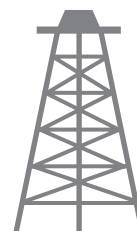




# Pacific Petroleum Geology



NEWSLETTER

Pacific Section • American Association of Petroleum Geologists

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## PSAAPG PLAYMAKER FORUM

### FINDING VALUE IN MATURE BASINS

Heritage of Discovery by Charles Sternbach

Adding value in mature provinces

The Monterey Formation

Monument Junction & Elk Hills Fields

Signal Hill Airport Field

Recent Discoveries in mature fields

.....and much more

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Conference Room CC50.  
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#### REGISTRATION

[www.psaapg.org/playmaker](http://www.psaapg.org/playmaker)

*please check back regularly for updates*

For more Information or to sponsor this event,  
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Friday  
May 13th,  
2016.  
Bakersfield,  
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## Exciting events Planned for 2016

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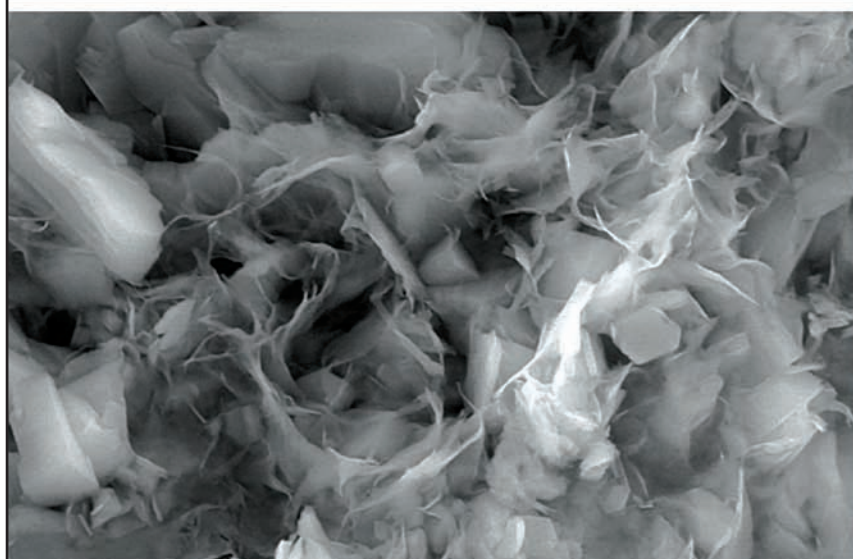
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# PSAAPG PLAYMAKER FORUM



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May 13th, 2016.  
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*Vaughn G. Thompson:*

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- CONTACT THE EDITOR at editor@PSAAPG.org
- Images (graphics, photos, and scans) must be at least 300 dpi resolution. Text should be at least 600 dpi.
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## Dear Pacific Section AAPG Members,

This is the time of year we prepare for and eagerly await our annual PSAAPG conference. Our conferences the last several years have been outstanding events, and the upcoming conference will no doubt continue this trend. We will, however, have to wait just a bit longer. Pacific and Rocky Mountain Sections will co-host the conference, *New Rocks, New Plays, New Days*, in Las Vegas from October 2nd through the 5th. This will be the first time our Sections are collaborating on a joint meeting. The program will be exciting. I encourage everyone to attend, as it will be great time to learn, catch up on new ideas and technologies, meet friends and colleagues, and network.



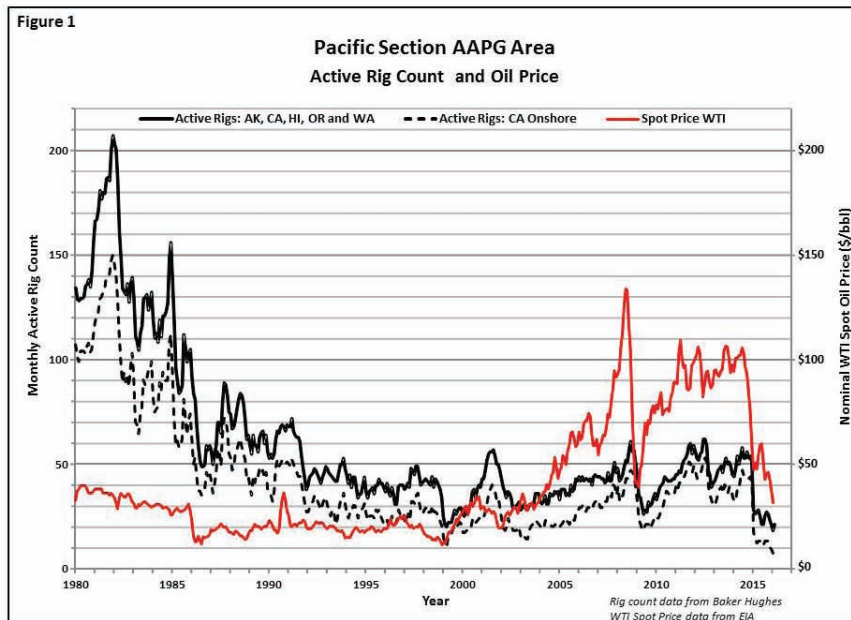
In addition to the joint meeting with Rocky Mountain Section, PSAAPG is planning to hold a Playmaker Forum in conjunction with AAPG and DPA. The Playmaker format has proven to be a very successful and exciting venue for sharing current and leading edge exploration ideas and concepts. Our Playmaker Forum, *Finding Value in Mature Basins*, will not only focus on exploration, but will also highlight the production geoscience efforts that add value to existing oil and gas fields by growing production and reserves. The one-day conference is scheduled for May 13th, and will be held at the Aera Energy office in Bakersfield. Save the date, and stay tuned for more information in the coming weeks.

Planning and hosting the annual conference and special meetings like the upcoming Playmaker Forum are just some of the benefits PSAAPG provides its membership, affiliated societies and their members. The programs offered and supported by PSAAPG are focused on advancing the petroleum geosciences through a broad range of learning and research opportunities, communicating and disseminating information relating to the geosciences and technology associated with the petroleum industry to a wide range of stakeholders, and most importantly, supporting the education and development of geoscientists across the five states that comprise PSAAPG. I point everyone to our website, [www.psaapg.org](http://www.psaapg.org), to obtain more information on these programs. Feel free to contact me or any member of the PSAAG leadership team if you have any questions.

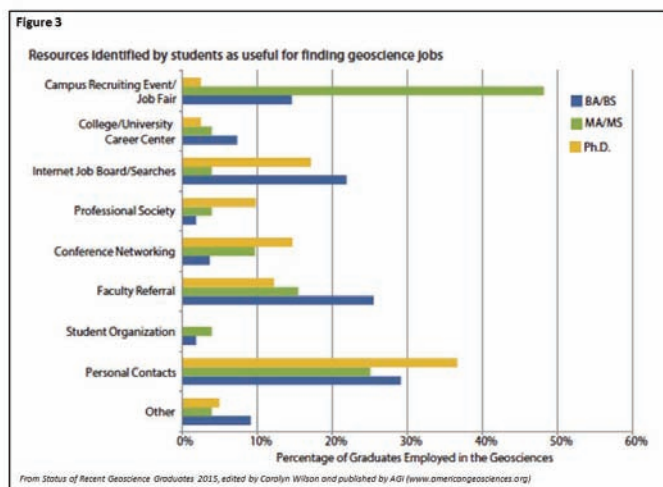
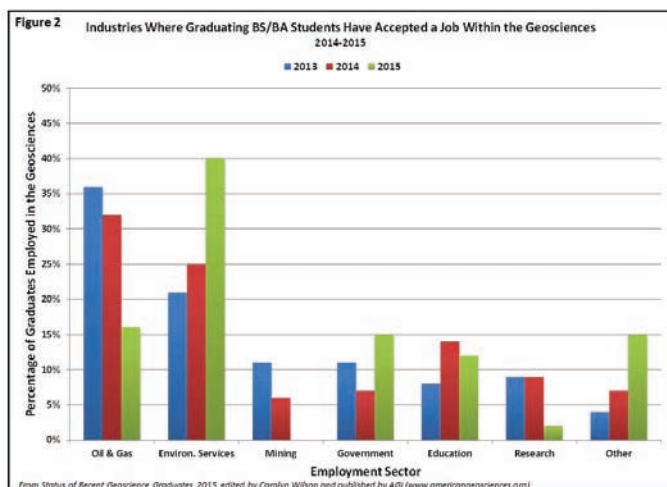
If someone told me 3 or 4 years ago I would be hoping and praying for the price of oil to be somewhere north of \$45 or \$50 dollars per barrel in 2016, I would have brushed them aside. I would not have completely dismissed them, because I know our industry is prone to such price cycles. I simply would not have been able to envision how we would have arrived there. Well here we are, and now it is difficult to imagine when and how we will get back to an oil price that will sustain our industry. But we know we will. The cost-cutting efforts underway at all companies and organizations across our industry are entirely understandable in this environment. According to the US Bureau of Labor Statistics, the US oil and gas industry has lost around 100,000 jobs over the last 16 months. Keep in mind that this statistic applies only to the US industry, and only includes direct employment. No doubt many in the supply and value chain of the US petroleum industry have also been severely impacted by the low oil prices, not to mention all those outside the US. The rig count in the states that comprise PSAAPG, a key barometer of activity, is at a historic low (figure 1), and many in our Section have been impacted through staff reductions. If it showed us anything, the oil price bust in the 1980's followed by the depressed prices in the 1990's had a profound impact on employment in the petroleum industry. This is evident in the broad gap in demographics, those with 10-20 years experience. Many highly skilled individuals left the industry during this period, never to return. This led subsequently to the staffing issues of the 2000's. Remember all the discussion around "the great crew change"? The industry put many programs in place to address this issue and attract talent. We did a good job identifying and encouraging young people to enter the industry, but now it is imperative that we figure out ways to retain them. Every day this low price environment continues, we lose not only potential new entrants in the field, but we lose those who we have worked so hard to train and mentor.

Given the current demographics of our industry, those impacted most during this time will fall into two groups, highly experienced geoscientists and early career individuals. It is the potential loss of the early career geoscientists that will impact our industry most in the years to come. In addition, the perceived lack of opportunity for geoscientists in the educational institutions will reduce the pipeline of new talent, further exacerbating future staffing issues. This is a major discussion topic in AAPG and other professional organizations, but there is no clear path forward.

(Continued on next page)



The American Geological Institute (AGI), publishes annually a document entitled *Status of Recent Geoscience Graduates*, authored by Carolyn Wilson that is based on a survey of geoscience students and educational institutions. The most recent installment, published in 2015, can be viewed at <http://www.americangeosciences.org>. Even though this publication focuses on geoscience students, there are many issues that are directly applicable to our current situation. First, I would like to draw attention to the employment statistics. There is a significant shift in employment over the last three years for geoscientists exiting schools with bachelor's degrees. 2015 is the first year that the oil and gas industry has not been the principle employer of geoscience graduates (figure 2). I draw attention to this because as industry insiders, we often fail to recognize how many different career opportunities are available to intelligent, creative and energetic geoscientists. We need to be aware of the wide variety of jobs potentially open to both students and early career geoscientists. Remain open-minded and creative in the search for employment, and strive to retain the geoscience talent we all worked so hard to nurture and develop. During the post-2000 growth years, we recognized geoscience talent in areas outside our traditional recruiting space, and the industry will certainly do this again in the future when prices rebound.



AGI provides another interesting statistic in the *Status of Recent Geoscience Graduates*. Students were asked which resources were most useful to them in finding employment. The results are summarized in Figure 3. If one discounts campus recruiting events and job fairs, the most important resource is personal contacts. This should not be a surprise to anyone who has struggled to find a job. Personal contacts are characterized by a relationship based on friendship, trust, and a knowledge and understanding of each other's capabilities.

(Continued on next page)

These relationships do not appear overnight, but develop over years of interaction and collaborating at universities, in companies, on joint projects, and in social organizations and professional societies. When times are good, we do not generally draw on these resources, but they become very important in situations like the one we are now facing. It is not a surprise that professional societies and conference networking rank low in importance in this survey. It is not the societies or conferences, per se, that are the opportunity, but the relationships with those individuals we work and interact with at these venues. Membership in PSAAPG, the Affiliated Societies and AAPG brings many benefits, but it can also provide a vital lifeline to its members. To get the full benefit, one needs to be an active rather than passive member of the society. Active participation in dinner/lunch meetings, conferences, and volunteering across the broad range of activities will open the door to developing relationships with a diverse group of people outside your immediate company and social circles that will provide the “contacts” and “networking” opportunities that can help support your career from start to finish.

I hope to see you at one of the upcoming conferences or other PSAAPG, Affiliated Society or AAPG venues.

Thank you.

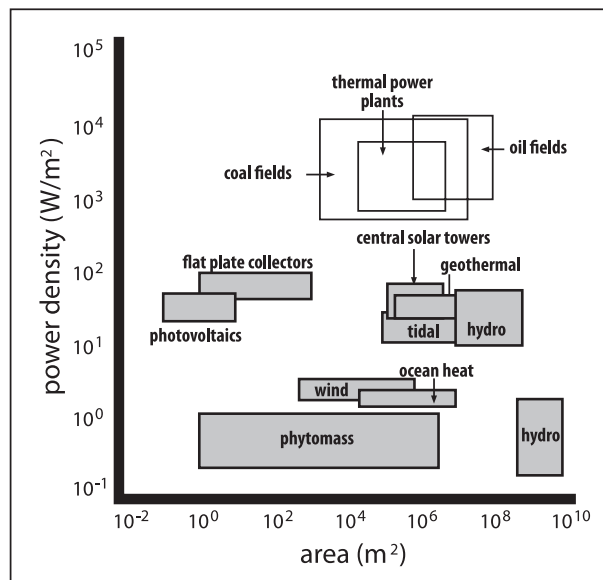
**Kurt Neher**

PSAAPG President, 2015-2016

### Did you know...

When comparing sources of energy, it is instructive to consider power density. Smil (2010) and Bryce (2010) define power density as the rate of energy flow per unit horizontal area of land or water surface, watts/meter<sup>2</sup>. Power density relates the efficiency of the energy source relative to the surface area required to produce that energy.

The chart below is reproduced from Smil (2010), and shows the relative power densities of various methods for generating electricity. The low power densities of renewables including solar, radiation, wind and biomass are in stark contrast to fossil fuels. Diffuse energy flows and large surface footprints (up to 1000 times greater than for fossil fuels not including extensive transmission rights-of-way) characterize the renewable technologies. To become competitive with fossil fuels, significant advances will be required to concentrate energy flow and reduce surface land requirements. The oil price collapse has made it nearly impossible for renewables to compete directly with fossil fuels, but the ground could be leveled with a carbon tax or fossil fuel tax as recently contemplated by the current federal administration. Until renewable technologies advance, however, the large surface area required by renewable energy sources will remain a major issue for permitting agencies and environment groups, regardless of the economic or climate imperative.





## King Vaughn

The “oil patch” lost a well-known and respected pitch man. King Vaughn passed away surrounded by his loving family on January 18, 2016. His great source of information and friendly demeanor will be missed by all of us. King is a core analysis ICON and was the one go-to guy that everyone knew you could get the right answer from. When anybody thought about Core, King always came to mind.

King’s career in Core analysis spanned 7 decades. He moved to the big city of Wichita Falls, Texas to earn his mathematics degree at Midwestern State University (a first for the Vaughn clan). In 1954, King began his core analysis career working for Ryder Scott. He concurrently worked as a mathematics instructor at Shepard Air Force Base. In 1956, he began working for Core Laboratories, Inc. in Wichita Falls. He was transferred to the new oil frontier (Long Beach, CA) in 1965 to supervise operations in the Los Angeles basin. He almost single-handedly got the THUMS Long Beach project off the ground with innovative techniques for analyzing unconsolidated core. In 1977, when Core Laboratories got some competition (Goode) in the San Joaquin Valley, King was transferred to Bakersfield as a district sales engineer. It was in this role that his knowledge of the rocks and the lab procedures, along with his lovable personality and gift for gab, came together in a perfect job. He had a talent for remembering everyone he ever met along with the details of those met. He could also remember every core job he was involved in.

King and Bryan Bell purchased Goode Core Analysis Service in 1988, providing King with an ability to do things his way. It was a dream opportunity to reap the benefits of their own hard work and nobody worked harder than King. Goode went from basically having one customer to having 85% of the local market. He felt that marketing the business wasn’t the same kind of work as lab work. He would spend a full day getting work in and then wanted to work in the lab getting the work out. King was known to move a gamma shield weighing over 200 lbs with one arm that the young staff required a forklift to move. Convincing him that he did not need to be tossing core around was a job in itself.



*Jan, King, and great-grandson Vaughn.*

King’s first attempt at retiring was only because of a ridiculous feeling that he was not doing his fair share of work. There was a full house at his official retirement party in 1995, which showed the respect the industry had for him. Although there was ample opportunity to roast King, no one could seem to muster a negative word or feeling - nothing but endearing accolades. Fortunately, retirement did not last; when honey do’s and travel ran its course, he eventually looked for additional entertainment. Goode was sold to Core lab. It was not hard to eventually convince King that they should team up again. His return in 2005 allowed a new generation of the industry to experience the charm of an icon in the business.

He will forever be remembered for his ethics, kindness, and generosity. I think most who have met him, would say—“what a nice guy.” He will be missed.

**Bryan Bell**



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## Harold Sugden

Harold Edward Sugden Sr., 86, passed away on January 11, 2016, at his home in Bakersfield, CA. He was born on April 26th, 1929 in Detroit, Michigan to Harold Edward Sugden and Gladys Fern Huntsman.

Harold grew up in Chicago, Illinois where his parents worked for the American Can Company. He graduated from Northwestern University with a Bachelor of Science degree in 1951. That same year, Harold joined the Army Corps of Engineers, serving his country during the Korean War. His service led him to Panama, where he contributed as a cartographer and photographer. Following his honorable release from active service in 1953, he attended graduate school at Washington State University in Pullman, WA. Harold began his lifelong career as a Geologist in 1957 when he was hired by the Tidewater Associated Oil Company, which later became the Getty Oil Company. In 1968, Harold moved to Bakersfield with Getty Oil Company and later worked for Belridge Oil Co., Shell Oil Co., Santa Fe Oil Co., Butte Resources, Bravo Oil Co., and eventually AJ Environmental. Harold never truly retired from his unbound interest in Geology. During the latter part of his life, Harold was in the midst of proving a theory that part of the Kern River had at one time flowed in the opposite direction. He also loved to photograph nature, such as the Grapevine poppy reserves, and visit Kern Canyon with his family to point out its many geological anomalies.



Harold married the love of his life Carol Elizabeth Jones in 1967 in Ventura, CA. They were happily married for 49 years. Harold was a member of the American Association of Petroleum Geologists, the San Joaquin Geology Society, the Bakersfield British Car Club, and was passionate about geological field work, hiking, and photography. Recently, he and his Bakersfield ophthalmologist Dr. Kai Wong, developed the Sugden-Wong Flashlight Method of detecting cataracts which is now being used in many parts of the world by health workers in screening for cataracts and other diseases of the eyes.

Harold is survived by his wife Carol Sugden (nee Jones), his two children Harold Edward Sugden Jr. and Laura Sugden, son-in-law Lieutenant David Ingel, daughter-in-law Lori Sugden and his grandchildren Brantley, Jason, Eliana, Jaiden, Ashton, and Theron.

Harold had a brilliant mind and probably forgot more than any of us will ever know. As a loving and devoted father, he taught his children the importance of integrity, honor, servitude, and love. He loved to regale his friends and family with stories of his early life. While on various trips with the British Car Club he sometimes served as tour guide pointing out various areas of geological interest. His grandchildren most remember his endless stories, trips to Rosemary's and apple pie at Cheryl's. Though we had 86 wonderful years with him, we will always miss his stories, his endless love, and his abundant knowledge. It will never be enough.

Published in Bakersfield Californian on Jan. 14, 2016.

All of your friends at PSAAPG and SJGS will miss you! A true geology hero.

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**Dear friends and colleagues,**

PSAAPG is as active as ever and we are excited to bring you something new:

The PSAAPG Playmaker Forum on Friday May 13th, 2016.

This event will be held in conjunction with the AAPG and DPA, and because "we're California", we decided to go with the theme of Finding Value in Mature Basins. Please keep a look out for further information, and please keep in mind that numbers will be limited, so you will want to register early to secure your spot. More information can be found at [www.psaapg.org/playmaker](http://www.psaapg.org/playmaker) (as of publication of this newsletter, the website is still being built, so please check back regularly).



And, to keep bringing good news, the joint PSAAPG and Rocky Mountain Section Meeting (2nd October, 2016 in Las Vegas) is in the full swing of planning and organizing. Our annual meetings always deliver technical excellence and a great opportunity to network. Given that many of our organizations are unable to provide travel budgets due to commodity price, please consider budgeting ahead of time and invest in yourselves by registering early and supporting this great event.

I look forward to seeing many of you at these events. Come network with colleagues, make new friends and learn some fresh new ideas to approach the age old problems of finding value in mature basins.

Sincerely,

**Vaughn**

### NOTE: PSAAPG ELECTIONS.

It's that exciting time of year again: the PSAAPG Officer Elections. If you would like to run for office or nominate your office buddy, please contact Larry Knauer or John Williams with your nominations ([LarryKnauer@chevron.com](mailto:LarryKnauer@chevron.com), [jtw@petrolog-geological.com](mailto:jtw@petrolog-geological.com)).

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## WE'RE NOT ECCENTRIC, WE'RE AHEAD OF THE PACK!

**Richard Behl**

Do you ever think that somehow you just don't quite fit in? That you are the one playing cricket while everyone else plays baseball? That you order wine while everyone else is drinking beer? That you listen to Tibetan throat singers when everyone else is listening to country western music?

Now, really... as a geologist, have you ever mentioned opal-CT to a colleague from outside of California, and they asked to see your new ring or earrings? You off-handedly comment that your reservoir has 60% porosity, and they start backing slowly, ever so slowly, out of the room? Diatomite?... "is that an intrusive igneous rock?" Porcelanite?...

"I know that one – it's one of those new synthetic quartz countertops, right?"

You've probably had some version of these kinds of experiences if you've worked in the Monterey, Antelope, Sisquoc, Reef Ridge, etc. and ever attended a conference in Houston or elsewhere outside of the California universe. But, we are really not that strange here in California – we are just way ahead of the pack. Our kinds of rocks are not all that unusual in the world...they are simply unnoticed, unappreciated and under-exploited elsewhere (Figure 1).

You know the basics. The Monterey Formation and its equivalents are the principal source of petroleum in California, and important reservoirs, as well. The Monterey is a remarkably organic-rich and siliceous, fine-grained unit. Most of it was originally deposited as diatom ooze or mud, with some intervals containing abundant calcareous microfossils – coccoliths and foraminifera, with other intervals more dominated by detrital clay, silt and sand. But overall, the Monterey has its unique biogenic-rich character due to a combination of being deposited at the right time and right place – along a relatively arid, subsiding continental margin beneath a strong upwelling zone that was starved of siliciclastic sediment. Where these conditions were not met (such as near coastal deltas), highly siliceous Monterey-type facies did not accumulate and more "ordinary" siliciclastic units were deposited.

Diatoms first evolved about 200 million years ago, but they didn't become the most important organic-carbon-producing plankton in the ocean until the Cenozoic. But Monterey-like diatomites don't only accumulate in marine settings; planktonic diatoms appeared in fresh-water lakes in the late Paleocene/early Eocene and they are now the dominant plankton in many lakes, large and small, including the rift-valley lakes of East Africa.

To many geologists' surprise, Neogene Monterey-type diatomaceous/siliceous deposits are not unique to California. OK, you probably know that there are Miocene Monterey-equivalents on the opposite Pacific Margin, but did you know that they occur in Indonesia, Philippines, Taiwan, South Korea, Japan, and Russia (Sakhalin Island and Kamchatka)? Some of these deposits (Japan and Russia) are even known to be associated with active petroleum systems and producing fields. But, did you know that there are Monterey-age diatomites in Baja California, Ecuador, Peru and Chile?

But wait...there's more! There are Neogene diatomites associated with deposition along the Atlantic, Mediterranean, and Antarctic margins. Along the Mediterranean, there are widespread and spectacular upper Miocene diatomites in Spain, Morocco, Libya, Italy, Sicily Greece, Moravia and Turkey. Did you know that the vast dome of the beautiful Hagia Sofia mosque/cathedral in Istanbul/Constantinople is made of blocks of strong, light, insulating diatomite (Figure 2)?



*Fig. 1. Paleogeographic map of known distribution of Neogene siliceous sediments, after Hein & Parrish, 1987.*

*(Continued on next page)*



The Neogene (Miocene-Pliocene) is certainly not the entire story for siliceous sediments. Siliceous sedimentary rocks that derived from first radiolarian then diatomaceous deposits span the Phanerozoic. Because of their greater age and locally greater maximum burial depth, these deposits no longer consist of biogenic opal-A, and their silica has all converted to opal-CT or quartz to form chert, porcelanite, or siliceous mudrocks. These deposits were especially prevalent along the Cretaceous Tethyan margin and are related to the prolific petroleum-producing provinces across the Middle East, northern Africa and northern South America although they have not yet been widely exploited as reservoirs. You would be amazed at how similar some of these rocks look to the Monterey.

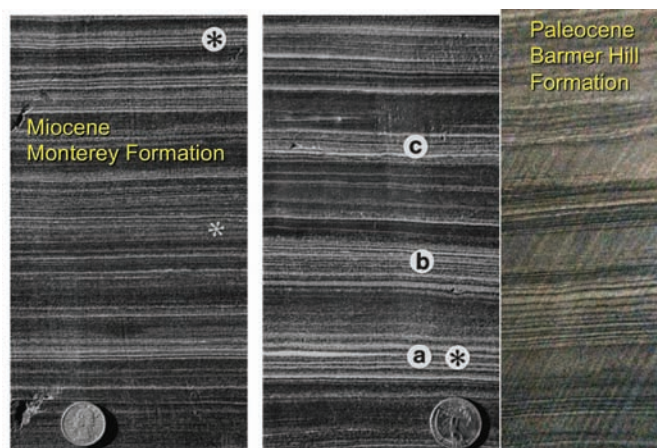
Last year, I had the wonderful opportunity to examine porcelanite cores from some of the earliest lacustrine, fresh-water diatomaceous deposits in the world from Rajasthan, India. The Barmer Basin is a failed intercontinental rift basin that formed as India passed over the Reunion hotspot in the Indian Ocean (Dolson et al., 2015, AAPG Bulletin). The basin subsided rapidly, filling with a succession of fluvial, then lacustrine, then fluvial/alluvial sediments with only minor and short-lived marine incursions from the south. The first and major reservoir in the basin is the fluvial sandstone of the Middle Paleocene Fatehgarh Formation. It is overlain by the fine-grained, organic-rich and siliceous lacustrine sediments of the Upper Paleocene Barmer Hill Formation. These rocks include thick, cyclic alternations of more- and less-siliceous mudrocks. The clean part of the cycle consists of mostly quartz-phase porcelanites in the subsurface and these have become a significant petroleum play with demonstrated reserves and production.

It was really remarkable to see the similarities and difference (Figure 3), between these porcelanites (Paleocene, lacustrine, intracontinental rift valley) to our Monterey porcelanites (Miocene, marine, continental margin). I recognized (as would you) many familiar characteristics in the lithologies, rock properties and sedimentary structures, but also distinct differences in the stratal stacking patterns, lamination styles, and fracture networks. Porosity and permeability are much like what we know from California. So, with similar rocks, but a different depositional and tectonic setting, what can be predicted about potential traps and reservoir behaviors??

My point in this essay, is to point out two advantages that you have by working in the weird and wonderful diatomaceous/siliceous rocks of California: 1. You have exercised and stretched your brain into fabulous condition to take on any challenges that normal rocks and geology may throw you in the “regular” world, and 2. There are a lot of potential Monterey-type plays out there in the world that have not yet been explored and exploited. After all, they say that the best geologist is the one who has seen the most geology...so then, who outside of this select group in the Pacific Section AAPG has the eyes and experience to find the next Monterey somewhere else in the world?



*Fig. 2. The dome of the Hagia Sophia in Istanbul, Turkey is constructed of diatomite blocks. Photo by Arild Vagen, shared by Wikimedia Creative Commons.*



*Fig. 3. Monterey diatomite and Barmer Hill porcelanite show similar lamination patterns. Diatomite photos from Chang & Grimm (1989).*

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## Alaska Geological Society

Alaska Geological Society luncheon meetings are held at the BP Energy Center in Anchorage, Alaska. The meetings are typically scheduled on the 3rd Thursday of each month 11:30 AM – 1:00 PM.

March 15th, 2016. 11:30 am

Speaker: Scott Digert, BP

“Drilling Program Outlook in Aging Prudhoe Bay”

May 17th, 2016. 11:30 am

Speaker: Rob Witter – USGS

“Ancient Tsunami Deposits and Modern Seismic Hazards, Southern Alaska Margin”

## Coast Geological Society

March 15th, 2016

Speaker: Tony Morgan, United Water Conservation District

“A Historic Drought and Groundwater Management Legislation: Can we Regulate Our Way to Sustainability?”

April 19th, 2016

Speaker: James Kennett, Professor Emeritus, UCSB

“The Younger Dryas Cosmic Impact Cataclysm 12,800 years ago: Extinction of Ice Age Giants, Human Culture Disruption & Abrupt Climate Change”

## L.A. Basin Geological Society

March 24th, 2016. 11:30 am

Speaker: Jim Boles, UCSB

“Mantle helium along the Newport Inglewood fault”

April 28th, 2016. 11:30 am

Speaker: Robert Clayton, Cal Tech

“New seismic detection project in LA”

## Northern California Geological Society

March 30th, 2016. 7:00 pm

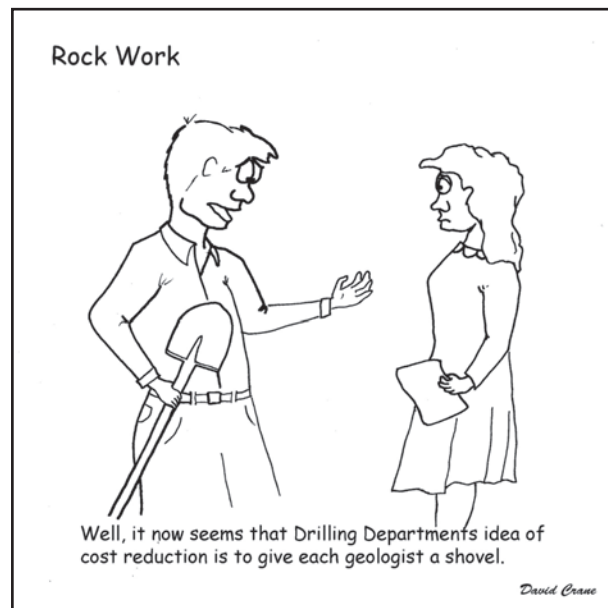
Speaker: Dr Jeff Unruh, Lettis Consultants International Inc.

“Tectonics of Mount Diablo and Vicinity”

April 27th, 2016. 7:00 pm

Speaker: Dr. Ronald Olowin, Saint Mary's College

“Topic to be decided”



## Northwest Energy Association

March 17th, 2016

Speaker: John Peiserich, Vice-President and General Counsel of Alta Mesa

“So You Want to be a Producing State: Challenges of Establishing First Production”

(Continued on next page)



## Sacramento Petroleum Association

March, 16th, 2016

Speaker: Owen Kittridge

"How not to become low hanging fruit for hackers"

April 20th, 2016

Speaker: Greg Croft

"Coal production peaking"


## San Joaquin Geological Society

March 8th, 2016

Speaker: Tom Howard, PayZone Inc.

"Some Perspectives on Electrical Borehole Image Logs for the End User"

**LOCATION CHANGE:** The new dinner meeting location is the Eagle's Lodge at 1718 17th Street, Bakersfield, CA 93302. Talk announcements to follow soon.



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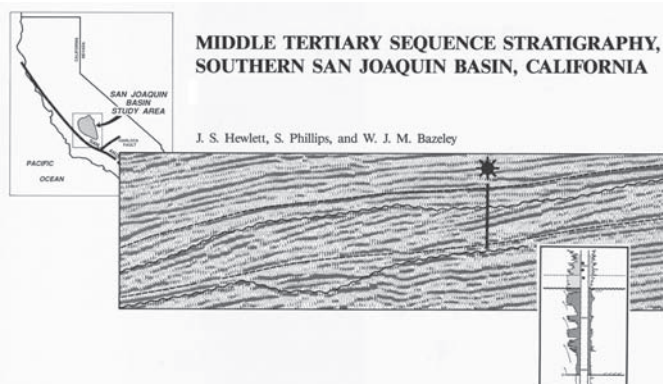
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## PSAAPG Has A New Publication – MP 51



"This publication follows from a technical project in the ARCO sequence stratigraphy group in Plano, Texas. This study was published as an internal company research report in 1989 in the early days of sequence stratigraphy. Twenty-five years later, the authors chose to not alter the original text and figures except to satisfy a few publication requirements – we hope the studies contribute to understanding the future exploration potential of the southern San Joaquin basin."

Originally published in-house in 1989 by ARCO: Hewlett, J. S., Phillips, S., & Bazeley, W. J. M.

This is an 11" X 24" spiral-bound book with B/W and color figures, 73 p. (1st edited version)

To purchase this publication you may go to the PSAAPG webpage ([www.psaapg.org](http://www.psaapg.org)) and download the publication ordering form or you may contact Larry Knauer (PS-AAPG Publications Chair) at [larryknauer@chevron.com](mailto:larryknauer@chevron.com). Cost is \$85 + S&H.

### Alaska Geological Society

www.alaskageology.org

P. O. Box 101288  
Anchorage, AK 99510

Contact: Eric Cannon  
eccannon@gmail.com



Luncheon meetings are held monthly September through May, usually on the third Thursday of the month, at the BP Energy Center (1014 Energy Court) from 11:30 a.m. to 1:00 p.m. The hot lunch cost is \$20 for members with reservations; \$22 for non-members with reservations; and \$25 without reservations. The box lunch cost is \$13 for members with reservations, \$15 for non-members with reservations, and \$18 without reservations. For reservations, call the AGS reservation voice mail at 907-258-9059 or contact David Hite at hiteconsult@acsalaska.net by noon on Monday before the meeting.

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### Coast Geological Society

www.coastgeologicalsociety.org

P. O. Box 3055  
Ventura, CA 93006

Contact: Bonnie Walters  
805-795-9898



Dinner meetings are held monthly September through May, on the third Tuesday of the month, at Poinsettia Pavilion, 3451 Foothill Road in Ventura. Social hour starts at 6:00 p.m., dinner is served at 7:00 p.m., and the talk starts at 8:00 p.m. The cost of dinner with reservations is \$20 (members), \$25 (non-members), or \$10 (students and K-12 teachers). For reservations, please email Eric White (secretary@coastgeologicalsociety.org), and should be made by 4:00 p.m. on the Friday before the meeting.

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Membership chair:	Nick Kunstek	membership@coastgeologicalsociety.org
Webmaster/Tech Support:	Whit Skaling	webmaster@coastgeologicalsociety.org

### Los Angeles Basin Geological Society

www.labgs.org

Contact: Jean Kulla  
949-500-3095



Luncheon meetings are held monthly September and October; and January through June, usually on the fourth Thursday of the month, at The Grand at Willow Street Conference Centre (4101 E. Willow Street) in Long Beach. Lunch is served at 11:30 a.m., and the talk starts at 12:15 p.m. The cost is \$25 (with reservations), \$30 (without reservations), \$20 for retired members, and \$5 for students. Reservations can be made online at www.labgs.org or by contacting Graham Wilson at 562-326-5278 or GWilson@SHPI.net. Reservations must be made prior to Tuesday before the meeting.

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Scholarships:	Karla Tucker	ktr2@aol.com
Webmaster:	Ivan Aburto	iaburto@breitburn.com

### Northern California Geological Society

www.ncgeolsoc.org

9 Bramblewood Court  
Danville, CA 94506-1130

Contact: Mark Sorensen  
msorensen64@earthlink.net



Evening meetings are held monthly September through May, usually on the last Wednesday of the month, at the Masonic Center (9 Altarinda Road) in Orinda. Social hour starts at 6:30 p.m., and the talk starts at 7:00 p.m. (no dinner). For reservations, contact Dan Day at danday94@pacbell.net before the meeting. Cost is \$5 per regular member; \$1 per student member; and \$1 per K-12 teachers.

(Continued on next page)

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### Northwest Energy Association

www.nwenergy.us

P. O. Box 6679

Portland, OR 97228-6679

Contact:

Jim Jackson or John Armentrout



Luncheon meetings are held monthly September through May, on the third Thursday of the month, at the Multnomah Athletic Club (1849 SW. Salmon Street) in Portland, Oregon. Meeting time is at 11:45 AM to 1:00 PM (speaker about 12:15 PM). The cost is \$25 for members and \$30 for non-members. For information or reservations email NWEnergyAssociation@gmail.com, or our Postal Box: Northwest Energy Association, P.O. Box 6679, Portland, Oregon 97228-6679.

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### Sacramento Petroleum Association

P. O. Box 1844

Folsom, CA 95630

Contact: Jerry Reedy or Pam Ceccarelli

916-486-2643

916-439-0400



Luncheon meetings held monthly January through November, on the third Wednesday of the month. Location: Club Pheasant Restaurant in West Sacramento. The meetings starts at noon. The cost is \$16 - \$20. For information or reservations, contact Pam Ceccarelli.

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### San Joaquin Geological Society

www.sanjoaquingeologicalsociety.org

P. O. Box 1056

Bakersfield, CA 93302

Contact: Beckie Burston

BeckieBurston@chevron.com



We have dinner meetings on the second Tuesday of the month at the Eagle's Lodge at 1718 17th Street, Bakersfield, CA 93302. There is an icebreaker at 6:00 p.m., dinner at 7:00 p.m., and a talk at 8:00 p.m. Dinner is \$25 for members with reservations and \$30.00 for nonmembers and members without reservations. Students may attend for free.

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## Submission Deadline 1 June 2016

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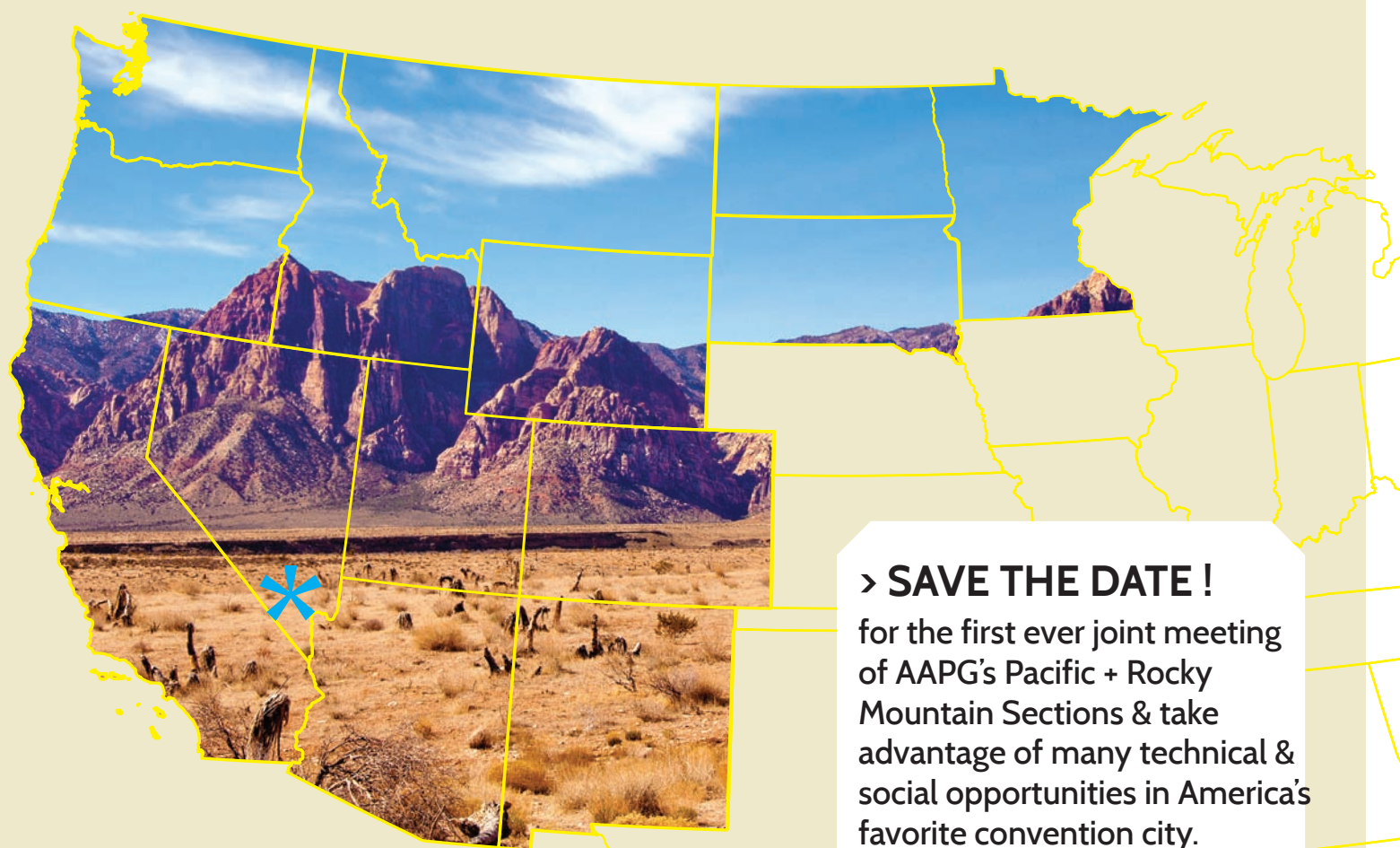


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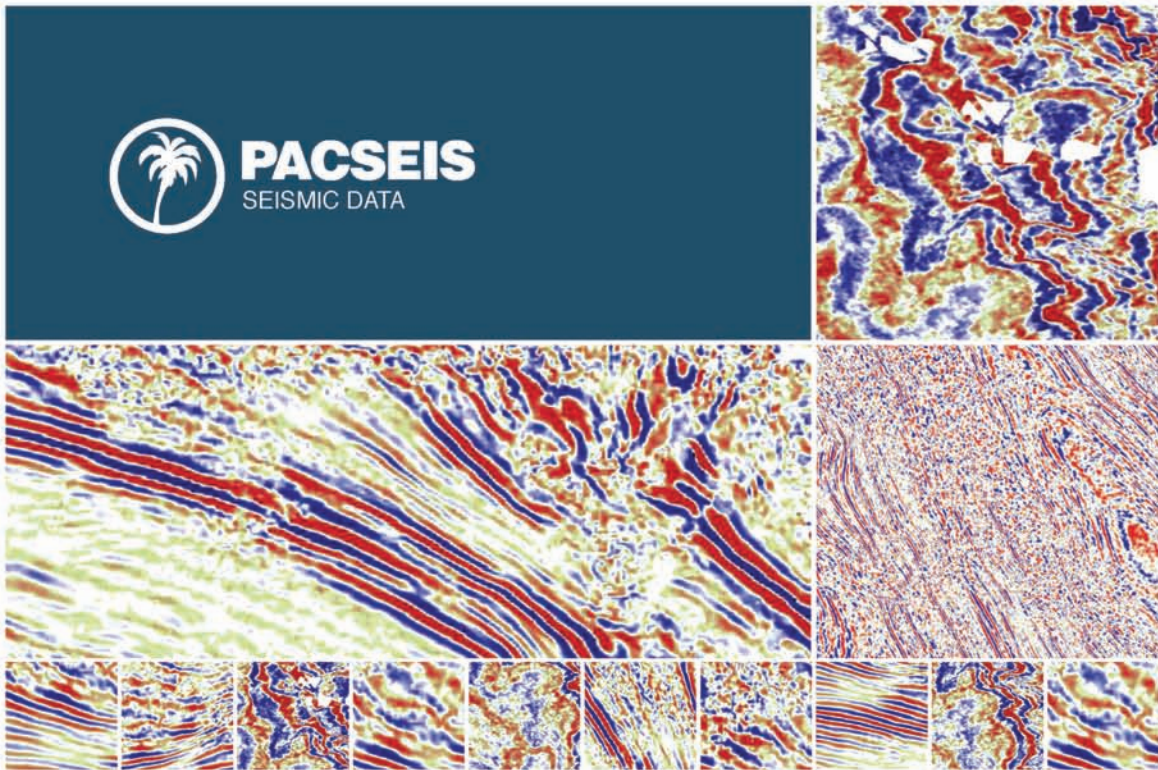
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