

ON THE ROCKS: PALO DURO CANYON

AAPG Mid-Continent Section

Presents:

2012 Biennial Field Conference
October 5 - 7, 2012

Hosted by:

Panhandle Geological Society
Amarillo, Texas



**Announcement &
Registration Information**

Limited to 125 participants ! Register today at:

www.mcsfieldconference.com

Join Us For :

- *An in-the-field look at Fluvial Depositional Systems*
- *Technical Sessions*
- *Dinner in Palo Duro Canyon*

Join Us!

An invitation from General Chairman John Miesse

On behalf of the AAPG Mid-Continent Section and the Panhandle Geological Society, we hope to welcome you to Amarillo, Texas for “ON THE ROCKS—PALO DURO CANYON”, October 5-7, 2012. This event is the inaugural biennial AAPG Mid-Continent Section Field Conference, which we hope will become a long standing tradition. The concept behind this is to conduct a field conference in years between the general Mid-Continent Section meetings. These conferences will be hosted by some of the smaller geological societies within the Mid-



Continent region where local outcrops applicable to subsurface oil and gas exploration can be examined. The Panhandle Geological Society is proud to lead the way with a first-class trip to “The Grand Canyon of Texas”—Palo Duro Canyon.

Showcasing this three-day field conference will be a hiking tour of one of the most spectacular geologic laboratories in Texas, where you will explore the Permo-Triassic depositional sequences of Palo Duro Canyon, consisting of colorful sandstones, shales, and evaporites. Also featured will be a short course, technical sessions, and a beautiful sunset dinner in the Canyon. An optional tour of the Panhandle Plains Historical Museum in Canyon, Texas is on the docket for Sunday morning.



Friday, October 5

The conference begins at the Ambassador Hotel in Amarillo on Friday afternoon with a free short course entitled “Wireline Logging—Yesterday and Today”. Presented by consulting petrophysicist Bob Mitchell and ThruBit Logging Solutions, this course will examine examples of conventional well log interpretations of Mid-Continent reservoirs and modern logging techniques used in today’s horizontal drilling realm. Following this will be a traditional icebreaker, as well as a poster session providing several geologic subjects of interest for the Texas Panhandle and Mid-Continent areas. These include, at press time:

A New Method for Determining Volume of Clay (Vcl), Effective Porosity (Φ_e), and Effective Water Saturation (Swe) in a Gas-Bearing Arkosic ("granite wash") Sandstone—George B. Asquith, Texas Tech University, Lubbock, TX

Delineating the Subsurface From Space—Latest Generation Satellite Imagery As Your Field Geologist--R.N. Baker, D. Koger, Koger Remote Sensing, Ft. Worth, TX

Minerals of Palo Duro Canyon—Darryl Maddox, Amarillo, TX

Using S-XANES at the Advanced Photon Source Beamline 9-BM to Investigate Sulfur Content in Coals and Kerogens—Trudy B. Bolin, Advanced Photon Source, Argonne, IL

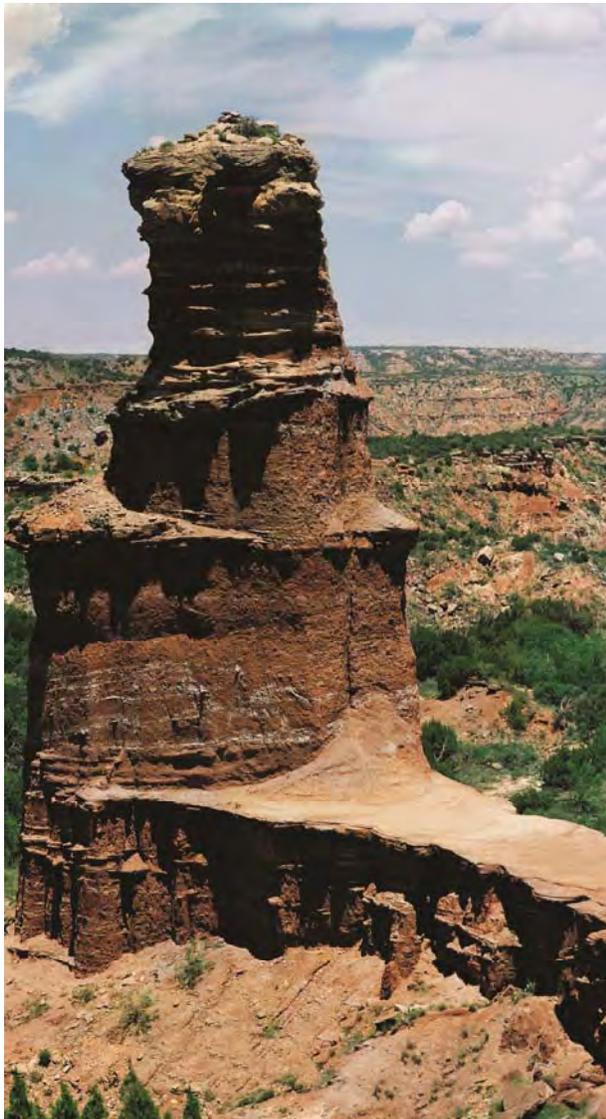
As the icebreaker and poster session wrap up, Friday’s activities conclude with a short technical session featuring two distinguished AAPG members, Mr. Ted Beaumont and Dr. Lee Krystinik, who by conference time will be, respectively, AAPG President and President-Elect. We are honored to have these two accomplished geoscientists speak to us and their presentations are not to be missed:

Sequence Stratigraphic Controls on Fluvial Sand Body Geometries: Insights from the Triassic Dockum Group, OR...How Did Those Little Channels Make Such Big Sheets of Sand?—Lee F. Krystinik, Fossil Creek Resources, Tulsa, OK

The Unconventional Black Swan Event—Ted Beaumont, SM Energy Company, Tulsa, OK

The Canyon Experience

Saturday, October 6



Saturday morning, we depart Amarillo and head south about 25 miles to spend the day and evening at Palo Duro Canyon State Park. October weather is generally the most beautiful of the year on the High Plains and the colorful rock section of the Canyon will be brilliant. A very comprehensive guidebook consisting of road logs and hiking logs, compiled by Chuck Hood and others, will be provided. Chuck, along with several other notable field guides will accompany us, which include Dr. Lee Krystinik, Dr. George Asquith, and Dr. Gerald Schultz; all who have done extensive geologic research in this area. Two hiking trips during the day will take you



through a 250 million-year geologic section where you will examine many classic outcrops of Triassic age fluvial sandstones and Permian mudstones and evaporites. These hikes are somewhat strenuous and will require sturdy hiking shoes or boots. A box lunch and plenty of water will be provided.

We will end the day at the newly opened Pavilion in the Canyon for a beautiful sunset BBQ dinner and a short program featuring an historic film of the Oil and Gas Industry in the Texas Panhandle. Prior to the pre-dinner reception, we'll shuttle those who are interested to the Park's interpretive center.

The Hikes in the Canyon

CCC Trail—Goodnight Peak

This approximately one and three-quarter-mile hike will take us along the historic CCC (Civilian Conservation Corps) Trail first established in the 1930's during the early days of the state park. We will travel back in geologic time from the Ogallala Formation on the top (beginning), down through the Triassic Dockum beds (Trujillo then Tecovas), ultimately down into the Permian Quartermaster Formation near the end. We will begin at the trailhead with a brief introduction to the geology of Palo Duro Canyon, taking advantage of the wonderful panorama overlook before us. We will hike on the CCC Trail past Goodnight Peak.

The trail is a generally narrow route descending to the main Trujillo sandstone bench seen capping many of the mesas within the Canyon. It takes us around the head of a major tributary to Timber Creek and onto Goodnight Mesa or "Triassic Peak". After inspecting an array of sedimentary structures in the Trujillo sandstones along the mesa, we will then continue our descent down the other side of the mesa to ultimately culminate at the Pioneer Amphitheater parking lot.



Velloso Dome



This approximately two-mile hike will follow along a popular running and hiking trail for the first six-tenths of a mile through the Upper Permian Quartermaster red shales and siltstones. Above us lingers the multi-colored mudstones of the Upper Triassic Tecovas Formation, often slumping down the Quartermaster slopes as we make our way around Timber Mesa. The mesa is capped by resistant Trujillo sandstones, huge blocks of which litter the slopes in places. We will literally walk over several areas of interesting climbing ripples in the bedded Permian siltstones on our way to our main destination, Velloso or "Fuzzie's" Dome in the bed of the (normally) dry Sunday Creek. Here wildly contorted thicknesses of Cloud Chief Gypsum await our examination, as well as sedimentary structures found in Quartermaster siltstones above. After walking through the "Dome", we will leave the creek bed and hike up and over to

the Lighthouse Trail as it winds around Capitol Peak, a magnificent precipice of Quartermaster and Tecovas rocks. The 0.9 miles left to trails' end affords an excellent view in the distance of Fortress Cliff and the entire rock section recorded in the canyon.

Catarina Caves

Field conference members may wish to take this short excursion, time permitting. The Catarina Caves trail entrance is just down Park Road 5 from the old Sad Monkey railroad depot off the right (west) side of the road. Nestled just below the north side of Timber Mesa, the main trail takes guests to a series of rather interesting caves that exist in relatively soft, easily-eroded Quartermaster redbeds and punctuated with a number of intervening gravity slumps and slides of Tecovas mudstones. Equally interesting are the number of features in the Permian "badlands" topography seen to the right of the main trail, from the trailhead area westward for a short distance. Participants can wander through this area noting the different features. Total round trip for those wishing to visit both the caves and badlands area should be under one mile.

These hikes can be strenuous at times and should not be attempted by anyone with health problems. Sturdy hiking boots and long pants are highly recommended.

Please note that collecting rock samples in Texas State Parks is illegal. Please bring your binoculars, hand lenses and cameras but leave your rock hammer and sample bags at home. Plan to leave the Park with only great memories!

Amarillo has many great attractions to visit while you are in the area, highlighting its rich history on the high plains. We you can plan to come early or stay an extra day to enjoy some of these sights. For more information please visit www.visitamarillotx.com/index.cfm.

Optional Add-On Activities

Friday & Sunday

Reservoir Analysis Short Course:
"Wireline Logging—Yesterday and Today"

2:00-4:00 PM

Friday October 5, 2012

Conducted by Mr. Bob Mitchell, log analyst in the Mid-Continent for 37 years, and ThruBit Logging Solutions

Limit: 65

Cost: Free (but you must register; includes course materials)

Mr. Mitchell will visit examples of wildcat wells that have been plugged only to be found later to be large producers. Wireline logs from the 1930s to the present will be evaluated quickly and thoroughly as needed to satisfy the requirements of the exploration geologist and the reservoir engineer.

A ThruBit representative will discuss the different methods to evaluate horizontally drilled wells as well as the respective costs and advantages/disadvantages of each method.

ThruBit Logging Solutions utilizes advanced 2-1/8" logging tools to acquire open-hole log data in both conventional vertical wellbores and unconventional horizontal wellbores. By utilizing patented technology, ThruBit can acquire open-hole log data in horizontal wells in a low risk and efficient manner. During the presentation, we will discuss the conveyance procedure for horizontal logging operations and will review log examples from the Mississippian, Cleveland, Granite Wash, and Bakken formations.

Panhandle-Plains Historical Museum
"Let History Surprise You!"

8:30AM-11:30AM

Sunday, October 7, 2012

Limit: 110

Cost: \$35 (includes museum entrance fee, coach transportation & refreshments)

Where else can you cover 26,000 square miles in a day on foot? From dinosaurs to conquistadors, you'll find it all in Texas' largest history museum. Relive the stories of courage and hardship, victory and defeat over the past 14,000 years. Walk along the boardwalks of a life-size 1880's frontier town, view one of the Southwest's finest art collections, experience the exciting history of the petroleum industry, and more.





Guest/Spouse Program "Doing Amarillo Right!"

Departs Ambassador Hotel at 10:00AM Saturday, October 6

Cost: \$75 (includes Friday's icebreaker, Saturday's sunset dinner at Palo Duro Canyon, all entrance fees, transportation & refreshments; lunch Saturday is on your own)

A complete spouse/guest activity program begins Saturday morning with a trip to the American Quarter Horse Hall of Fame and Museum, followed by lunch own your own and antique shopping in Amarillo's historic Route 66 District. A short stop at the famous Cadillac Ranch will be included if time permits. From there we'll make our way back to the Ambassador for a brief stop, then it's on to Palo Duro Canyon for a driving tour through the park and a visit to the interpretative center before joining the field trip participants at the Mack Dick Group Pavilion for dinner.

Amarillo: Real Texas

Lest you get the impression that Amarillo is a one-attraction town, let's saddle up and take the nickel tour of Amarillo and the area. As mentioned above, the American Quarter Horse Association, headquartered in Amarillo, has created a truly world-class facility—The American Quarter Horse Hall of Fame and Museum. Entertaining exhibits, hands-on displays and captivating video productions showcase the rich heritage and modern activities of the American Quarter Horse: <http://aqha.com/museum>.

Other great Amarillo attractions include the Amarillo Botanical Gardens, with a tropical plant conservatory (<http://www.amarillobotanicalgardens.org/>); Amarillo Museum of Art with a wide variety of items in its collection (<http://www.amarilloart.org/>); Don Harrington Discovery Center, a fine educational facility for all ages (<http://www.dhdc.org/>); and new in 2012 is The RV Museum at Jack Sisemore Traveland, a unique museum with vintage RVs and motorcycles (<http://www.rvmuseum.net/>).

No trip to Texas would be complete without rubbing elbows with Texas cattlemen at the Amarillo Livestock Auction (<http://amarillolivestockauction.com/contact.html>), one of the largest in Texas. More than 100,000 head of cattle pass through the auction each year. Be sure your plans include lunch at the Stockyards Café—the steaks are delicious and the price is right.

After seeing the cowboys, take in the Kwahadi Museum of the American Indian (www.kwahadi.com) and enjoy the world-renowned Kwahadi Indian Dancers. They perform most summer weekends and have special performances in the fall and winter. The museum has a fine collection of Native American artifacts and art.

You can even "get your kicks on Route 66." Over one mile of antiques and collectibles await the visitor along Historic Route 66. Buildings that once housed theaters, cafes, and drug stores are now quaint antique, craft and specialty shops. Numerous unique dining experiences are also available at Route 66 eateries, on 6th Avenue between Georgia and Western.

Pick any spot on the compass and there's something unique to the Amarillo area. You have a standing invitation "Step Into The Real Texas."



Registration Form

2012 AAPG Mid-Continent Biennial Field Conference • October 5-7 • On the Rocks: Palo Duro Canyon

Register online, or mail this form to MCS Field Conference Registration, P.O. Box 3471, Tulsa, OK 74101-3471.

First Name Last Name First Name for Badge

Company/Institution

Address City State/Country ZIP/Postal Code

Phone Number Fax Number Email (Required)

Please check all that apply:

- | | | |
|--|---|--|
| <input type="checkbox"/> Owner/Partner/Officer | <input type="checkbox"/> Engineer | <input type="checkbox"/> Speaker |
| <input type="checkbox"/> Manager | <input type="checkbox"/> Independent Consultant | <input type="checkbox"/> Poster Presenter |
| <input type="checkbox"/> Chief/Sr. Geologist | <input type="checkbox"/> Student | <input type="checkbox"/> Sponsor |
| <input type="checkbox"/> Staff Geologist | <input type="checkbox"/> Professor/Instructor | <input type="checkbox"/> Organizing Committee Member |
| <input type="checkbox"/> Geophysicist | <input type="checkbox"/> Retired | <input type="checkbox"/> Other |

Professionals and students may not register as guests or spouses. Use one form for each Professional or Student registration.

Indicate Registration Item	Cost	No.	Total Cost
Professional	\$185	1	_____
Student	\$50	1	_____
Spouse/Guest(s)	\$75	__	_____
Wireline Logging Short Course (Friday 2:00-4:00)	FREE	__	- 0 -
Icebreaker & Friday Presentations ONLY (Fri 5:00-8:30)	\$40	__	_____
BBQ dinner at Palo Duro Canyon ONLY (Sat 5:00-8:00)	\$30	__	_____
Please indicate if you will be utilizing transportation (3:00 departure from the Ambassador Hotel): <input type="checkbox"/> Yes <input type="checkbox"/> No			
Panhandle-Plains Historical Museum Tour (Sun 8:30-12:00)	\$35	__	_____
Please indicate if you will be utilizing transportation (8:30 departure from the Ambassador Hotel): <input type="checkbox"/> Yes <input type="checkbox"/> No			
GRAND TOTAL:			_____

First and last name for registrant badge: _____

First and last name of Spouse/Guest(s) for badge(s): _____

Payment Information

- | | | |
|---|---|--|
| <input type="checkbox"/> VISA | <input type="checkbox"/> MasterCard | <input type="checkbox"/> Discover Card |
| <input type="checkbox"/> American Express | <input type="checkbox"/> Check enclosed (make payable to PGS 2012 Conference) | |

Card Account No. Exp. Date CVV (from back of card) Total amount to be charged

Name as it appears on card (please print) Authorized signature

Billing address for card (if different from above)

List any special needs (dietary, accessibility, etc.) you may require: _____

I will be 21 years of age or older on or before October 5, 2012: Yes No

Provide a name and phone number to contact in case of an emergency: _____

FULL PAYMENT MUST ACCOMPANY THIS FORM IF MAILED. NO PURCHASE ORDERS. The AAPG Mid-Continent Section does not invoice for registration fees. Checks must be drawn on a U.S.-based bank account and in U.S. dollars only. Credit cards are charged in U.S. dollars only. A fee of \$30 will be charged on all full cancellations after July 31, 2012. NO REFUNDS WILL BE ISSUED AFTER SEPTEMBER 15, 2012.

By registering for the 2012 MCS Field Conference, I release and agree to indemnify the Mid-Continent Section of the American Association of Petroleum Geologists (MCS-AAPG) and the Panhandle Geological Society (PGS) and their agents, officers, servants and employees of each, from all liability for any loss, damage or injury sustained by me while involved in any way with the 2012 Mid-Continent Section Field Conference, except that each of MCS-AAPG and PGS is not released from such liability to the extent the same is caused by its actual negligence or willful misconduct. By registering I further acknowledge that I have read and understand and agree to this waiver and release.

Registration Information

To ensure everyone has the best field experience possible, the conference is limited to 125 participants, so you are advised to sign up early. There are three easy ways to register:



Register online (a credit card is required)

Go to <http://www.mcsfieldconference.com/2012/index.php/registration> and follow the link.



By mail (check or credit card)

Complete the registration form on the next page and send it, along with your payment, to:

MCS Field Conference Registration
P.O. Box 3471
Tulsa, OK 74101-3471

Make checks payable to: PGS 2012 Conference



By fax (credit card only)

Fax your registration form, including credit card information, to: 1-918-585-1004 (wait until the end of the voice message; the fax machine will start automatically)

All full field conference, social event, optional tour and guest/spouse fees must be paid IN FULL at the time of registration. All fax registrations not including credit card information or mail-in registrations received without credit card information or a signed check will be returned. If completing a printed form, use one form per professional or student registrant. If registering spouse or guest, be certain to provide the individual's name for the badge. Professionals may not register as spouses or guests.

All field trip leaders, speakers and poster presenters must be registered.

Changes to your registration, including contact information and in particular monetary transactions (adding or deleting optional activities or cancelling outright), must be made in writing. Send your request to MCS Field Conference Registration, P.O. Box 3471, Tulsa, OK 74101-3471; or email sondra@gemworldevents.net. A fee of \$30 will be charged for all full cancellations. NO REFUNDS will be issued after September 15, 2012.

Registration fees:

Professional	\$185
Student	\$50 (limit 5 at this price)
Spouse/Guest	\$75
Friday Short Course ONLY	FREE
Icebreaker & Friday Presentations ONLY	\$40
BBQ dinner in the Canyon ONLY (transportation provided)	\$30
Panhandle-Plains Historical Museum Tour (transportation provided)	\$35

All full registrations (professional, student and spouse/guest) admit the holder to the Friday session and posters, icebreaker and dinner in the Canyon. In addition, professional and student registrants will receive a backpack, water bottle, comprehensive field guide, and thumb drive containing all the materials in the guide as well as additional background research. Pick up your badges and tickets to optional events in the Atrium of the Ambassador Hotel, 3100 I-40 West, Amarillo, TX 79102 anytime during the following hours:

Friday, October 5	12:30p.m. – 7:30 p.m.
Saturday, October 6	6:30 a.m. – 8:00 a.m.

Our Host Hotel



The Ambassador Hotel, voted Amarillo's Best Hotel since the award's inception years ago, is convenient to the city's business and medical districts, shopping, restaurants and the Rick Husband International Airport. Experience the attentive service of a fine hotel blended with a lasting legacy of Texas hospitality. TGI Fridays is located onsite and the room rate includes a complimentary breakfast buffet, wireless internet, fitness center, and airport shuttle. A special Field Conference rate of **\$89** has been negotiated.

To make your reservations, please call 1-800-817-0522 or 1-806-358-6161 and make reservations under 2012 Mid-Continent Field Conference. **Please Note: The discounted room rate is only available by calling the hotel to reserve your room, but feel free to visit the Ambassador's Website for additional information: www.ambassadoramarillo.com.**



Dress Code is 'Rugged Casual'

Feel free to wear some decent duds on Friday for the short course, Icebreaker and presentations at the hotel. For Saturday, the hiking will be strenuous though the weather should be beautiful; nevertheless, you should make sure you are dressed for the elements. Bring layers for the day and raingear just in case. You will be provided a backpack and water bottle, and water will be available on the trail.

There won't be a chance to freshen up before Saturday's dinner in the Canyon, but don't be concerned—dress for the day's activity. And please tell your guest that she or he will be enjoying barbeque with a field crew! It'll be West Texas casual!



We are Grateful to our Sponsors!

Gold (\$5000+)

PABLO ENERGY II LLC



Silver (\$2500-\$4999)



Double Bronze (\$1000-\$2499)

Questa Energy Corporation

John R. Backthal

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Contributors (up to \$500)

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Koger Remote Sensing • Gary Fields • James F. O'Connell

Interested in heightening your profile within the industry? Helping ensure the success of this inaugural event? Then join this list of growing sponsors!

Gold, Silver and Bronze sponsors will also be offered the opportunity to have materials on hand during Friday evening's Icebreaker and session at special tables set aside for display. For additional information please contact Bob Mitchell, Sponsorship Chairman, at prospecthill@sbcglobal.net.



Panhandle Geological Society

P.O. Box 2473

Amarillo, TX 79105

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