of the Southwest: A Rendezvous in the Mountains. See  
[www.southwestsection.org](http://www.southwestsection.org)**

**Sept 28-30- WTGS  
WTGS Fall Symposium, Midland Center.  
See [www.wtgs.org](http://www.wtgs.org) for  
more details.**

## Geo. B. Asquith— PBS-SEPM Luncheon Speaker

— Biography on page 2—

— Tuesday, March 15, 2011 —

—11:30 am, Midland Center, Midland, TX—

*RSVP by 3 pm Monday, March 14th : 432-683-1573 or email: <[wtgs@wtgs.org](mailto:wtgs@wtgs.org)>*

### “Log Analysis: Devonian Woodford Gas-Bearing Shale, Oklahoma”

#### Abstract:

In a potential gas-bearing Woodford Shale reservoir ( $R_o\% = 2.62$ ) with a standard logging suite [Array Induction-Neutron-Lithodensity] it is possible to calculate the following log parameters:

Reservoir Pressure (Pr)  $Pr = (\text{psi/ft}) \times \text{Depth}$

Total Organic Carbon (TOC wt %) using the Schmoker Equation

Volumes of Clay (Vcl), Quartz (Vqtz) and Kerogen (Vke) plus Total Porosity ( $\phi_{\text{Total}}$ ) using simultaneous equations plus  $\rho_b$  and  $\phi_{\text{nl}}$  data

Effective Porosity ( $\phi_e$ ) =  $\phi_{\text{Total}} - \text{CBW}$  Clay Bound Water =  $V_{\text{cl}} \times \phi_{\text{clay}}$

Effective Water Saturation  $S_{\text{we}} = R_o / R_{\text{sh}}^{0.5}$   $R_o = R_w / (1 / \phi_{\text{Total}})^{0.5}$

Gas-filled Porosity ( $\phi_{\text{gas}}$ ) =  $\phi_e \times (1 - S_{\text{wsim}})$

Permeability (k) in nannodarcies (nD) =  $[(0.0108 \times \phi_{\text{gas}}) - 0.000256] \times 10^6$

Absorbed Gas (Gs) and Free Gas (Gf) in scf/area

In addition to log data laboratory analysis was done on samples from three depths {9480', 9500' and 9520'}. A comparison of Vcl, Vqtz and Vke values determined in the lab with Vcl, Vqtz and Vke values determined from log data are listed below:

Depth	Vcl (klab)	Vqtz (lab)	Vke(lab)	Vcl(log)	Vqtz(log)	Vke (log)
9480	24.3	65.1	10.8	21.6	65.6	12.8
9500	24.4	62.6	13.0	16.7	67.0	16.3
9520	18.7	68.5	12.7	17.7	69.5	12.8

The data listed above reveals that the Simultaneous Equation Method using only  $\rho_b$  and  $\phi_{\text{nl}}$  data (Lewis, 2009: see below) predicts the laboratory results fairly accurately. However, if large amounts of calcite or dolomite are present in the Woodford Shale, the results would be much less reliable. In the Woodford Shale in this well, the amount of calcite is 0.0% and the amount of dolomite ranges from 1.8% to 2.5%.

#### Mineral Volumes and Total Porosity [Lewis, 2009]

$V_{\text{cl}} + V_{\text{qtz}} + V_{\text{ke}} + \phi_{\text{Total}} = 1.0$   $V_{\text{ke}} = \text{TOC} \times K_{\text{vr}} \times \rho_b / \rho_{\text{kerogen}}$

$(V_{\text{cl}} \times \rho_{\text{clay}}) + (V_{\text{qtz}} \times \rho_{\text{qtz}}) + (V_{\text{ke}} \times \rho_{\text{ke}}) + (\phi_{\text{Total}} \times \rho_f) = \rho_b$

$(V_{\text{cl}} \times \phi_{\text{in clay}}) + (V_{\text{qtz}} \times \phi_{\text{in qtz}}) + (V_{\text{ke}} \times \phi_{\text{in ke}}) + (\phi_{\text{Total}} \times \phi_{\text{nl}}) = \phi_{\text{nl}}$

Of the entire gross organic shale interval (9448—9548') with high gamma ray ( $GR > 200$  API) and high resistivity ( $AT_{90} > 150 \text{ ohm-m}$  and  $AT_{90} = 320 \text{ ohm-m}$ ) only 52 ft is net pay as defined by the following cut-offs: 1)  $\text{TOC} > 2\%$ ; 2)  $\phi_{\text{ie}} > 4\%$ ; 3)  $\phi_{\text{gas}} > 2\%$ ; 4)  $S_{\text{we}} < 45\%$ ; and 5) permeability gas (Gf) in scf/area (area = 640 ac) is calculated using the equations below modified after Hartman, 2009:

$$\begin{aligned} &\text{Absorbed Gas-in-Place Volume (scf/ara)} \\ &GS = 1,359.7 * A * h * \rho * gc \quad GS = 9.7 \text{ BCF/sec} \\ &\text{Free Gas-in-Place (scf/area)} \\ &Gf = 43,560 * A * h * \phi_{hie} * (1.0 - S_{we}) * (1/Bg) \quad Gf = 14.3 \text{ BCF/sec} \end{aligned}$$

The well was a horizontal completion with an IPF of 4.36 mmcf/gd and an EUR of 5.2 bcf. The horizontal was placed in the thickest net pay interval (34 ft) with calculated permeabilities from 106 nD to 439 nD, which contains 15 BCF/sec. Based on the calculated reserves of 15 BCF/sec and an EUR of 5.2 BCF, the recovery would be 35%.

Three conclusions maybe reached from this study:

- 1) Log analysis is possible on Gas-Bearing shale using only Deep Resistivity, Bulk Density and Neutron Porosity
- 2) The determination of Vcl, Vqtz, Vke and Total Porosity using Bulk Density and Neutron Porosity data is reliable if only small amounts of calcite or dolomite are present.
- 3) The Shaly Sand Productible Plot (Q-Plot) maybe useful in Gas-Bearing shales as an indicator of reservoir versus non-reservoir shale.

## Bio—Permian Basin Section SEPM Speaker—March 15, 2011

### Geo. B. Asquith, Ph.D.

George Asquith is the former Pevehouse Chair of Petroleum Geology and is Emeritus Professor of Geosciences and Director of the Center for Applied Petrophysical and Reservoir Studies at Texas Tech University. He received his B.S. (honors) in geology with a minor in mathematics from Texas Tech and his M.S. and Ph.D. from the University of Wisconsin-Madison with a minor in geophysics. His 25 years of petroleum industry experience include work as research geologist, Atlantic-Richfield Co.; staff geologist, ALPAR Resources; chief geologist, Search Drilling Co.; district geologist, Pioneer Production Corp.; and project leader, Mesa Limited Partnership. His industry projects have included the determination of the reservoir architecture and remaining gas reserves in the Hugoton and West Panhandle fields and exploration and reservoir characterization of selected reservoirs from the Gulf Coast (onshore and offshore), Permian, Alberta, San Juan, Williston, Arkoma, Cooper (Australia), Neiva (Colombia), Maracaibo (Venezuela), and Anadarko basins.

He has authored 123 publications including 5 books in the fields of petrophysics, computer geology, and carbonate and clastic sedimentation and petrology. His book, *Basic Well Log Analysis for Geologists* won the AAPG best book award in 1984 and is the top selling book in the history of AAPG. During 1991-1992, *Log Evaluation of Shaly Sandstones: A Practical Guide* was one of the top 3 selling AAPG publications. His numerous awards include the Distinguished Service and Best Paper Awards from the Society of Professional Well Log Analysts (1994); Levenson Award for best paper at the AAPG Southwest Section meeting (1996); AAPG Distinguished Educator Award (1997); Educator of the Year Award presented by the AAPG Southwest Section (1999); West Texas Geological Society Distinguished Service Award (1999); and the Monroe Cheney Science Award from the Southwest Section of AAPG and Dallas Geological Society (2001).

He has served as Distinguished Lecturer for the Society of Professional Well Log Analysts (1991-1992 and 1994-1995), lecturer for the AAPG Subsurface Carbonate Depositional Modeling school (1980-1986), and is currently lecturer and science advisor for the AAPG Basic Well Log Analysis, Carbonate Well Log Analysis, and Shaly Sand Well Log Analysis schools (1982-present).

Dr. Asquith's research interests include the documentation and quantitative mapping of relationships between petrophysical responses and depositional and diagenetic lithofacies, the petrophysics of carbonate and shaly-sand reservoirs, and the application of computers to petrophysical analysis.

## Corporate Sponsorships (2010-2011)

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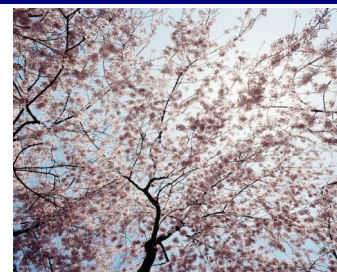
**“However, if we aren’t allowed to  
drill, no oil will ever be found.”**

Wallace Pratt, comments about government estimates of oil potential in  
unexplored basins.



# President's Column

*Teri McGuigan*



On Tuesday, March 8, 2011, NYMEX West Texas Intermediate Crude Oil for April delivery closed at \$105 per barrel, and according to Baker Hughes, rig count is up 311 from last year in the US. It is a good time for all of us in the Permian Basin.

There is a need for constant development on how we find and extract oil and gas. Geoscientists coming together and sharing their knowledge and expertise is a big part of the education provided to us. As president, and speaking on behalf of all the executive board members of PBS-SEPM, the society is here to provide the geologic community new and maybe not-so-new but tucked away insights into current or future plays.

The PBS-SEPM has incredible didactic programs coming your way through August, 2011. It can be a very massive task to put these programs together, but it is at the pleasure of your PBS-SEPM board. Success of the programs gives us the indication that we have hit the mark on the needs of our members which in turn provides a feeling of satisfaction to the board that it was a job worth doing.

May 13-15, 2011 is the date set for our annual spring field trip. Dr. Xavier Janson plans to lead a group in the Sacramento Mountains. Dr. Janson's abstract and a registration form are in the newsletter this month.

The Young Professional Field Trip has been such a success these

past few years that the society is already receiving inquiries. The trip will happen from June 9-12, 2011. The registration form can also be found in this newsletter.

We have two other upcoming events in August. Mitch Harris, research scientist for Chevron, has agreed to present a full day core workshop on the Gulf PDB-04 core that shows a complete stratigraphic succession of the Capitan reef and its equivalent facies. This core has not been shown since 1993. Take a look at the abstract which has been included in the newsletter, and I am sure you will agree that it is an event you will not want to miss. Both the society and Mitch Harris are very interested in attendance by our young students studying geology and have not had the opportunity to experience a core workshop. It is our thoughts and hopes that we will find a few companies that might be willing to sponsor a student or two that might not be able to attend such an event without the support of a company. If this is something your company might like to be involved with, please get in touch with Paula Mitchell at the society office (432) 687-1593 or Teri McGuigan (432) 770-7099. This event is scheduled for August 2 and registration forms will be out soon.

Monday evening, August 1 and the evening prior to the core workshop, PBS-SEPM will have its first Robert Read Distinguished Lecture Series. Many of you may

remember Robert. I knew him well as we spent a significant amount of time together working on our geologic studies at The University of Texas of the Permian Basin. Robert was tragically taken from us too early in his life due to a car accident. As a young professional who loved this business, Robert and much of what he stood for will be honored through this lecture series. It is the society's objective to provide an outstanding dinner and speaking event that will highlight the young professionals that venture into a profession that was so loved by Robert. It seemed a nice fit to have the dinner the evening before the presentation of such an outstanding core workshop - a workshop that will hopefully draw and provide special enlightenment for many young professionals. More information will be provided for this event soon.

I still have a few months left as President, but it is time to elect the new 2011-2012 executive board. Take a look at the list of candidates and their bios we have provided in the newsletter. This information as well as the ballot will be coming in the mail to our members soon. Please take the time to vote.

*Teri McGuigan*

President, PBS-SEPM 2010-2011

<http://www.pbs-sepm.org>



## PBS-SEPM Executive Board (June, 2010—May, 2011)

<b>President:</b>	Teri McGuigan	<a href="mailto:tmcguigan1@suddenlink.net">tmcguigan1@suddenlink.net</a>	770-7099
<b>President Elect:</b>	David M. Thomas	<a href="mailto:dthomas@tretyresources.net">dthomas@tretyresources.net</a>	570-6898
<b>First Vice President</b>	Robert Nail	<a href="mailto:Robert.Nail@whiting.com">Robert.Nail@whiting.com</a>	688-1708
<b>Second Vice President:</b>	Wayne Helms	<a href="mailto:Wayne.helms@weatherfordlabs.com">Wayne.helms@weatherfordlabs.com</a>	684-8800
<b>Treasurer:</b>	Cindy E. Bowden	<a href="mailto:Cindy_bowden@kindermorgan.com">Cindy_bowden@kindermorgan.com</a>	688-3785
<b>Secretary:</b>	James Hawkins	<a href="mailto:jhawkins@midland.oilfield.slb.com">jhawkins@midland.oilfield.slb.com</a>	571-4626
<b>Executive Director:</b>	Paula Mitchell	<a href="mailto:wtgs@wtgs.org">wtgs@wtgs.org</a>	683-1573
<b>Past—President</b>	Fred H. Behnken	<a href="mailto:fred_behnken@kindermorgan.com">fred_behnken@kindermorgan.com</a>	688-2344

Do you have an idea for an interesting luncheon talk? Have a core workshop you'd like to present? Have some suggestions on how PBS-SEPM can better serve the geologic community? Just click on the e-mail above and drop us a note—your PBS-SEPM Executive Board would **LOVE** to hear from you!



"Man will occasionally stumble over the truth, but usually manages to pick himself up, walk over or around it, and carry on".

- Winston S. Churchill

## Corporate Sponsors (2010-2011) see others on p. 3

If you are interested in a sponsorship opportunity, please call Paula Mitchell for more details at (432) 683-1573

**Your Company Logo could be in this space showing your support of PBS-SEPM.**

**Your support lifts your corporate name within the Permian Basin .**

Your Corporate Logo could be here.

Your logo will be on the website, in every newsletter, on the Power Point shown prior to every luncheon and in the calendar credits for one year June to May.



**PBS-SEPM is grateful for the generosity of these corporate sponsors .**  
See page 3 for additional sponsors

**Please remember to thank them for their support!**

# 2011—2012 PBS-SEPM Executive Board Nominations

## President Elect Nomination



**Robert S. Nail, PhD**  
Sr. Geoscientist  
Whiting Petroleum Corp.  
Midland, TX 79701

**Education:** Ph.D., Geoscience, Texas Tech University; M.S., Geology, University of Texas at Arlington; B.S., Geoscience, Texas Tech University

**Memberships:** SEPM (National, Permian Basin Section, Gulf Coast Section); AAPG; West Texas Geological Society (WTGS); Houston Geological Society (HGS); North American Micropaleontology Section (NAMS); Geological Society of America (GSA)

**Activities:** PBS-SEPM - First VP (2010), Second VP (2009), Luncheon Speaker Chair (2008); WTGS – WTGS Fall Symposium Technical Co-Chair (2011), Website Chair (2007-present); SWSAAPG – Website Chair (2010-present); GCSSEPM – Website Chair (2000-2010); NAMS – Secretary (2002-2006)

## 1<sup>st</sup> Vice President Nomination



**Robert Campbell**  
Consultant  
Midland, Texas

**Education:** BS (1974) and MS(1976) Petroleum Engineering, University of Texas

**Memberships:** SEPM, WTGS, SPE, SPWLA

**Activities:** PBS-SEPM Young Professional Field Trip Mentor (2008-present)

## 2<sup>nd</sup> Vice President Nomination



**Cindy E. Bowden**  
Geologist  
Kinder Morgan Production Co., Inc.  
Midland, Texas

**Education:** Odessa College, AS in Geology 1999, UTPB, BS in Geology 2005, UTPB, MS in Geology, 2010

**Memberships:** SEPM, AAPG, SEG, PBS-SEPM, WTGS

**Activities:** PBS-SEPM - Lunch Arrangements (2005-2008), Secretary (2009-2010), Treasurer (2010-2011); WTGS - Secretary (2006-2007), 2nd Vice President (2007-2008), Editor-in-Chief 2008-2010, WTGS Fall Symposium - Speaker's Judge 2003, Judges Chairman (2004-2006), Abstract Editor 2007, Editor 2008

## PBS-SEPM Core Workshop

**Tuesday, August 2, 2011 – Midland Center, Midland, TX**

## Geology of the Capitan Shelf Margin: The Gulf PDB-04 Core

**Presented by: Paul (Mitch) Harris, Chevron Energy Technology Company,  
San Ramon, CA**

# 2011—2012 PBS-SEPM Executive Board Nominations

## Secretary Nominations



**Sandra Elliott**  
Geologist  
McClure Oil Company  
Midland, Texas

Education: B.S. Geology 2003 Sul Ross State University  
M.S. Geology 2009 Sul Ross State University  
Memberships: PBS-SEPM, WTGS, GSA, AAPG  
Activities: PBS-EPM Core Committee member 2011, President Geology Club, Sul Ross State University 2003, Vice President Geology Club Sul Ross State University 2002



**Debrah S. Gann**  
Project Scientist / Task Manager / Geologist  
Arcadis  
Midland, TX

Education: BS Geology, University of Texas of the Permian Basin 1992; MS Geology, University of Texas of the Permian Basin, 2000; Texas Licensed Professional Geoscientist; Tennessee Registered Professional Geoscientist  
Memberships: PBS-SEPM, WTGS, AAPG, AAPG-DEG, Business & Professional Women, NGWA, SPE-ESG  
Activities: PBS-SEPM – 2<sup>nd</sup> Vice President (2007-2008), Treasurer (2008-2009); WTGS – Continuing Ed Chairman (2006-2009); AAPG / AAPG-DEG – Health & Safety Committee (2006-2008); AAPG SWS – DEG Advisory Board (2003-2004), Environmental Session Technical Committee and Moderator; Business & Professional Women – Community Projects Committee Chair (2010-2011), Woman of the Year (2010-2011), President (2009-2010), Corresponding Secretary (2006-2008), Communications Chair (2004-2009)  
I like to take vacation as much as possible and read. I enjoy field trips when I can attend them and hiking when time allows.

## Treasurer Nominations



**Curtis D. Helms, Jr.**  
Geologist  
Great Western Drilling Co  
Midland, Texas

Education: M.S. Geology, The Univ. of Texas of the Permian Basin 2011  
B.S. Biology The Univ. of Texas of the Permian Basin 2003  
Memberships: AAPG, Energy Minerals Division of AAPG, WTGS, PBS-SEPM, FCGS, RMAG, Lions Club International-Farmington, New Mexico, NRA  
Activities: Hunting, Skeet Shooting, Fishing, Hiking, Golfing, Riding Horses, anything outdoors



**Wayne Helms**  
General Manager  
Permian Basin Operations  
Weatherford Laboratories  
Midland, Texas

35 years of industry experience  
Memberships: WTGS, PBS-SEPM, SPE  
Activities: PBS-SEPM 2<sup>nd</sup> Vice President (2010-2011); Continued support to PBS-SEPM and WTGS by overseeing the rig up and rig down of core workshops





# UPCOMING EVENT

## PERMIAN BASIN SECTION SEPM

### YOUNG PROFESSIONAL AND INTERN FIELD TRIP

#### June 9-12, 2011

- Four day multi-disciplined field trip in the Guadalupe Mountains for geology, engineering and land young professionals and interns
- Trip led by Dr. Emily Stoudt and Dr. Robert Trentham from The University of Texas of the Permian Basin, who have a combined 55 years of geological experience in research, development and production in the Permian Basin
- Robert Campbell and Chris Fling will provide mentoring support in engineering and land and have comparable years of Permian Basin experience in their respective professions
- Goal is to educate participants in combining outcrop data with industry exploration and production techniques in a multi-disciplined environment
- Participants will have opportunity to observe world-class outcrops of shelf to basin deposits that are direct analogues to producing fields in the Permian Basin
- Lectures covering geology of west Texas, carbonates, sequence stratigraphy, quick and simple log calculations and land practices
- Classroom exercises on general land practices, sequence stratigraphy, log correlation, seismic interpretation and production analysis
- Break out sessions specific to each discipline



**Field studies**



**Classroom exercises**



**2010 Field Trip Participants**

Participants will leave Midland, TX on June 9, travel to Carlsbad, NM, where they will stay at the Stevens Inn, and return to Midland, TX, the evening of June 12. Cost will be \$800.00 for single occupancy and \$700.00 for double occupancy. Included in the costs: round trip transportation from Midland, three nights lodging, three breakfasts, three lunches, refreshments in the field, guidebook and handouts.

**WATCH [pbs-sepm.org](http://pbs-sepm.org) WEBSITE FOR UPDATES ON FIELD TRIP**

Contact Information:

Paula Mitchell, Executive Director

PBS-SEPM, P. O. Box 1595, Midland, Texas 79702

e-mail: [wtpgs@wtpgs.org](mailto:wtpgs@wtpgs.org)

phone: (432) 683-1573

Fax (432) 686-7827





# PERMIAN BASIN SECTION SEPM



## YOUNG PROFESSIONAL AND INTERN FIELD TRIP

June 9-12, 2011

### Registration Form

- Four day multi-disciplined field trip in the Guadalupe Mountains for geology, engineering and land young professionals and interns
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*Limited space is available, so the first to register will be given priority.*

Cost (Please check your choice):      Single    \$800.00 ( )      Double:    \$700.00 ( )

Discipline (Mark One)      Geologist ( )      Land Professional ( )      Engineer ( )

#### REGISTRATION FEE NON-REFUNDABLE AFTER JUNE 1, 2011

Name: \_\_\_\_\_  
 Company/Affiliation: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 Business Telephone: \_\_\_\_\_ Fax Telephone: \_\_\_\_\_  
 Email address: \_\_\_\_\_ Roommate: \_\_\_\_\_  
 Rooms are nonsmoking      Special Dietary Needs: \_\_\_\_\_

Payment check, cash or credit card:

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**Make checks payable to PBS-SEPM.**

Registration information and payment to: **PBS-SEPM P.O. Box 1595, Midland, TX 79702**

Credit card orders may be faxed to (432) 686-7827

For additional information contact: **PBS-SEPM Office (432) 683-1573 or Teri McGuigan (432) 770-7099**



## 2011 PERMIAN BASIN SECTION SEPM FIELD TRIP

### REGISTRATION FORM

May 13 thru May 15, 2011

### Paleozoic mounds stratigraphic architecture in the Sacramento Mountains: implication for reservoir characterizations

**Dr. Xavier Janson**

*Reservoir Characterization Research Laboratory  
Bureau of Economic Geology, University Of Texas at Austin*

The Permian Basin Section SEPM has scheduled its annual field trip to the Sacramento Mountains in New Mexico. Dr. Xavier Janson, Reservoir Characterization Research Laboratory, Bureau of Economic Geology, University of Texas at Austin will lead the trip.

The participants will leave from the Midland Center, Corner of Wall and Main, Midland, Texas, at 12:00 noon CDT on Friday, May 13, 2011, where we will take vans or personal vehicles to Cloudcroft, New Mexico (Please note that personal vehicles will not be used during the field exercises). There will be an icebreaker (cash bar) starting at 5:30 p.m. MDT at The Lodge Resort & Spa located at 601 Corona Place, Cloudcroft, New Mexico, with dinner served at 6:30 p.m. MDT. Dr. Janson will provide an overview of the field trip directly after dinner.

On Saturday, May 14, the stops will be centered around Indian Well, Alamogordo, Alamo Canyon and Muleshoe. At the end of the day, the vans will return to Cloudcroft. Sunday, May 15, will be spent in Dry Canyon and the vans will return to Cloudcroft at the end of the field trip. This two day trip will use the unique suite of carbonate outcrops in Sacramento Mountains to illustrate reservoir-scale stratal architecture and methodologies for interpreting these carbonate mounds geometries from contained facies. Two different platform style of mounds development will be visited. The Mississippian mounds grew on a wide low angle ramp below wave base and are dominated by aphotic to oligophotic biota, whereas the Virgilian algal mounds are dominated by euphotic biota that depends on light to grow and as a result are controlled not only by the hydrodynamic regime but also the water depth (accommodation). We will draw comparison with the subsurface data from the Horseshoe Atoll and in the Fort Worth Basin where these two types of mounds are present or at least suspected whenever possible. We will contrast the two stratigraphic architectures and discuss the applicability of these outcrop and outcrop-derived conceptual model to the isolated platform case in Horseshoe Atoll and Fort Worth Basin.

In addition to the incredible field trip, the costs include: round trip transportation in the vans, Friday night's dinner, two nights lodging, two lunches, beverages in the field and the field trip guidebook. The trip will begin and end in Midland, Texas. Mark your calendars for a fantastic field trip to visit what may provide insights into your current or future plays. If you are unable to attend but would like a copy of the field guide, PBS-SEPM will make a guidebook available for sale on CD. **THE TRIP IS LIMITED TO THE FIRST 30 REGISTRANTS.**

#### Cost (Please check your choice)

<b>PBS-SEPM Member:</b>	<b>\$525.00 single ( )</b>	<b>Non-Member:</b>	<b>\$575.00 single ( )</b>
	<b>\$450.00 double ( )</b>	<b>Non-Member:</b>	<b>\$500.00 double ( )</b>
<b>Guidebook CD (only):</b>	<b>\$30.00 ( )</b>		

#### REGISTRATION FEE NON-REFUNDABLE AFTER April 12, 2011

**WILL TRAVEL WITH GROUP FROM MIDLAND \_\_\_\_\_ WILL MEET GROUP IN CLOUDCROFT \_\_\_\_\_**

Name: \_\_\_\_\_

Company/Affiliation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Business Telephone: \_\_\_\_\_ Fax Telephone: \_\_\_\_\_

Email address: \_\_\_\_\_ Roommate: \_\_\_\_\_

Rooms are nonsmoking \_\_\_\_\_ Special Dietary Needs: \_\_\_\_\_

Payment check, cash or credit card:

( ) I authorize you to charge the above to my:

( ) MasterCard ( ) Am. Express ( ) VISA Exp. Date: \_\_\_\_\_ Security Code \_\_\_\_\_

Card Number: \_\_\_\_\_ Signature: \_\_\_\_\_

**Make checks payable to PBS-SEPM. Please send your registration information and payment to:**

**PBS-SEPM P.O. Box 1595, Midland, TX 79702**

**For additional information please contact: PBS-SEPM Office- (432) 683-1573, Robert Nail (432) 664-5486 or Teri McGuigan (432) 770-7099**



# Paleozoic mounds stratigraphic architecture in the Sacramento Mountains: implication for reservoir characterizations

Dr. Xavier Janson

*Reservoir Characterization Research Laboratory*

*Bureau of Economic Geology*

*University Of Texas at Austin*



This two day trip will use the unique suite of carbonate outcrops in Sacramento Mountains to illustrate reservoir-scale stratal architecture and methodologies for interpreting these carbonate mounds geometries from contained facies. Two different platform style of mounds development will be visited. The Mississippian mounds grew on a wide low angle ramp below wave base and are dominated by aphotic to oligophotic biota, whereas the Virgilian algal mounds are dominated by euphotic biota that depends on light to grow and has a result are controlled not only by the hydrodynamic regime but also the water depth (accommodation). We will draw comparison with the subsurface data from the Horseshoe Atoll and in the Fort Worth Basin where these two types of mounds are present or at least suspected whenever possible. We will contrast the two stratigraphic architectures and discuss the applicability of these outcrop and outcrop-derived conceptual model to the isolated platform case in Horseshoe Atoll and Fort Worth Basin.

## Day 1: Mississippian outer-ramp deposits and associated mud mounds

Mississippian Lake Valley mid- and outer-ramp deposits and buildups are well displayed across the west-facing wall of the Sacramento Mountains for some 12 miles in an approximate dip orientation. We will examine mound geometries, flank beds, and crinoidal gravity flows at three locations along the Lake Valley ramp. The most updip locality will consist of small mound complexes, followed by larger mounds complexes and large lobate crinoidal rudstone deposits in Alamo Canyon downdip. Finally, we will then examine the famous Muleshoe mud mound in a more downdip position along the ramp profile. These exposures will give us the opportunity to compare stages of mound growth—including lenticular, aggradational, and laterally accreting along the updip to downdip accommodation profile of the Lake Valley ramp—with the phylloid-algal mound we'll see the next day in the Pennsylvanian. We will also examine the stratal geometries of outer-ramp crinoidal turbidite lobes. We will discuss similarities and differences between phylloid-algal and crinoid mounds and try to make some generalization about other skeletal-mound systems, such as Cretaceous rudist mounds.

## Day 2: Mixed siliciclastic Upper Carboniferous shelf in Dry Canyon: icehouse cyclicity and mound-dominated margin architecture

The Dry Canyon area of the Sacramento Mountains is a classic exposure of complex icehouse-mixed-siliciclastic-carbonate strata deposited in shallow-water-shelf, shelf-margin, and slope settings. The narrow shelf exposed in Dry Canyon will allow us to contrast facies distribution and proportion, stratal geometries, and cycle architecture between the shelf interior and the shelf margin. We will examine stratal geometries and cycle boundaries typical of high-amplitude, sea-level changes found in icehouse conditions. We will observe variations of phylloid-algal mound size, shape, and distribution in three dimensions and between two distinct stratigraphic intervals. We will examine and discuss the influence of antecedent topography and differential compaction on facies/cycle architecture and, ultimately, reservoir quality.

### Bio—Permian Basin Section SEPM Spring Field Trip Leader

Xavier Janson, Ph.D.



Xavier Janson received his Ph.D. from the University of Miami in 2002, where he was a student in the Comparative Sedimentology Laboratory. He received a D.E.A. degree (equivalent to an M.Sc.) from the Institut Français du Pétrole. He joined the Reservoir Characterization Research Laboratory at the Bureau of Economic Geology of the Jackson School of Geosciences at the University of Texas at Austin in 2002, where his current research involves building three-dimensional (3-D) geocellular models and 3-D synthetic seismic models from outcrop study to help reservoir characterization and seismic interpretation.





## 2011 PERMIAN BASIN SECTION SEPM FIELD TRIP

### REGISTRATION FORM

May 13 thru May 15, 2011

### Paleozoic mounds stratigraphic architecture in the Sacramento Mountains: implication for reservoir characterizations

**Dr. Xavier Janson**

*Reservoir Characterization Research Laboratory  
Bureau of Economic Geology, University Of Texas at Austin*

The Permian Basin Section SEPM has scheduled its annual field trip to the Sacramento Mountains in New Mexico. Dr. Xavier Janson, Reservoir Characterization Research Laboratory, Bureau of Economic Geology, University of Texas at Austin will lead the trip.

The participants will leave from the Midland Center, Corner of Wall and Main, Midland, Texas, at 12:00 noon CDT on Friday, May 13, 2011, where we will take vans or personal vehicles to Cloudcroft, New Mexico (Please note that personal vehicles will not be used during the field exercises). There will be an icebreaker (cash bar) starting at 5:30 p.m. MDT at The Lodge Resort & Spa located at 601 Corona Place, Cloudcroft, New Mexico, with dinner served at 6:30 p.m. MDT. Dr. Janson will provide an overview of the field trip directly after dinner.

On Saturday, May 14, the stops will be centered around Indian Well, Alamogordo, Alamo Canyon and Muleshoe. At the end of the day, the vans will return to Cloudcroft. Sunday, May 15, will be spent in Dry Canyon and the vans will return to Cloudcroft at the end of the field trip. This two day trip will use the unique suite of carbonate outcrops in Sacramento Mountains to illustrate reservoir-scale stratal architecture and methodologies for interpreting these carbonate mounds geometries from contained facies. Two different platform style of mounds development will be visited. The Mississippian mounds grew on a wide low angle ramp below wave base and are dominated by aphotic to oligophotic biota, whereas the Virgilian algal mounds are dominated by euphotic biota that depends on light to grow and as a result are controlled not only by the hydrodynamic regime but also the water depth (accommodation). We will draw comparison with the subsurface data from the Horseshoe Atoll and in the Fort Worth Basin where these two types of mounds are present or at least suspected whenever possible. We will contrast the two stratigraphic architectures and discuss the applicability of these outcrop and outcrop-derived conceptual model to the isolated platform case in Horseshoe Atoll and Fort Worth Basin.

In addition to the incredible field trip, the costs include: round trip transportation in the vans, Friday night's dinner, two nights lodging, two lunches, beverages in the field and the field trip guidebook. The trip will begin and end in Midland, Texas. Mark your calendars for a fantastic field trip to visit what may provide insights into your current or future plays. If you are unable to attend but would like a copy of the field guide, PBS-SEPM will make a guidebook available for sale on CD. **THE TRIP IS LIMITED TO THE FIRST 30 REGISTRANTS.**

#### Cost (Please check your choice)

PBS-SEPM Member:	\$525.00 single ( )	Non-Member:	\$575.00 single ( )
	\$450.00 double ( )	Non-Member:	\$500.00 double ( )
Guidebook CD (only):	\$30.00 ( )		

#### REGISTRATION FEE NON-REFUNDABLE AFTER April 12, 2011

WILL TRAVEL WITH GROUP FROM MIDLAND \_\_\_\_\_ WILL MEET GROUP IN CLOUDCROFT \_\_\_\_\_

Name: \_\_\_\_\_

Company/Affiliation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Business Telephone: \_\_\_\_\_ Fax Telephone: \_\_\_\_\_

Email address: \_\_\_\_\_ Roommate: \_\_\_\_\_

Rooms are nonsmoking \_\_\_\_\_ Special Dietary Needs: \_\_\_\_\_

Payment check, cash or credit card:

( ) I authorize you to charge the above to my:

( ) MasterCard ( ) Am. Express ( ) VISA Exp. Date: \_\_\_\_\_ Security Code \_\_\_\_\_

Card Number: \_\_\_\_\_ Signature: \_\_\_\_\_

Make checks payable to PBS-SEPM. Please send your registration information and payment to:

PBS-SEPM P.O. Box 1595, Midland, TX 79702

For additional information please contact: PBS-SEPM Office- (432) 683-1573, Robert Nail (432) 664-5486 or Teri McGuigan (432) 770-7099



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Midland, TX 79702

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Fax: 432-686-7827  
E-mail: wtgs@wtgs.org

**We're on the Web!**  
**[www.pbs-sepm.org](http://www.pbs-sepm.org)**

"When truth is evident, it is impossible for parties and factions to rise. There never has been a dispute as to whether there is daylight at noon. "

Francis Marie Arouet  
de Voltaire,  
(1694-1778)  
French Writer 1764

PBS-SEPM is the Permian Basin Section of SEPM—the Society for Sedimentary Geology. However, you do not need to be a SEPM member or a geologist to join PBS-SEPM.

Our non-profit society relies upon the efforts of dedicated volunteers to serve the geological community—primarily through educational events. These events include monthly luncheon talks, core workshops, annual field trips, and special geological publications. Thanks to our Education Committee we are involved in MISD 5th grade geology presentations to interest elementary students in pursuing a career in geosciences. We would like to increase our exposure on college campuses—reaching out to future earth scientists through scholarships, discounted memberships, and offering full-time geology students the ability to participate in professional-grade field trips at little to no cost.

If you would like to join PBS-SEPM, you may visit our website ([www.pbs-sepm.org](http://www.pbs-sepm.org)) to learn more about us, discover how to get involved and download a membership form.

### **Individual Sponsors of PBS-SEPM ( 2010-2011)**

Individual sponsors are advertised on the PBS-SEPM website and each Newsletter. Cost is \$85/year. If you are interested in an individual sponsorship opportunity, please call Paula Mitchell for more details at (432) 683-1573.

### ***Your Business Card Could Be here***

Your card will be in every newsletter for one year June to May, on the Website, the Power Point shown prior to every luncheon and in the calendar credits.



**Spring is Here! It is Time to Look at the Rocks!**

## PBS-SEPM Core Repository Location Project

### We Need Your Assistance !

Now we need your help. What do you do when you need to find a core? Do you know of any repositories that aren't in the list below ? Do you know what your employer or other operators have done or plan to do with their core? Please contribute any such information to this effort by contacting the committee: David M. Orchard, Chair, [david.m.orchard@conocophillips.com](mailto:david.m.orchard@conocophillips.com), 832-486-2314; Dr. Emily Stoudt, [stoudt\\_e@utpb.edu](mailto:stoudt_e@utpb.edu), 432-552-2244; and Andrew Parker, [andrew.parker@whiting.com](mailto:andrew.parker@whiting.com), 432-686-6784 office.

The following lists of portals and core repository facilities represent our first compilation

#### PORTALS TO INFORMATION

**PTTC** has a portal to the holdings of several public repositories. You can sort by repository and display their holdings in map view. <http://inside.mines.edu/Research/PTTC/Core%20Locator/>

**AGI** has a list of repositories of various geologic data, including cores. It provides contact information and accesses data through a map interface. <http://www.agiweb.org/ngdrs/overview/datadirectory.html>

Tony Troutman's website <http://www.carbonates.us/cores.htm> has a list of storage sites, including several state repositories.

#### PUBLIC AND COMMERCIAL STORAGE FACILITIES

The **USGS** has a storage facility in Denver that has Permian Basin material. Their collection can be searched online at <http://geology.cr.usgs.gov/crc/>. 303-202-4851.

The **Bureau of Economic Geology (BEG)** holds Permian Basin cores in their Midland, Houston, and Austin facilities. See <http://www.beg.utexas.edu/facilities.php> for information and contacts. Their catalog is called **IGOR** which has a link on above address. IGOR will be replaced soon by a more advanced database.

**New Mexico Bureau of Geology and Mineral Resources** has Permian Basin cores in Socorro. Request a list of the collection at <http://geoinfo.nmt.edu/libraries/subsurface/home.html>

**CEED** (Center for Energy and Economic Diversification) at **UT Permian Basin** (<http://ceed.utpb.edu/>) has Texas and New Mexico cores. 432-552-2020.

The **International Sample Library at Midland** has cores and core chips. Their collection is not in a database and must be searched through index cards. 707 Connell St, Midland, TX , 79701. 432-682-2682.