

Chisos Mountain Range, April 2021, taken by Hector Martinez

PBS-SEPM NEWSLETTER

August 2023

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KEY DATES For Fall 2023

AUGUST 2023

- **15: PBS-SEPM Luncheon, Bush Convention Center, 11:30am-1pm**
Helium exploration workflow in the Four Corners area, Navajo Nation - Mark Andreason

SEPTEMBER 2023

- **26: PBS-SEPM Luncheon, Bush Convention Center, 11:30am-1pm**
Old Rocks, New Ways: Outcrop Well Logs of the Fusselman Formation and Montoya Group, Far West Texas and Southeastern New Mexico - Andy Roark, Chevron

OCTOBER 2023

- **17: PBS-SEPM Luncheon, Bush Convention Center, 11:30am-1pm**
Josh O'Brien and Jarret Borell, Devon Energy Corporation

President's Column

As the summer draws to a close, I want to take a moment to welcome you all back and express my excitement for the upcoming year. PBS-SEPM is stronger than it has been in the past several years, and I am excited to lead us as President into a new era of growth and opportunities.

As we begin this new year, I would like to remind everyone that your membership is essential in continuing our mission and achieving our long term goals. I encourage all members to renew their membership promptly so that we can continue to provide the resources and support that are vital to the geological community.

PBS-SEPM is known for hosting engaging and informative luncheons that bring both students and professionals together to learn, network, and share ideas. I am thrilled to announce that we have an exciting lineup of speakers planned for this year. I invite you to attend our upcoming luncheons to connect with other members and stay informed about the latest developments in our industry. I am also pleased to announce members in good standing have access to our virtual luncheons at no cost! While the majority of our membership resides in the Permian Basin, we want our out-of-town members to feel they are receiving all of the member benefits that the locals receive.

In addition to our luncheons, we are planning several other exciting events and initiatives for the year ahead, including social events, field trips, volunteer opportunities, and professional development activities. We are committed to providing our members with the resources and support they need to succeed, and I look forward to working with all of you to achieve this.

Thank you for your continued support of the Permian Basin Section - SEPM. I am excited to lead us as President for 2023-2024 and can't wait to see all that we will accomplish together.

Sincerely,
Ashton Bruyere
PBS-SEPM President, 2023-2024

"The purpose of the section is to promote the science of geology in the Permian Basin and adjacent areas; to foster scientific research in paleontology, sedimentary petrology, and stratigraphy; to disseminate scientific information, especially as it relates to petroleum geology."

PBS-SEPM Executive Committee

2023-2024



Ashton Bruyere
President



Polly Fleischmann
President Elect



Miles Henderson
1st Vice President



Aarne Hamalainen
2nd Vice President



Bill Schellenbach
Secretary



JT Truong
Treasurer

2023 Young Professional, New Hire, and Intern Field Trip

This year PBS-SEPM ran another successful Young Professional, New Hire, and Intern Field Trip to the Guadalupe Mountains. On the trip, the 21 participants learned about the geology, engineering, and land opportunities for oil and gas production in the Permian Basin. The field trip provides participants with lectures, visits to geologic outcrops, local production facilities, and the local courthouse. The trip culminates with a hands-on experience in exploration geology, production engineering, and land deals in a simulated exercise guided by the trip instructors.

This year the trip was led by an incredible group of dedicated volunteers, including Robert Campbell, Robert Trentham, Cory Hoffman, John Hagar, and Chris Fling, that combined have over 100 years of Permian Basin Experience. PBS-SEPM is grateful to Beryl Oil and Gas for financial support, to Suttles Logging, Inc. for providing the water wagon, to the University of Texas Permian Basin and Liberty Lift for transportation support, and to Schlumberger for use of logging charts.

Be on the lookout for information about our next trip in 2024!! Please enjoy these photos from our trip!



Photo of the 2023 Young Professional, New Hire, and Intern Field trip participants and leaders in the Guadalupe Mountains along U.S. Highway 62/180 just north of Guadalupe Peak.

2023 Young Professional, New Hire, and Intern Field Trip



PBS-SEPM Luncheon Talk – August 15, 2023—11:30 AM



Bush Convention Center—105 N. Main St., Midland, TX 79701

\$25 Early Bird Rate - \$35 Walk In/Late RSVP - \$10 Student - \$5 Virtual

Register by 3PM on 8/11: www.pbs-sepm.org/events - info@pbs-sepm.org - (432) 279-1360



Helium exploration workflow in the Four Corners area, Navajo Nation

Mark Andreason

ABSTRACT

Very high concentrations of helium (5-9%) have been historically discovered and produced within the Four Corners region of the Navajo Nation generally as a byproduct of oil and gas exploration. The purposeful exploration for helium deposits requires an understanding of the helium system and what exploratory tools best take advantage of helium's unique system. From 2020-2021, NNOGC, funded by the US Dept. of Interior, conducted a detailed study over 1.7 million acres in the Four Corners area. The study's purpose was to better understand the mechanisms that result in the accumulation of high helium deposits and to identify new potential helium resources within the Navajo Lands. Two aspects of the study will be discussed in this presentation: 1) a high-resolution aeromagnetic data (0.25 x 1 mile grid) over an area that contains the highest concentration of known helium deposits to better understand the source, migration, and possibly trapping aspects and 2) a high-density soil gas sampling survey (2232 samples, 0.125 mile grid) over several known and prospective helium deposits to see if there is a relationship between subsurface helium deposits and helium soil gas concentrations. This presentation will show the results and benefits of high-resolution aeromagnetic and helium soil gas data in identifying potential helium prospects. These surveys also gave insights into the workings of the helium system.

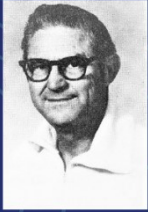


The radioactive decay of uranium and thorium within the crust serves as the source for helium. Radioactive decay is only a function of time, and thus very old and shallow (below the closure temperature) granitic rocks will have the highest concentrations of stored helium. Release of helium from the granitic source can occur because of orogenic and/or magmatic events. In the Four Corners study area, data suggests that magmatic events, particularly those related to the Oligocene (28-19 Ma) Navajo Volcanic field, were the primary release and concentration mechanism for helium from the crustal source rocks. Data also suggests that helium migration from rising intrusive bodies and basement lineaments is very short before encountering a trap. Data from this study also suggests that the helium fields surrounding the Defiance uplift would have begun charging due to the Navajo Volcanic field magmatic activity or later.

The most helium prospective areas, as determined by this study, are basement highs intersected by basement lineaments and intermediate-depth intrusive bodies. Over two hundred untested potential helium deposits were identified within the study area meeting these criteria. Thirty-five (35) of these basement intersection-intrusive overlap areas had been previously tested resulting in a 45% success rate for finding significant high helium-rich deposits. Helium soil gas sampling was also found to be indicative of identifying subsurface helium deposits and is a useful and cost-effective method to reduce the exploratory risks.

BIOGRAPHY:

Mark Andreason is currently the VP of Geosciences of Navajo Nation Oil and Gas Company. He has experience in the oil and gas industry for 38 years working exploration and development projects both internationally and domestically. Mark earned both his B.S. and M.S. degrees at the University of Texas at Austin in Geological Sciences. His international experience includes Southeast Asia, Brazil, China, and Russia. His North American experience is in East Texas, West Texas, South Texas, North Texas, Gulf Coast, GOM, Oklahoma basins, Michigan basin, Illinois basin, Appalachian basin, and the Four Corners area. Mark formed and managed a small domestic oil and gas E&P company, Northshore Petroleum LLC, in the Michigan basin. Previous companies that he has working experience with include: Unocal, SM Energy, Contango Oil & Gas, and Castleton Resources.



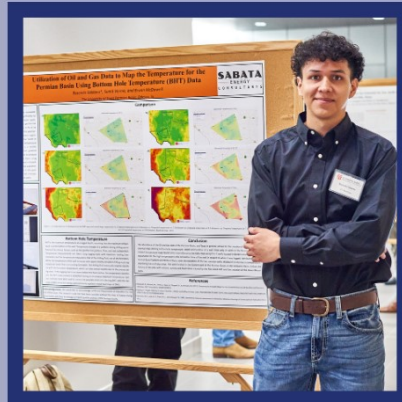
Wendell J. Stewart Scholarship Recipients

2022-2023



Emily Moore

- Kingwood High School, '23
- Plans to study Geology at UT Austin in the Fall



Rosendo Saldana

- Undergraduate Student
- Studying Geology at UT - Permian Basin



Madison Woelfel

- Graduate Student
- Studying Geological Sciences at UT - El Paso



Sue T. Reid Scholarship Recipient

2022-2023



Emily Moore

- Kingwood High School, Class of 2023
- Plans to study Geology at UT Austin in the Fall



PBS-SEPM Award Recipients

2022-2023



Robert Campbell
Honorary Life Member



Polly Fleischmann
Volunteer of the Year



Ashton Bruyere
Dedicated Service



J. Michael Party
Perryman Award



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IT'S TIME TO RENEW/JOIN



2023-2024

PBS-SEPM ANNUAL MEMBERSHIP

MEMBER BENEFITS

- ✔ Special Member Pricing on Publications, Events, and More
- ✔ Networking and Social Events
- ✔ Community Service Opportunities
- ✔ Professional Field Trips & Core Workshops
- ✔ Help provide Geoscience Scholarships
- ✔ Monthly Technical Luncheons
- ✔ Distinguished Lecture Series
- ✔ Young Professional Field Trip
- ✔ Free Virtual Luncheons

Annual Dues

Professional	\$25
Student	\$10

RENEW/JOIN ONLINE

THANK YOU FOR YOUR SUPPORT!



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If you are interested in volunteering with PBS-SEPM, below are the Board Positions and Committees

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President-Elect
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Nominating
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Publicity
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Lunch Arrangements
Luncheon Program
Speaker Award
Publications

Please email us at info@pbs-sepm.org to get more details about the position or committee.

PBS-SEPM Publications



PBS-SEPM PUBLICATION HIGHLIGHT

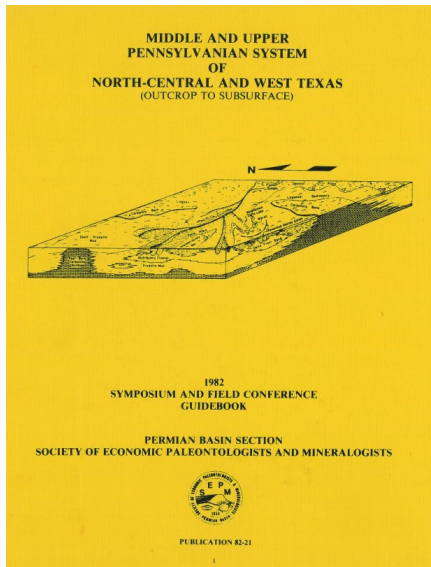


“Middle and Upper Pennsylvanian System of North-Central and West Texas”

82-21

Hard Copy: \$8.75 Members \$17.50 Non-Members

Digital Copy: \$25



Entire PBS-SEPM publication library (1955 – 2007)

There is a fully searchable Table of Contents—find a topic or author just by typing in the word(s). All publications are in Adobe PDF with all major articles being bookmarked, and all the figures are linked in the text for quick reference. Those areas that are off limits to geologists like the Glass Mountains or Sierra Diablos have been written up in these publications. Numerous out-of-print publications and figures and/or plates not published in the original guidebooks are now available in this library.

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To purchase online, click [HERE](#) and pay with credit card

For additional information contact: PBS-SEPM office (432) 279-1360 or info@pbs-sepm.org.



Carbonate Log & Core Analysis Spreadsheet v. 5.0

By Cory L. Hoffman, Ph.D.

Major Upgrade (January 2020)! [Designed for Microsoft Excel 2013]

Carbonate Log analysis draws heavily upon teachings of George Asquith
 Core Data analysis draws heavily upon teachings of Dan Hartmann



NEW AND IMPROVED!

Carbonate Log Analysis Tool

- Analyze up to 7500 data rows (3750' at 0.5' depth step)
- **Includes 'mini' version of spreadsheet for analyzing 2000 rows of data**
- Color-code up to 5 different series of data points on plots
- GR, Sw, and PHIt filters hide unwanted points on plots and analyses
- **Detailed workflows for log and core analysis with interpretation helps**
- **Added apparent Rw method for Rw determination**
- Determines Quick Rt, Quick Rxo, PHIsonic, PHIt from raw input data
- **Uses M-N and Neutron-Density plots for automated lithology selection**
- **Customizable inputs (lithology / travel time) for improved sonic porosity**
- **Added cell bar graphs to quickly visualize data trends within tables**
- Performs 12 carbonate log analysis techniques simultaneously:
 - Secondary porosity using sonic or resistivity data
 - Archie Sw, PRI, Ratio Water Saturation, MHI, BVW
 - Variable 'm' Sw (Nugent, Borai, Focke & Munn, Shell, user-defined)
 - Uses Rz technique if no Rxo device present
- Interprets results & highlights potential pay zones meeting user cutoffs
- **Improved interpretive crossplots: Dew, Buckles (BVW), Pickett**



Core Data Analysis Tool

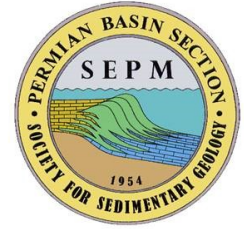
- Interpret capillary pressure (Pc) and core perm, porosity, So, Sw data
- **Winland R35, RQI, Lucia ARFN, K/Φ methods for reservoir quality**
- **Shift core to logs using GR and/or PHIt to integrate log and core results**
- **Integrated Plots: Log / core analyses on interpretive well log plots**
- **Convert Pc from Lab fluids / conditions to Reservoir fluids / conditions**
- **Determines Height above FWL from each Pc curve; creates HAFWL plots**
- Plots up to 20 capillary pressure curves
- Plot multiwell Sw vs subsea to further evaluate FWL

Thank you to Sabata for sponsoring our August Luncheon on August 15th!

Thank you so much for your support!!!

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PBS-SEPM Sponsorships Cont. (2023-2024) - PBS-SEPM is grateful for the generosity of these fine sponsors!



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Individual sponsors are advertised on the PBS-SEPM website and each newsletter. Cost is \$100/year. Please call PBS-SEPM for more details at (432) 279-1360 or email info@pbs-sepm.org.



Sponsorship Information (2022-2023)

Our non-profit society relies entirely upon the efforts of dedicated volunteers to serve the geological community—primarily through educational events. The PBS-SEPM hosts luncheon lectures, core workshops and field trips that are led by experts in their chosen areas of the geosciences. If you would like to sponsor the PBS-SEPM in anyway, we have various levels of commitment you can choose from.

PLATINUM

\$1,500 +

Your Company Logo included on:

- Young Professional Field Trip (YPFT) guidebooks and paraphernalia
- Core Workshop/Field Trip Guidebooks
- Full Page Advertisement on Monthly Luncheon Slides and Newsletter
- Website Homepage
- New Publications

GOLD

\$1,000

Your Company Logo included on:

- Core Workshop/Field Trip Guidebooks
- Half Page Advertisement on Monthly Luncheon Slides and Newsletter
- Website

SILVER

\$750

Your Company Logo included on:

- Core Workshop/Field Trip Guidebooks
- Quarter Page Advertisement on Monthly Luncheon Slides and Newsletter
- Website

LUNCHEON

\$400

Your Logo included for one luncheon date on:

- Luncheon Advertisements (LinkedIn, Emails, Newsletter)
- Full Page Advertisement on Luncheon Slides for that month
- Website
- Table tents

INDIVIDUAL

\$100 - One Year

\$50 - Six Months

Your Business Card included in:

- Newsletter
- Monthly Luncheon Slides
- Website

If you are interested in a sponsorship opportunity, please call PBS-SEPM for more details at (432) 279-1360 or e-mail info@pbs-sepm.org.



PBS-SEPM
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Midland, TX, 79701

Web: www.pbs-sepm.org
Phone: 432-279-1360
Fax: 432-683-8739
Email: info@pbs-sepm.org

If you are interested in a sponsorship opportunity, please call PBS-SEPM for more details at (432) 279-1360 or e-mail info@pbs-sepm.org.

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? Send us an e-mail to share your idea, your PBS-SEPM Executive Board wants to hear from you!

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.

PBS-SEPM prides itself on its success in providing high caliber speakers as well as exceptional core workshops and field trips. PBS-SEPM also provides scholarships to graduating high school students in western Texas and New Mexico. These scholarships are on occasion, offered to college students that have declared their desire to pursue a degree in the geosciences. Through continued support from the industry, PBS-SEPM can continue to provide excellent educational opportunities for the oil and gas industry.

If you would like to join PBS-SEPM, you may visit our website to learn more about us, download a membership form, and learn how to get involved.

Scholarship and Distinguished Speaker Events (2022-2023)

Wendell J. Stewart Fund: so named for the famous sequence stratigrapher, was initially funded by the family, and then later through PBS-SEPM members who have contributed over the years. In the past, the scholarship was established to award high school students intending to pursue a college education in the geoscience field (declared major), and had evolved to include college students actively pursuing a geology degree when there were no other qualified candidates. Funding for this scholarship has waxed and waned over the years with the changes of the petroleum industry and because this scholarship is set up in such a manner that only the interest can be used to distribute funds, most scholarships in the last 30 years have been awarded through the PBS-SEPM main budget and not the scholarship fund.

Robert Read Distinguished Lecturer Fund: was founded to honor a bright, young geologist who had been an active member of both PBS-SEPM and WTGS and was tragically killed by a drunk driver. Donations from various members of both societies contributed to a membership donation fund that both encourages our continuing education efforts by helping offset the cost of bringing in a distinguished lecturer, usually in geosciences, but not required.