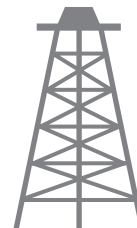




# Pacific Petroleum Geology



NEWSLETTER

Pacific Section • American Association of Petroleum Geologists

May & June 2016

## 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

Aera Energy LLC.  
Conference Room CC50.  
10000 Ming Ave. Bakersfield, CA 93311

#### REGISTRATION

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

*please check back regularly for updates*

*For more information or to sponsor this event,  
please contact Vaughn G. Thompson:*

[Vaughn.Thompson@crc.com](mailto:Vaughn.Thompson@crc.com)



Friday  
May 13th,  
2016.  
Bakersfield,  
CA.



## Playmaker, PSAAPG Annual Convention, and Officer Elections.

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



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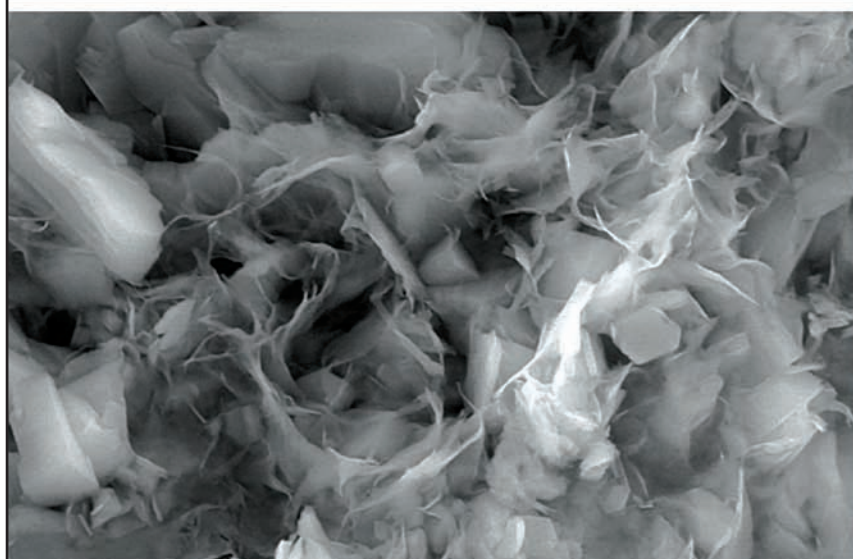
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# PSAAPG PLAYMAKER FORUM



Friday  
May 13th, 2016.  
Bakersfield, CA.



## FINDING VALUE IN MATURE BASINS

Heritage of Discovery by Charles Sternbach

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.....and much more

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*Vaughn G. Thompson:*

*[Vaughn.Thompson@crc.com](mailto:Vaughn.Thompson@crc.com)*

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**5-6 President's Message •** *Kurt Neher*

**7 Did you know •** *Kurt Neher & Tom Hopps*

**8-10 Candidates •** *PSAAPG Election*

**12-13 Member Article •** *Stephen P. Mulqueen*

**14-17 Member Society News •**

- 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.
- Scanned photos, illustrations (line art) or logos should preferably be submitted as a .tif, .gif, or .bmp; jpeg is OK.

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## Dear Pacific Section AAPG Members,

Preparations continue on the 2016 PSAAPG-sponsored conferences, and I would like to thank everyone working to make both the 2016 Joint PSAAPG and Rocky Mountain Section Conference (Oct. 2-5) and the PSAAPG Playmaker Forum (May 13) successful. Our conferences at all levels, sectional, national and international are important to the professional wellbeing of our members and critical to the financial welfare of our organizations. They give us the opportunity to present our new work, share ideas, catch up on the latest technology and E&P trends, meet new people, network and rekindle old friendships. Ours is a small, tight community of petroleum geoscientists. During my 30 years of attending conferences, I do not know of one time I came home empty-handed. I have always picked up new information or ideas that impacted the projects on which I was working. You can never predict where concepts will appear, but we all know it takes just one good idea to drive success. I hope you make the effort and get a chance to attend one of our PSAAPG conferences this year or the upcoming ACE in Calgary (June 19-22). More information can be found on the PSAAPG and AAPG websites.



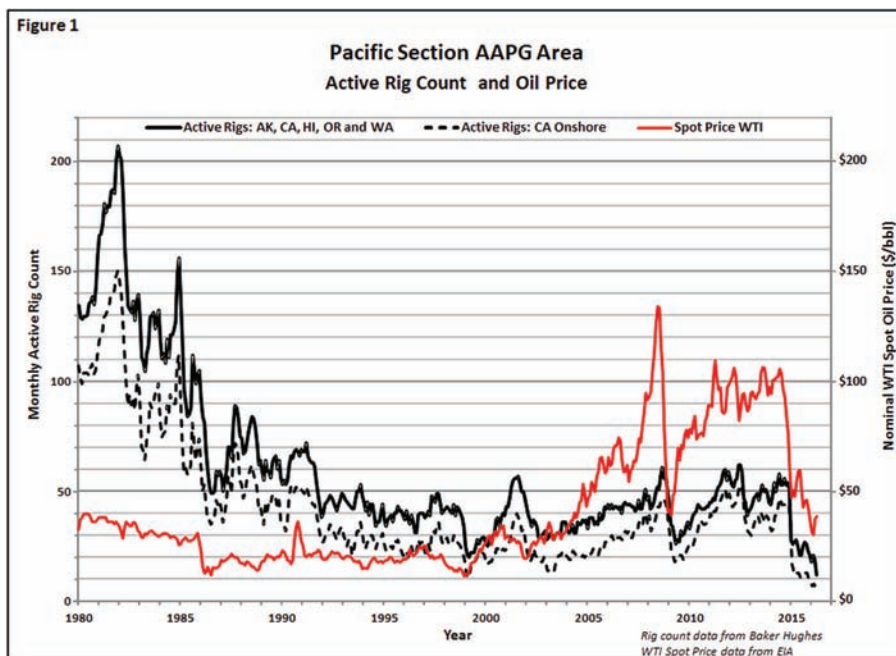
The PSAAPG Playmaker Forum is just around the corner, and the planning committee has pulled together a series of exciting talks illustrating the value geoscience adds across the spectrum of the E&P business. The presentations will highlight recent exploration discoveries, the impact of 3D seismic on exploration and step-out drilling, new ideas on the Monterey Formation and the impact geoscience has on very mature fields that characterize our Section. Given the current environment, PSAAPG, AAPG and DPA have taken every step possible to minimize the cost of attending this one-day forum. As part of this effort, Aera Energy agreed to host the forum at their Bakersfield office. I applaud these efforts and thank everyone involved.

I am sure you all noticed the upward movement of the price of oil over the last month. It is a welcome change, but the question is whether it is sustainable. The price really needs to be north of \$50 per barrel to make a significant proportion of industry's projects and fields profitable. Here in the PSAAPG states, the rig count continued its downward trend over the last couple of months, and is now at a level hardly anyone currently working in the industry has ever seen (Figure 1). This is a worrying trend as ultimately the work we do as petroleum geoscientists expresses itself in a bit turning to the right in search of oil and gas. Hopefully this trend will reverse itself as prices stabilize and the E&P industry begins to ramp up activity. However, this is just one of many challenges our industry is currently facing.

Many of you remember the late 1990's and early 2000's when the rising price of oil and gas sparked a renewed discussion in Hubbert's Curve and the fear of Peak Oil. Many looked at renewable energy sources as the only answer. Not only did they appeal to the no-carbon community, but a broader group viewed them as a competitive alternative to high-priced fossil fuels. As happened so often in the past, the story did not turn out as everyone thought. Viewed from our current vantage point, the petroleum industry's demise is more likely to happen because of too much hydrocarbon as opposed to too little. The mandate for renewables now relies solely on carbon reduction and climate motives rather than economic, price-driven reasons. President Obama's proposed \$10 per barrel oil tax, the Paris "Agreement" and the increase of the renewable portfolio standards in many states is simply an attempt to phase out fossil fuels as opposed to providing stable low-cost energy that would benefit the economy, jobs creation, and society in general. Barring the appearance of a game-changing technology, renewable mandates like San Diego's recent commitment to 100% renewable energy by 2035 will certainly raise energy costs and potentially decrease reliability.

I mentioned in an earlier PSAAPG newsletter that we need frank and open discussion of the issues based on facts and data. Partisan politics and special interests are skewing the discussion, and I cannot help but get irritated when I hear things like "consensus science" or "the science is settled". The scientific process was ingrained into us during our education as earth scientists, and we know that science is never "settled" nor is it driven by "consensus". I would hope most understand that disagreement and skepticism are integral to any healthy discussion; do we need to remind everyone of Galileo Galilei's relationship with the Inquisition?

*(Continued on next page)*



Most of our PSAAPG members are engaged in this discourse if we look at the full spectrum of engagement from informal conversations with friends and neighbors to active participation in industry and political decision-making forums. We, as an organization, should actively support our members who are courageous enough to engage in these dialogs and forums. As a first step, the Executive Committee and the Legislation and Public Affairs Committee will provide a list of non-profit, government, private and industry websites that contain basic information, data and analyses to support our members in these dialogs. The information will be available on the PSAAPG website ([www.psaapg.org](http://www.psaapg.org)) in the very near future, and as usual, we would appreciate any feedback and comments from the membership.

Thank you.

**Kurt Neher**

PSAAPG President, 2015-2016

**Marty Hall**  
Program Development Manager  
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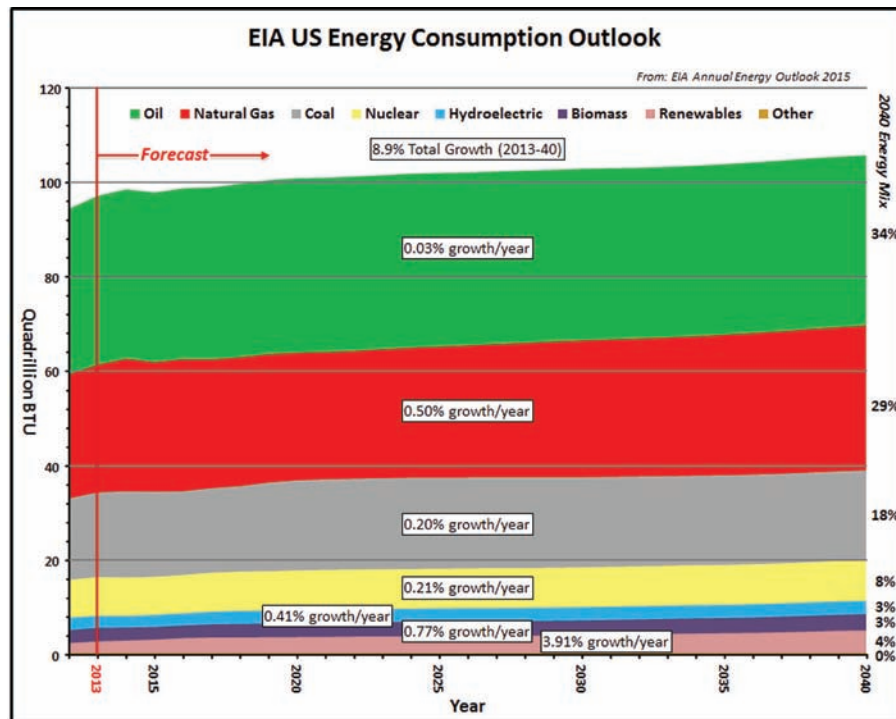
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### Did you know...

The Energy Information Administration (EIA) believes that the energy consumed in the United States for the next quarter century will be dominated by fossil fuels. The chart below shows EIA's energy consumption forecast from 2013 through 2040. In the year 2040, oil and natural gas will provide 63% of the country's total energy. If one includes coal, the amount grows to over 80%! Renewables, although outpacing all other forms of energy in annual growth at almost 4% per year, will make up only a small part of the energy mix. Of course there are many assumptions that go into this forecast relating to prices, economic growth, stability, etc. Probably the most important assumption is that there will be no game-changing technologies that are developed that could radically change the energy mix.

The impact of this information to us as petroleum geoscientist is clear. Oil and gas will be needed for the foreseeable future. For those who have recently entered the petroleum industry and those students considering beginning a career as a petroleum geoscientist, you will likely have a bright future. As we have seen recently, the industry is prone to ups and downs, but it will come back and good people will be sought out. And if a new technology appears that disrupts this picture, it could only be viewed as positive. Even then, earth scientists will be sought out.





## President-elect

### Jean Kulla



#### EDUCATION

Jean is past-President of the Los Angeles Basin Geological Society (LABGS). Prior to President, Jean also held office as Vice President, Treasurer, and Scholarship Chair. She is currently Chair of the Legislative Affairs and PR Committee of PSAAPG. Jean has also been an alternate Delegate for LABGS to the AAPG House of Delegates. Jean has been a member of AAPG since 1979.

Jean B. Kulla is President and Principal Geochemist and Geologist with K2 Enviro, Inc. and K2 Energy and Environment. She has a Ph.D. and MS in Geology and Geochemistry from the University of Illinois and has been a Professional Geologist (PG) in California and Arizona since 1992. She has over 30 years of experience in multi-phase fluid migration, dissolved phase chemical fate and transport, designing geochemical testing and tracer programs, dating of transporting water masses, organic fingerprinting compounds, interpretation of chemical reaction signatures to decipher the source and transport history of chemical contaminants and isotope investigations in groundwater and oil field fluids. Jean has been a special consultant to the US Department of Energy. She formerly worked for Exxon-Mobil in applied research world-wide on subsurface transport of migrating oil, gas, and oil field fluids.

### Michael Nelson



#### EDUCATION

- M.S. Geology, 1978, Oregon State University
- B.S. Geology, 1975, University of Minnesota, Duluth

#### EMPLOYMENT

- Geoscience Manager DCOR LLC, 2013 - present
- Senior Geologist, DCOR LLC, 2006 -2012
- Exec Director, California Oil Museum, 1993-2006
- Geological Advisor, Unocal Corp, 1989-1993
- Area Development Geologist, Unocal Corp, 1986-1989
- Development Geologist, Unocal, 1982-1986
- Exploration Geologist, Unocal, 1977-1982

#### PRIOR SERVICE

- PSAAPG Annual Convention Sponsorships Chair, 2015, Ventura
- AAPG National Convention Field Trip Coordinator, 2012, Long Beach: Geology & Oil Seeps of the Santa Barbara Channel
- PSAAPG Annual Convention Sponsorships Co-Chair, 2009, Ventura
- Coast Geological Society President, 2009, Ventura
- Coast Geological Society Vice President, 2008, Ventura



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## Vice president

**Emily Fisher**



### EDUCATION

- B.S. Geology & Environmental Science, Miami University of Ohio, 2007
- M.S. California State University, Fresno, 2010

### EMPLOYMENT

- 6 years & two internships with Aera Energy, working production & development North Midway-Sunset, current assignment in exploration
- One summer as a seismologist at Miami University

### PRIOR SERVICE

- Founder of Fresno State's AAPG Student Chapter
- First Liaison to Student Chapters for PS-AAPG
- Domestic Vice-Chair of Student Chapters
- San Joaquin Geological Society Secretary 2012-2013
- Registration Chair PS-AAPG convention, Bakersfield 2014

**Peter Morris**



### EDUCATION

- BS in Psychology from University of North Carolina, Chapel Hill
- MS in Geology from University of Colorado, Boulder

### EMPLOYMENT

- Geologist at Venoco Inc. May 2010 – March 2016
- Geologist at Chevron: 2000 – 2010

### PRIOR SERVICE

- Vice President, Coast Geological Society: 2011-2012.
- Treasurer, Coast Geological Society: 2012-2013.
- President, Coast Geological Society: 2013-2014.
- Past-President, Coast Geological Society: 2014-2015.
- Co-registration Chair, Pacific Section Annual Conference, Oxnard, CA. 2015

## Secretary

**Becca Schempp**



### EDUCATION

- B.S. Geology, 2010, California State University, Long Beach
- M.S. Geology, 2013, California State University, Long Beach

**Nicholas Driscoll**



### EDUCATION

- M.S. Geology, Brigham Young University, 2012
- B.S. Geology, Brigham Young University, 2009

(Continued on next page)

#### EMPLOYMENT

- California Resources Corporation, Geologist, 2015-Present
- Occidental Oil and Gas, Geologist, 2013-2014
- Occidental Oil and Gas, Geoscience Specialist, 2011-2013
- Occidental Oil and Gas, Geotechnical Intern, 2009-2011

#### PRIOR SERVICE

- Treasurer, PSAAPG Foundation, 2015- Present
- Liaison to Student Chapters, PSAAPG, 2013-Present
- Student Coordinator for PSAAPG Annual Convention 2014 & 2015
- Secretary, Pacific Section AAPG, 2011-2013
- AAPG Imperial Barrel Award Participant, CSULB 2011
- Secretary, Los Angeles Basin Geological Society, 2009-2011
- PSAAPG YP Distinguished Service Award, 2015

#### EMPLOYMENT

- Chevron E&P, Geologist, 2012 – Present
- Shell E&P, Geologist Intern, 2011
- Rio Tinto Kennecott Utah Copper Mine, Geologist Intern, 2010

#### PRIOR SERVICE

- 2014 PSAAPG presentation, Introduction to San Ardo AAPG member since 2007
- SDSU Student Chapter -Member at large 2010-2012

## Treasurer-elect

**Kelly Harrington**



#### EDUCATION

- MS Petroleum Geology, CSUB, 2014
- BS Geology, CSUB, 2012

#### EMPLOYMENT

- Chevron USA, Bakersfield - Geologist. 2015-present
- Kern County Environmental Health 2008-2013

#### PRIOR SERVICE

- AAPG Imperial Barrel Award Participant; CSUB 2013
- AAPG Imperial Barrel Award Mentor: CSUB 2015

**Simmie Chehal**



#### EDUCATION

- M.S. Geology, CSU Northridge, 2014
- GIS Graduate Certificate, SFSU, 2012
- B.S. Environmental Resource Management, CSU Bakersfield, 2011
- B.S. Geology, CSU Bakersfield, 2011

#### EMPLOYMENT

- Geologist, Aera Energy LLC, Bakersfield, CA (current)
- Teaching Associate, CSU Northridge, Northridge, CA (2012-2013)
- Intern, DOE, Berkeley, CA (2011-2012)

#### PRIOR SERVICE

- AAPG Student Chapter at LSU – President, 2004-05
- My volunteer work has primarily focused on encouraging students to study earth science through the Quest in Science program in Northridge, CA and currently as a mentor to high school students in Bakersfield, CA.

**Save the NEW date!**

**SPRING 2016!**

*You did NOT miss It  
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**“THE WOOLLEY”**  
*17th ANNUAL CGS*  
**GOLF TOURNAMENT & BBQ**  
**Friday, May 6, 2016**

\* This classic event has been rescheduled in Spring to avoid Santa Ana winds, El Nino floods, the Big One, and to better inspire and align with the CGS May Scholarship Awards. See you there !!



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## Nitroglycerin and Its Application to Early Oilfield Fracking Operations of the 1860s

Written by Stephen P. Mulqueen.

Nitroglycerin, a powerful liquid explosive, was used extensively in early blasting operations involving excavating, mining, tunneling and in “shooting” oil wells. This nitroglycerin bottle in the photo measures 9” in length and 2½” in diameter. Note the thickness of the glass and the bottle’s rounded shape. This design reduced the chance of breakage or detonation during transport of the unstable liquid. Bottles manufactured for containing nitroglycerin were usually shipped in partitioned wooden crates packed with excelsior (wood shavings).

The practice of fracking wells, first using gunpowder and later nitroglycerin, dates back to the 1860s and was developed in the oil fields near Titusville, Pennsylvania. In November 1864, during the Civil War, Union Army Colonel Edward A.L. Roberts applied for a patent for a process in which nitroglycerin was detonated within an oil well in order to fracture the petroleum horizon, clear paraffin accumulations and enhance oil production. The patent was issued on April 25, 1865 to Roberts Petroleum Torpedo Company (Figure 1). The basic principal involved increasing porosity and permeability within the oil zone with use of the liquid explosive.



Figure 1. Patent issued to Roberts Petroleum Torpedo Company.

To “shoot” wells during the 1860s, a “torpedo” was prepared that consisted of a thin-walled iron stovepipe approximately 3” in diameter and several feet in length. Stovepipe was made in a blacksmith’s shop or machine shop by wrapping sheet metal around a mandrel, in the shape of a pipe, and riveting the adjoining sides together. The stovepipe was closed at the bottom by forming a tapered end or by hammering it flat and folding the end 180-degrees. The term “torpedo” was derived from its general shape and content. The cylinder was lowered into the well so that the top of it could be loaded at the surface above the wellhead. Extra weight was added before it was filled. Weights, consisting of iron, lead or gravel, were applied so that the torpedo would readily sink as it was conveyed by cable through oil and water to the bottom of the well.

Nitroglycerin was poured from glass bottles (Figure 2) or steel cans into the vertically oriented stovepipe. A blasting cap, attached to insulated copper wires, was inserted inside the cylinder, in contact with the fluid. The torpedo was sealed at the surface by pinching the stovepipe, being careful not to sever the wires. A thin braded steel cable was attached to the top of the torpedo. The wires were wrapped around the cable or allowed to extend parallel to the cable. (Note: Roberts Petroleum Torpedo Company detonated the nitroglycerin with a mechanical device that initiated a blasting cap. The cap was triggered by a heavy weight that slid down the steel cable.)

The torpedo was conveyed into the well on the end of the cable. Again, a special effort was made to keep the wires from being damaged. After the torpedo was positioned to the proper depth, the ends of the insulated copper wires were attached to a detonator at the surface. This resulted in the detonation of the blasting cap and the nitroglycerin. The explosion would destroy the stovepipe, fracture the oil zone, clear paraffin from the wall of the hole and send a shockwave of fluid under pressure to the surface. This usually resulted in an increase of oil production from the well.

(Continued on next page)



The practice of fracking the productive zone in wells with use of nitroglycerine was later applied to gas wells and water wells. Many years later, during the late 1940s, “hydraulic” fracking was developed for enhancing the production of oil and gas wells. This involved breaking the formation using water, with dissolved chemicals, under extreme pressures. Early research in hydraulic fracking determined that the propagated fractures would close after the release of pressure. As a direct result, fractures were mechanically propped open with use of injected sand or other fine synthetic proppants.

Fracking has played an essential role in the enhancement of petroleum production in the United States beginning with its early application during the 1860s at oil fields near Titusville, PA.



*Figure 2. Glass bottle used to store nitroglycerin*

Stephen Mulqueen earned a Bachelor of Science degree in Geology at Cal Poly Pomona in 1978. Steve is currently semi-retired after a 28-year career with the California Dept. of Conservation's DOGGR and California State Lands Commission. His early years after college included work in the minerals industry for two large mine operators in the California Desert.

## List of References

American Oil & Gas Historical Society, Petroleum Technology, “Shooters – A ‘Fracking’ History”, Washington, D. C.

Michael MacRae, December 2012, American Society of Mechanical Engineers, “Fracking: A Look Back”.

Also, see numerous listings on the Internet under the heading of “Roberts Petroleum Torpedo Company, 1865” and “Torpedo, Petroleum”.

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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.

May 17th, 2016. 11:30 am

Speaker: Rob Witter – USGS

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

## Coast Geological Society

May 17th, 2016

Speaker: Art Sylvester and Libby O’Black Gans

Discussing their book: Roadside Geology of Southern California

June through August: Summer break.

Meeting to resume in September.

## L.A. Basin Geological Society

May 26th, 2016. 11:30 am

Speaker: Elizabeth Cochran, USGS

“Quake Catcher Program”

June through August: Summer break.

Meeting to resume in September.

## Northern California Geological Society

May 25th, 2016. DINNER MEETING - EARLY START TIME: 6:00 pm

Speaker: Dr. Charles K. Paull, Monterey Bay Aquarium Research Institute

“Sediment movement through Monterey and other submarine canyons along the California coast”

June 22th, 2016. 7:00 pm

Speaker: Jerome V. De Graff, California State University Fresno

Richard H. Jahns Lecturer for 2016 by the Association of Environmental & Engineering Geologists and the Geological Society of America

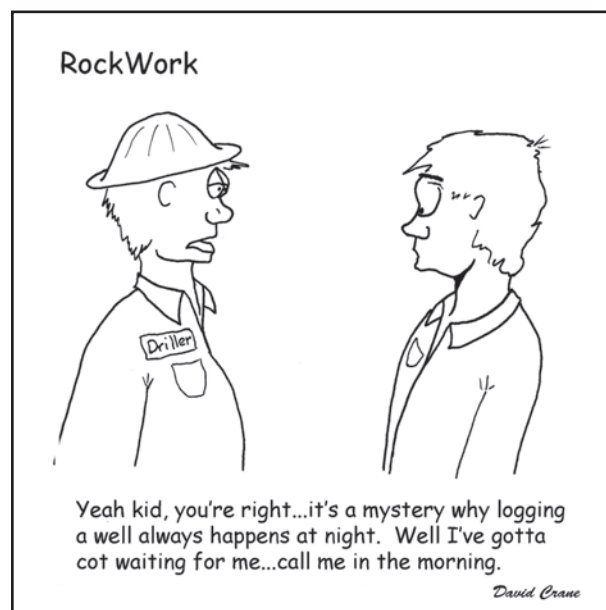
“Fire, Earth, & Rain”

June through August: Summer break.

Meeting to resume in September.

## Northwest Energy Association

Announcements coming soon.



(Continued on next page)

## Sacramento Petroleum Association

May 28th, 2016. Noon

Speaker: Scott Hector

"The Shell (Vilche) Deep Test and a better understanding of the Pine Creek Fault, northern Sacramento Basin: What a difference one paleo report makes"


## San Joaquin Geological Society

May 10th, 2016. 6:00 pm

Speaker: Dr. Jon Rotzien

"Coming soon"

**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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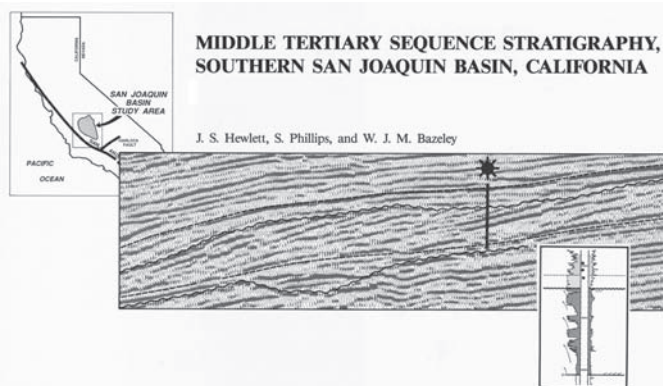
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## PSAAPG Has A New Publication – MP 51



"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 [laknauer@aol.com](mailto:laknauer@aol.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.

President:	Monte Mabry	monte.mabry@bp.com
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Secretary:	Dave Buthman	dbuthman@hilcorp.com
Treasurer:	Heather Heusser	heather.heusser@alaska.gov
Past-President:	Keith Torrance	keith.torrance@uicumiaq.com

**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.

President:	Bonnie Walters	president@coastgeologicalsociety.org
Past President:	Bob Blackmur	pastpresident@coastgeologicalsociety.org
Vice President:	Alastair Haddow	vicepresident@coastgeologicalsociety.org
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Treasurer:	Theresa Heirshberg	treasurer@coastgeologicalsociety.org
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.

President:	Bert Vogler	hvogler@kleinfelder.com
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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)



## **NCGS Officers:**

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Website Editor	Mark Detterman	mdetter1@gmail.com

### **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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Past President	John Armentrout	jarmenrock@gmail.com
Treasurer	Barb Portwood	bbportwood@gmail.com
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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.

President:	Jerry Reedy	JWR5532@aol.com
Vice-President:	Scott Hector	Scott.Hector@gmail.com
Secretary	Derek Jones	djones@gasbiz.com
Editor/Treasurer	Pam Ceccarelli	pc626@comcast.net

### **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.

President:	Ariel Auffant	aauffant@chevron.com
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## Submission Deadline 1 June 2016

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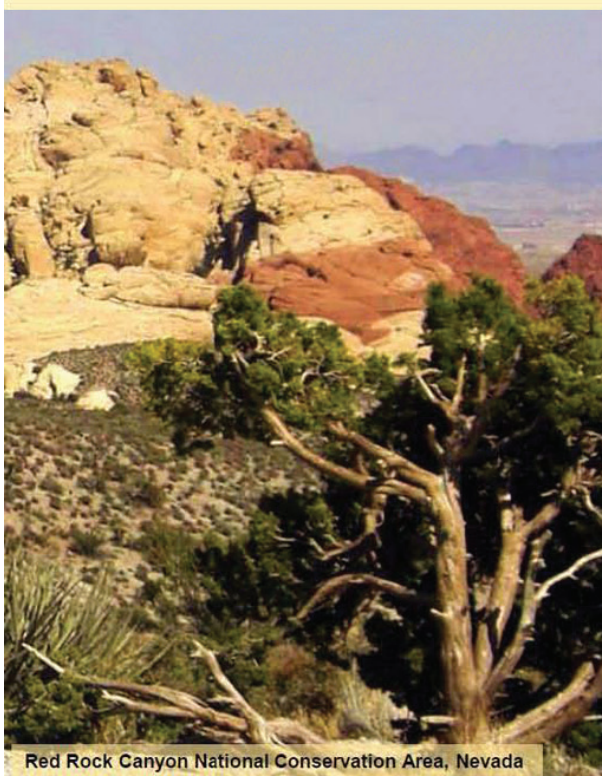
For additional information contact:

### Jon Allen

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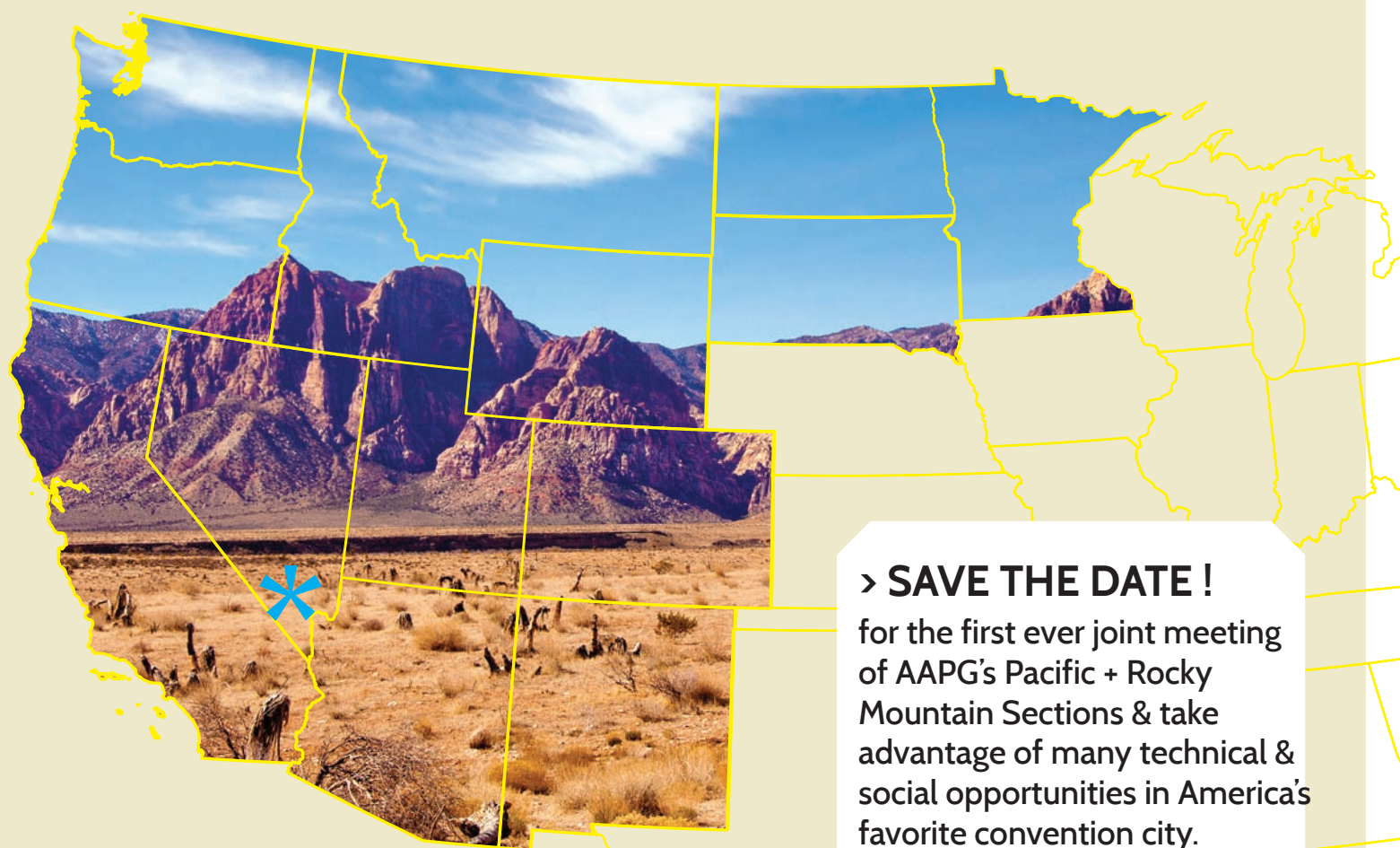
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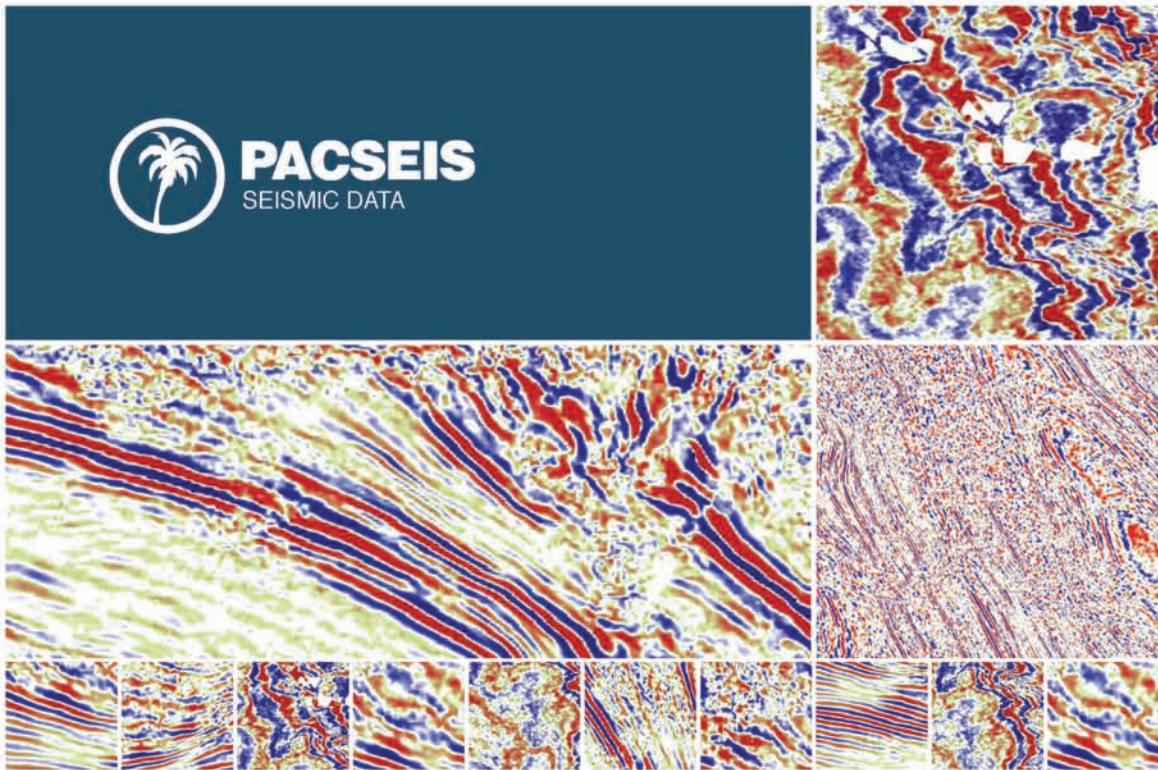
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