



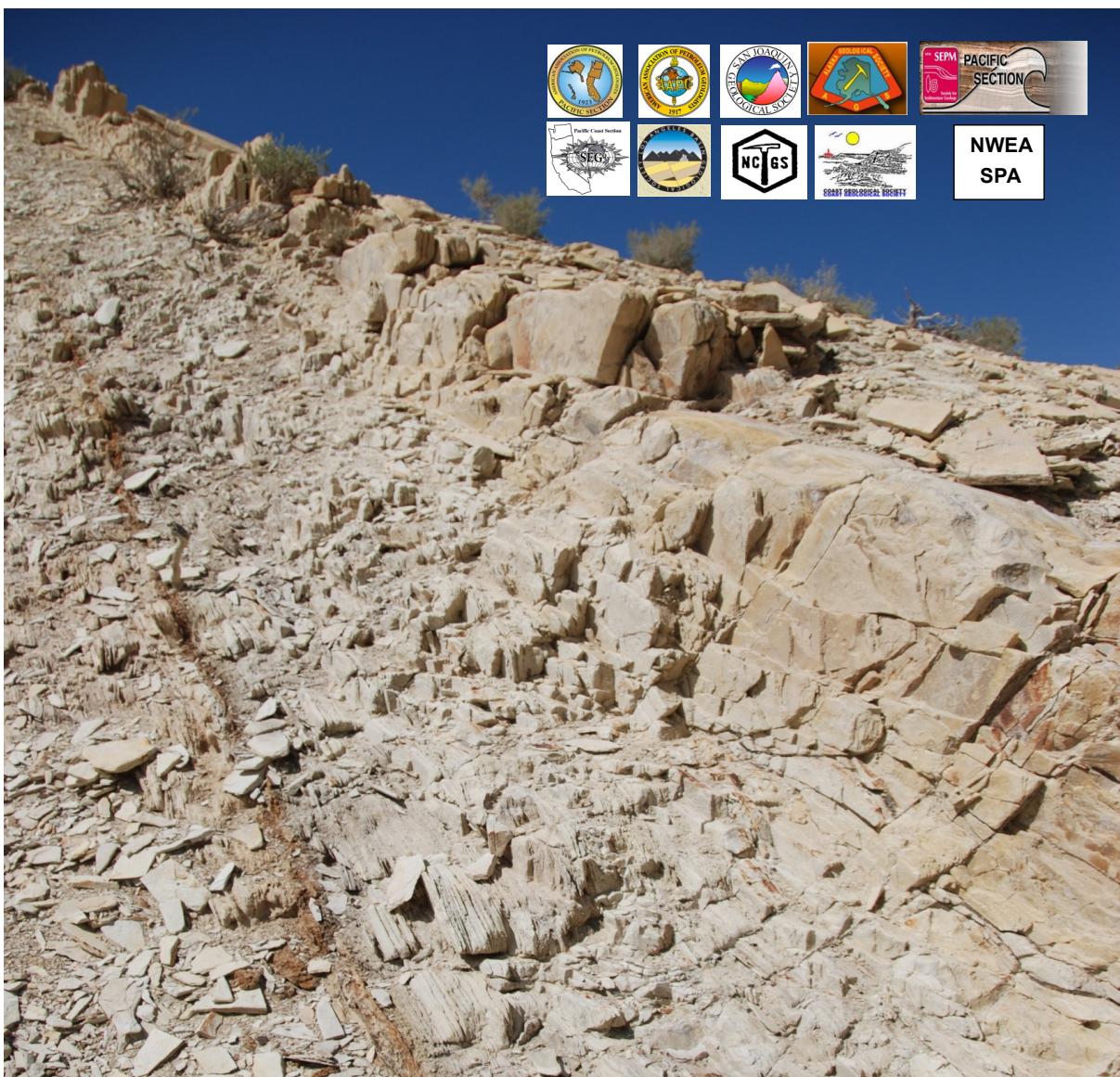
Pacific Petroleum Geology



NEWSLETTER

Pacific Section • American Association of Petroleum Geologists

March & April 2014



2014 Pacific Section AAPG – Joint Annual Meeting

A Century of Innovation – From Exploration to EOR

April 27-30, 2014

Bakersfield, CA





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Dear Members,

The April 27-30 Bakersfield PSAAPG Convention is coming along very well. You can “read all about it” in this issue of the Newsletter. The National AAPG ACE is also in April, in Houston. Many folks from Pacific Section are planning to attend. We hope that you will take the time to register and participate in these important events. Conventions are the major source of funds for the Section and for the hosting Society. These funds are used to support our broad range of student-focused activities such as scholarships, Imperial Barrel competition, Teacher of the Year, and student chapters. The funds are also used for Section publications and enjoyable events, donations to museums, and young professional activities. All members are encouraged to participate in Local Society activities and to donate time and money to support their Section and Local Society.



Each month I participate, along with President-Elect John Williams, in the AAPG Section President's telephone conference. As you can imagine, there are representatives from all the Sections as well as from AAPG National. We discuss topics ranging from Section finances to Conventions, Websites, and Activities. It is a great opportunity to share best practices and to discuss areas where we may improve. For John and I, it is always good to learn that what we do in Pacific Section is seen by our peers and by National as being top notch. Our finances are being very carefully managed and meet all applicable legal requirements. National AAPG sees the way we finance conventions and the way we interface with the Pacific Section AAPG Foundation as being very strong, transparent, and sustainable.

With regards to Conventions, the interface between the Convention Committee, hosting Society, the Committee on Conventions, and the Executive Committee of PS-AAPG are seen as providing solid support, encouraging proactive engagement so activities run smoothly. We try to ensure the Convention is a technical and financial success. The PS-AAPG website is seen as being one of the best. It has excellent functionality, looks good and works very smoothly, has a lot of good information, and links to value-added content. If you have not seen it lately, please take a look.

The one other topic that has been discussed at the telecom is the new Scholarship Program. This has been seen as a best practice as well. Even though it is only a couple of years old, it has provided significant funding to students from across the Section. This year PSAAPG has received several requests from our Affiliated (Local) Societies, and we are expecting to receive even more. We have set aside \$28,000 annually to fund scholarship requests coming from the seven Affiliated Societies. We are looking forward to seeing the requests.

The last topic I want to mention is the Imperial Barrel Award competition. The five teams have their datasets and are working hard to evaluate the data, generate their prospects, and prepare their presentations. The competition is set for March 21st at Aera Energy LLC in Bakersfield. This is an exciting and nerve wracking time for the teams and their sponsors. It will all come together in the next couple of weeks. Good luck to the teams and best wishes to the winner, who will represent Pacific Section at the final competition taking place at the AAPG National Convention in Houston.

Have a great spring... I hope to see you at the National Convention and the Section Convention in April.

Best Regards,

Dan

DAN TEARPOCK

The petroleum geology community lost a significant leader recently when Dan Tearpock passed away in Houston, Texas, at age 65. Dan was an AAPG Honorary Member, over the years held multiple offices in AAPG's Division of Professional Affairs (DPA), and earned DPA's Heritage Award. His early industry employment was with Tenneco. In 1988, he set out on his own to form Subsurface Consultants and Associates. His significant subsurface mapping expertise was the foundation for the three textbooks and related training courses he co-authored: *Applied Subsurface Geological Mapping*, *Quick Look Techniques for Prospect Evaluation*, and *Applied Subsurface Geological Mapping with Structural Methods*. Dan was a dedicated family man who never missed a track meet, softball game, dance team function, band concert or piano recital. He will be missed.

-notification submitted by John Williams

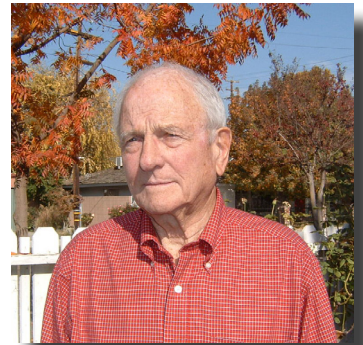
HARRY PTASYNSKI

Harry Ptasynski died after a long and successful career in the oil and gas industry. He served his country in World War II. He graduated from Stanford with a Geology degree in 1950, and immediately started work for Pure Oil Co. His first assignments were in Kansas, Texas, and Oklahoma. He was also involved in the California oil industry, and maintained friendships on the West Coast. But most of his career was spent in Casper, Wyoming, where he was active as an independent geologist and producer from 1958 until his death in December, 2013. He was a respected member of many geological organizations, and a past officer of the Independent Petroleum Association of America (IPAA.)

-notification submitted by Bob Lindblom

HENRY WALROND

Henry Walrond, a long-time Bakersfield area geologist and past President of the San Joaquin Geological Society, passed away February 21, 2014. He was born October 14, 1923 in Fresno, California to Henry E. and Imogene Walrond. Henry attended school in Fresno and at Fresno High he excelled in swimming and diving, which were activities he enjoyed throughout his life. He began college at Fresno State, but in 1943, enlisted in the U.S. Army Air Corps, becoming a B-24 Liberator pilot as part of the 484th Bomb Group based in North Africa and subsequently Italy. During one mission, Henry and his crew were forced to bail out over Yugoslavia, and were listed as MIA. The entire crew was scattered far and wide, but they were reunited and helped by the partisans, and eventually After WWII, Henry attended University of Southern California where he received a Bachelor of Arts in 1949 and a Master of Arts degree in Geology in 1951. During these years in the summer of 1947, Henry joined a group of 11 schoolmates and voyaged to Tahiti in a 110 foot U.S. Navy surplus subchaser. Their plan was to fish for sharks and sell the livers, but neither the sharks nor the Marquesa natives cooperated. Nevertheless, the trip was a successful two month adventure to the South Pacific where he learned to deep dive with the native pearl divers. In addition, the group greeted and assisted the arriving Kon-Tiki and its crew. Henry continued his adventurous life, earning his Masters degree with a 28 square mile geologic mapping thesis in the Santa Ynez Mountains above Santa Barbara.



After graduation from USC, Henry began his geologic career with General Petroleum, doing petroleum geologic studies and geologic mapping in California, Oregon, Washington and Alaska. In 1958, he located to Bakersfield, working for Sunland Refining and then Norris Oil Company. In 1974, he found his passion, becoming a successful and respected consulting petroleum geologist where he generated and sold petroleum prospects and performed geologic studies for many clients.

Continued on next page

(continued from page 5)

During this period, he discovered new pools at South Cuyama, Del Valle, and Riverdale oil fields. His geologic success carried over to hard rock mining, when he and a group of friends acquired mining leases that subsequently have become part of the Mesquite Mine, one of the largest gold mines in the southwest U.S.

During the last 15 years, at an age when many of his contemporaries had been retired for years, Henry continued the work he loved, showing up at his office every day ready to find that next drill site. And he was successful, discovering new oil pools at Midway-Sunset, North San Ardo, SE Raisin City, and Rosedale oil fields.

Henry was a 55-year member of the American Association of Petroleum Geologists [AAPG] and in 2004 was awarded an Honorary Life membership (the Society's highest award) to the Pacific Section of the AAPG for long and meritorious work for the society. One of his proudest accomplishments was the publication in 2007 of his and Robert Paschall's book, "Reflections on the San Andreas and San Gabriel Faults" that was written to further discussion on these important faults.

Henry enjoyed life and looked forward to each day. He was an avid reader, had many interests, including woodworking, and enjoyed an after work swim at the Racket Club until his 90th birthday. During his long and fruitful career, he made hundreds of friends who admired his enthusiasm, professionalism, and honesty. Henry was the epitome of a gentleman and will be missed.

Dedicated to and much loved by his family, Henry is survived by his wife of 54 years, Ann-Marie, his children Caroline, Eric and Katherine (Jerry) Bacon, granddaughter Kristina, his sister Martha Corbett, and her family. He was preceded in death by his parents and sister, Fanny Jane.

-submitted by Frank Cressy



Henry Walrond dines with family and friends at the SJGS BBQ, Sept 2012

photo by Tim Elam



Early 2012 photo of Henry Walrond (center), Joe Rose (left) and Gordon Dole (right) at the discovery well of a new pool in the Rosedale oil field near Bakersfield, the result of Henry's geologic work.

photo from Frank Cressy

EDITOR'S NOTE: In the January/February PPG Newsletter, I wrote an article about Geology field camps in general, and mine in particular. I invited newsletter readers to share your thoughts and experiences about field camps. Below is a response received from Dr. Robert Yeats, ECI and Oregon State University Professor Emeritus. Dr. Yeats also received PSAAPG's 1991 Distinguished Educator Award.



Thanks, Tim Elam, for the article on your field camp experience. Despite field camp being the capstone course for geology, the number of field camps has diminished from 257 to around 100, as you point out. In addition, as discussed in an article in *Earth*, field camp length has been decreasing over the years from six weeks to four.

The reasons are the increasing costs of undergraduate education, especially a course that may require the student to spend several weeks across the country in places with good exposures. Tuition has gone up, and the availability of field-camp sites has gone down. Many universities require liability insurance for participants.

In addition to taking my field course at the University of Washington, I taught field courses at Ohio University (held in eastern Nevada) and Oregon State University (held in eastern Oregon). In my view, the field course changes you from a student taking courses in geology to a geologist. You won't be mapping quadrangles, but you can walk up to an outcrop and know what you're doing. Employers value that.

We all bear a responsibility to the course that shaped our careers and lives as geologists. Part of that responsibility is recognizing that university administrators may not understand the necessity of teaching the course at scenic locations far from campus. In times of tight budgets, the field course is always under an administrator's scrutiny as a place to cut costs.

To PSAAPG members: If you value your field course experience and attribute your professional success in part to what you learned at field camp, it's time to step up. You can contribute to maintenance and improvement of field-camp facilities, which cash-strapped universities are probably not willing or able to do. Or you can endow a scholarship at your own field camp alma mater and help educate the next generation of geologists. This is important as the profession gets ready for the Great Crew Change, when us old guys head for the golf course, and industry employers look for our replacements. This helps in two ways: first, because tuition and fees keep going up, and second, when a student takes field camp, he or she can't take a summer job to pay for next year's college expenses. In addition, money for the field course donated to the department by alumni and future employers gets the attention of university administrators.

-Bob Yeats, ECI and OSU Emeritus Professor

THANKS TO GREG HUMMEL!

Greg Hummel, our Webmaster for the past two years, has decided to step down. That is our loss, because Greg worked to get a new PSAAPG website in place, partnering with CS DesignArt. No transition is smooth, but, Greg dedicated himself to get a good, functional website in place...one that has responsive support. His efforts have been successful!

As President Schwartz states in his message this issue "The PS-AAPG website is seen as being one of the best. It has excellent functionality, looks good and works very smoothly, has a lot of good information, and links to value adding content." Indeed, the website is recognized as being one of the two or three best among sections. Webmaster is not an elected position, and its' importance often goes unnoticed by Section members.

Greg is not riding into the sunset...he continues to wear another professional society hat: Vice-President for LABGS. We are immensely fortunate that Jason Minch has stepped up to take Greg's place. Jason has experience in working with the SJGS website. **Next time, as you sit in your favorite establishment, downing your favorite beverage, please raise a toast to Greg Hummel and Jason Minch!**

PSAAPG CONVENTION ATTENDEES,

I am pleased to welcome you to the 2014 Pacific Section AAPG Technical Conference and Convention in Bakersfield, California. The San Joaquin Geologic Society is our 2014 host along with our Pacific Section SEPM and the Pacific Coast Section SEG partners. The 2014 Convention theme is: "A Century of Innovation – From Exploration to EOR". This theme is fitting for the return of the annual meeting to the Southern San Joaquin Valley and its rich history of oil and gas production. The PSAAPG annual meeting always provides attendees with excellent networking and learning opportunities from fellow industry colleagues. We are honored to have AAPG President, Lee Krysinik, as the keynote speaker for our All Convention Luncheon. The talk will address the impact of unconventional resources and the associated drilling and completions technology boom. You won't want to miss it!

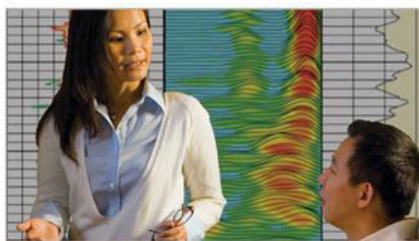
This year's technical conference and convention will be held at the Bakersfield Marriott at the Convention Center. The hotel has an excellent exhibition hall and is a great venue for presentations, workshops and short-courses. I would like to personally thank all of the exhibitors who have signed on this year to help make this year's convention a success. The center also provides numerous dining and entertainment opportunities within easy walking distance.

The technical sessions are arranged into pertinent themes including: Fine-grained Biosiliceous Rocks, Western North America Regional Geology, Shallow to Deepwater Depositional Systems of the West Coast and two sessions dedicated to new Petrophysical and Geophysical applications. We will have timely sessions focusing on the important issues surrounding water resources, CO₂, and environmental/regulatory updates in the Western U.S., as well as a special session on the Cenozoic Geologic History of Southern California honoring the memory of our esteemed colleague, A. Eugene Fritsche. This year's technical committee has set up numerous field trips to both the Western and Eastern margins of the San Joaquin Basin as well as trips to the Ventura Basin. I hope you will be able to attend one or more of these excellent trips, all of which are within easy driving distance from the convention center. Short course topics include: Working with Ancient E-logs, Image Log Interpretation, two core workshops on Fracture Characterization and San Joaquin Siliciclastic Reservoirs, and a Sequence Stratigraphy for Students course.

We expect to have a strong student presence at this year's conference; there will be numerous activities for both students and Young Professionals. The committee has also planned several fun outings for guests and spouses including a tour of Central Coast vineyards, a trip to the Giant Sequoias, and a rafting trip on the beautiful Kern River.

I would like to thank the San Joaquin Geological Society for hosting the 2014 technical conference and convention. The committee is equally indebted to the numerous sponsors and volunteers who make this event possible. I look forward to seeing you all this April in Bakersfield!

Kevin Weberling
PSAAPG Convention Chair



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2014 PSAAPG Convention - Bakersfield, Ca.

April 27-30, 2014



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Sponsorship Chair

Larry Knauer
Geologist, Chevron
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Technical Themes:

Celebrating Century Fields from Discovery to EOR

Fine-grained Biosiliceous Rocks; the Monterey and Beyond

Structure, Tectonics, and Regional Geology of Western North America

Understanding Fractured Reservoirs: Characterization, Geomechanics, & Completions

Heavy Oil Development: How Technology Has Made the Unconventional Conventional

From Fluvial to Deepwater, Clastic Reservoirs and Depositional Systems of the West Coast

Field Trips, Short Courses & Activities:

Heavy Oilfields and Outcrops of the Eastside San Joaquin

Reservoir Plumbing in the Injectites of Panoche Hills

Giant Oilfields of the Westside San Joaquin Basin

Cuyama Basin in Memory of Gene Fritsche

Core Examples of San Joaquin Clastic Reservoirs

Fracture Characterization Core Workshop

Basic Image Log Interpretation

Working with Ancient E-Logs

Sequoia National Park
Kern River Rafting
Wine Tasting

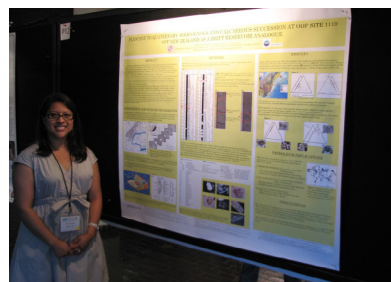
... and more!



Hey, LISTEN...



There will be lots of things to do, people to see, places to go in Bakersfield at the 2014 PSAAPG CONVENTION.
SEE YOU THERE!



Photos by Tim Elam, Stefano Mazzoni, and Brian Pitts.

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PSAAPG ALL CONVENTION LUNCHEON- HONORS AND AWARDS

To all attendees of the Annual Meeting of the Pacific Section in Bakersfield April 26-30:

An important part of the the All-Convention Luncheon on Monday April 28 will be presentation of Honors and Awards to members of the Section. The following persons will receive the noted awards.....

• Honorary Life Member

Robert D. Hoffman, Bakersfield, CA
Stephen A. Reid, Bakersfield, CA

• Distinguished Service

Bonnie Bloeser, Bakersfield, CA
Timothy D. Elam, Bakersfield, CA
Cynthia A. Huggins, Bakersfield, CA

• Distinguished Educator

Janice M. Gillespie, PhD, Cal State- Bakersfield, Bakersfield, CA

We will also recognize the recipients of the **A.I. Levorsen** and **H. Victor Church** awards for the respective best paper and poster presentations given at last year's Pacific Section's Annual Meeting in Monterey, CA. The **A.I. Levorsen Award** will be given to Todd J. Green, PhD, Department of Geological and Environmental Sciences, Cal State-Chico. The **H. Victor Church Award** will be given to Brian Gray, Lettis Consultants Intl, Inc., Walnut Creek, CA.

Bob Lindblom, Chair of the H&A Committee, looks forward to your attendance at the luncheon, where these people will be recognized for their distinguished service in so many ways to the Pacific Section.

-Bob Lindblom

CORRECTION:

The January-February Newsletter listed three Pacific Section members who will receive awards at National AAPG Annual Convention and Exhibition. However, the location and date of the ceremony was listed incorrectly.

JOHN ARMENTROUT and **DON CLARKE** will receive the AAPG Honorary Member Award at the Annual Convention in Houston, April 6-9, 2014. This award is presented to members who have distinguished themselves by their accomplishments and through their service to the profession of petroleum geology and to AAPG.

DON LOWE will receive the Grover E. Murray Award at the Annual Convention in Houston, April 6-9, 2014. The Murray Award is presented for distinguished and outstanding contributions to geological education, both at the university level and toward education of the general public.

-EDITOR



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70th Anniversary of NCGS

This year marks the seventieth anniversary of the Northern California Geological Society. The Society was founded in 1944 by a group of petroleum geologists, mudmen, and well logging representatives. Early membership was mainly petroleum industry-oriented people with some academic and government geoscientists mixed in.

Over the years, particularly in the last two decades, membership has evolved into a diversified mix of environmental, geotechnical, engineering, petroleum, and mineral geoscientists, with some representation from the academic community and government organizations. The very first meeting was held in Sacramento in January, 1944, with the speaker being one John W. Thomas of Standard Oil Company of California, showing slides of "A Trip through Saudi Arabia." Some 60 people attended this ground-floor meeting and enjoyed the show. For several years most meetings were held in Sacramento and at Foster's Bar in Rio Vista. Foster's was the premier meeting place for petroleum types in northern California back then. Foster's Bighorn is still there, still alive and well with a room full of big game trophies.

By the late forties, few geologists were left in the Sacramento Valley and the meetings migrated to San Francisco, where they stayed until 1985, featuring dinner meetings at first and then becoming luncheon talks, often attended by over 100 people. In the fall of 1985, after Chevron's domestic exploration staff moved to San Ramon in 1985 the meetings moved to the East Bay and returned to being evening affairs, albeit without dinner, at a variety of venues. In January, 1999, we finally found our current home and format in Orinda.

Our famous, nameless newsletter evolved in January, 1997, from mere meeting announcements to essentially its present format. Since the beginning, Dan Day and now Mark Detterman have for all these years intrepidly produced nine issues per year, every year. Exactly when our website was born is lost in the ether but for the last several years Mark has also kept that up and running. We'll be including tidbits from our first seventy years in the newsletter this spring. If you want to see an entertaining and more thorough rendition of NCGS history, see "Short History of Northern California Geological Society" by Ottmar Kotick (1976), AAPG Bulletin, v. 60, p. 988-992. Copies of this paper will be available at NCGS meetings. Kotick got a couple of the early details wrong but no matter.

Reprinted from NCGS Newsletter, January, 2014



FIGURE 1

Long time NCGS member Mel Erskine unrolls the state geologic map. Erskine recently spent time with Bay Nature Institute contributing writer Sarah Phelan, helping her understand the Monterey Formation.

Photo: Sarah Phelan

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Age dating and environmental determinations of the LA Basin, the Ventura Basin, the San Joaquin and Sacramento sections, as well as the Alaskan Cook Inlet and Post Paleozoic North Slopes section

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The company had been afraid of how it produced the 3rd Massive in the #1 well, because the sand in the well bore had a fairly thin gas layer on water. I determined that there was a very good play updip of this well for more gas in the 3rd Massive sand. It looked as if we could drill a second well updip of the first well, on the horst block, and get a lot more gas.

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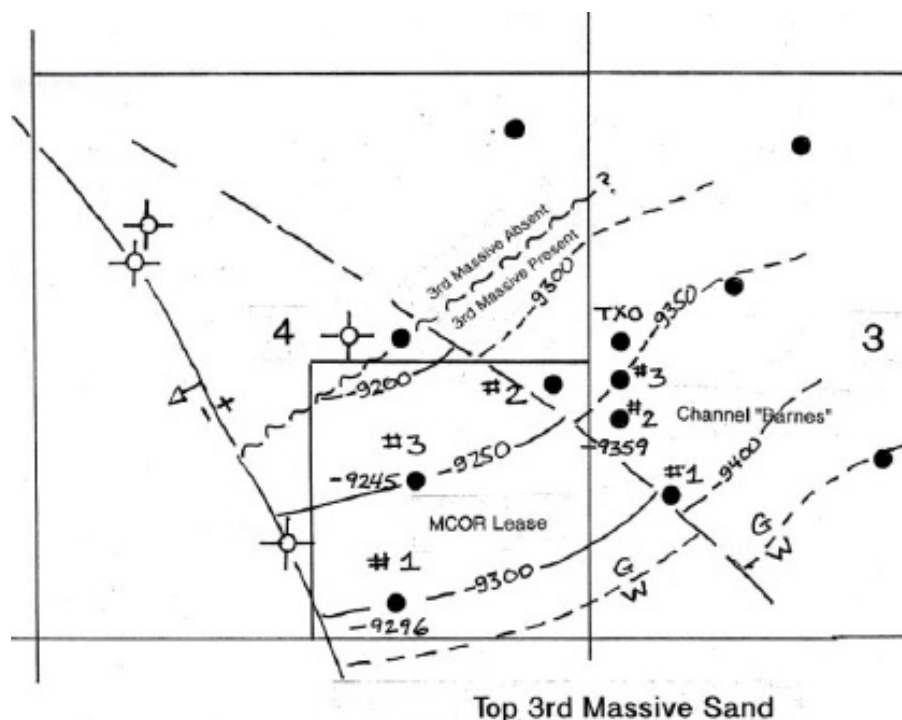


FIGURE 1
Structure Map- Top
3rd Massive Sand
(upper Cretaceous)
within a portion of
Denverton Creek
Field

I met with the Vice-President of Engineering for MCOR and reviewed my proposal. Though he said that he thought it might work, the company really had to be careful with the money it had to spend. He agreed that we needed to drill a well on the lease, since we had been offset by TXO with an offset well to the east. In order not to lose some of our own lease by default, we needed to offset the TXO well. So, that is what we did. That well was drilled to the 3rd Massive zone, and completed there. It was, unfortunately, located out of the horst block and made only about 600,000 Mcf of gas.

MCOR left me in 1986, and I was sent out on my own. As a consultant, I remembered some of my favorite plays, and watched how the “Lambie” # 1 and #2 wells were doing. Thus, I was pleased when MCOR called me and asked if I knew of anyone that would be interested in buying the pipe from the “Lambie” wells that they were abandoning. I told them that I was, and also that I would like permission to lease the ground after they left. They did so.

So, I was finally going to get to drill the well that I wanted to in the first place! By this time, I was working for a company named North Valley Oil and Gas, based out of Woodland, California. We drilled the “Lambie” # 3 well, and it came in as well as could have been expected. The initial rate of gas from the 3rd Massive zone was 5,000 Mcf/D. Since the discovery the well has changed hands several times, and has a cumulative production of over 3,000,000 Mcf, and is one of the best wells in the Denverton Creek gas field.

So, there is yet another story of how a field that I thought I was never going to see again did a return visit in my career. The results proved that my initial idea was as good as I had hoped. What I learned from this story: if you think you have a great idea for an oil or gas well and don't get to drill where you want to the first time, keep on pushing to “drill, baybee, drill”!

-Scott T. Hector

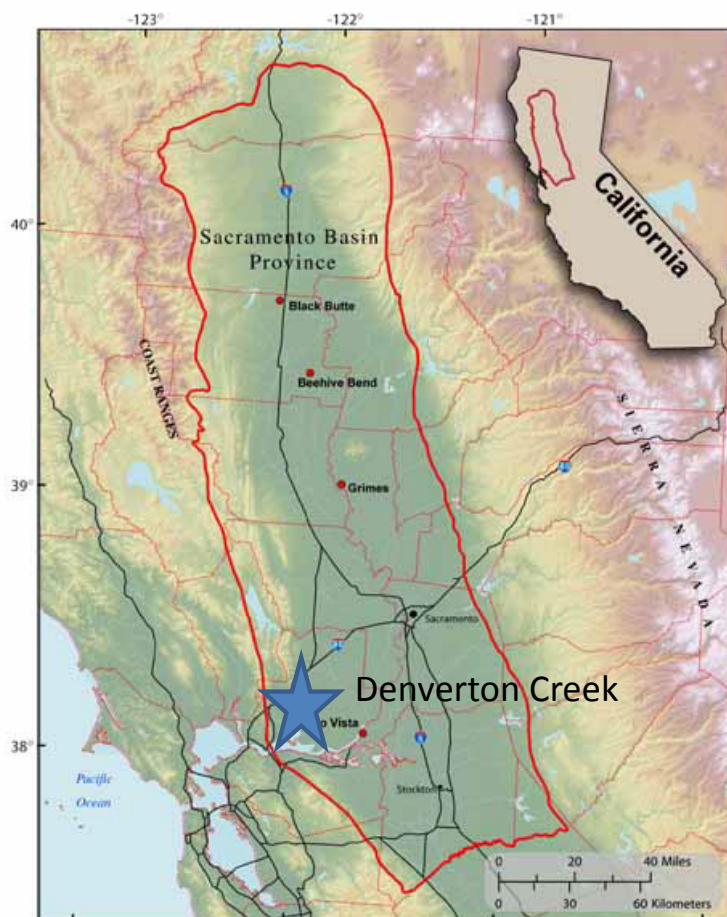


FIGURE 2
Sacramento Val-
ley Gas Province
Base Map

STEAM: A Game-changer in the San Joaquin Basin

Kern River Field: 19,200 BOPD
Midway Sunset Field: 38,200 BOPD
South Belridge Field: 12,500 BOPD
Cymric Field: 9355 BOPD



photo by
Larry Knauer

Are the numbers above a look into future daily oil production of some prominent California oil fields? Fortunately, not yet anyway. Actually, these numbers are a snapshot of production from four giant/supergiant San Joaquin Basin fields in **1960**, long after these fields had been discovered. But these low numbers represent production before the widespread use of steam revitalized the state's oil production over the last 50 years. (DOGGR, 1960.) The current oil production from each of these fields is approximately three times greater (or more) than the 1960 production.

In the San Joaquin Basin, steam and other key events have been “game changers,” that facilitated large increases in oil production. Past game-changers were technological, geopolitical, economic, and even product transportation. We may yet see another game changer with significant Monterey Shale production. Where there is a will (i.e. a financial incentive,) history suggests a technological way will usually be found. Past SJGS President Mike Clark prepared a graph several years ago (Figure 1.) That graph is very instructive in seeing how game changers of last 100 years or so have affected San Joaquin oil production.

So, how did the California thermal oil recovery industry get started? A literalist might say that steam first impacted San Joaquin Valley production in 1901. That is when, after discovery of Kern River Field, steam was used to keep oil warm as it was transferred from wells and field tanks to horse-drawn tankers. Steam was also employed at the end of it's journey...often to San Francisco power plants (Franks and Lambert, 1985.)

In 1960, the industry was dealing with +/- \$3/barrel oil. California primary production was in decline; waterflooding and some fracing propped up production. A few new, conventional, light oil discoveries had been made...Asphalto (1962) was one of them. Still, there was a technological dilemma: how could companies increase production and NOT leave behind the remaining 85% + of shallow, heavy oil in low-pressure reservoirs of declining giant and supergiant fields in California? A heavy oil technological breakthrough was needed.

In the 1950's and early 1960's companies experimented with thermal techniques to address the issue. California fields were at the vanguard of thermal recovery tests worldwide. Yes, there were other concurrent efforts: particularly at Lagunillas and Tia Juana fields in Venezuela, and Cold Lake Field in Alberta, Canada (*Oil and Gas Journal*, 2004). Results of thermal pilots, trials, and lab experiments were closely guarded by companies who recognized thermal heat transfer could be a game changer. There were many reasons for secrecy: 1) public uncertainty of what would happen underground; 2) the cost of leases could potentially skyrocket, adding to overall cost, and 3) competitive advantages over peer companies.

Companies experimented with “fireflooding” (in situ combustion), electrical “downhole heaters” and “hot waterflooding” in the late 1950's to introduce heat underground. General Petroleum (ultimately a part of Exxon Mobil and AERA) picked the Marina lease in South Belridge Field for a fireflood. The costs and results of that effort were shared amongst eleven companies (Rintoul, 1990.) Chevron, then called Standard Oil of California, had a large proprietary fireflood project in Midway Sunset in the late 1950's. Tidewater (a forerunner of Getty, Texaco, and Chevron) had a successful downhole heater effort in Kern River Field in the late 1950's (Rintoul, 1990.)

But injection of steam in the early 1960's proved to be the most successful. Shell was one of the first companies to enact trials, experimenting with steaming at Yorba Linda Field in the LA Basin in 1960. (Rintoul, 1990.) Almost concurrently, Tidewater experimented injecting hot 300°F water and steam in Kern River Field. Other players got involved in the steam game, including Chevron at Cymric and Coalinga, Belridge Oil Co. at South

continued on page 17

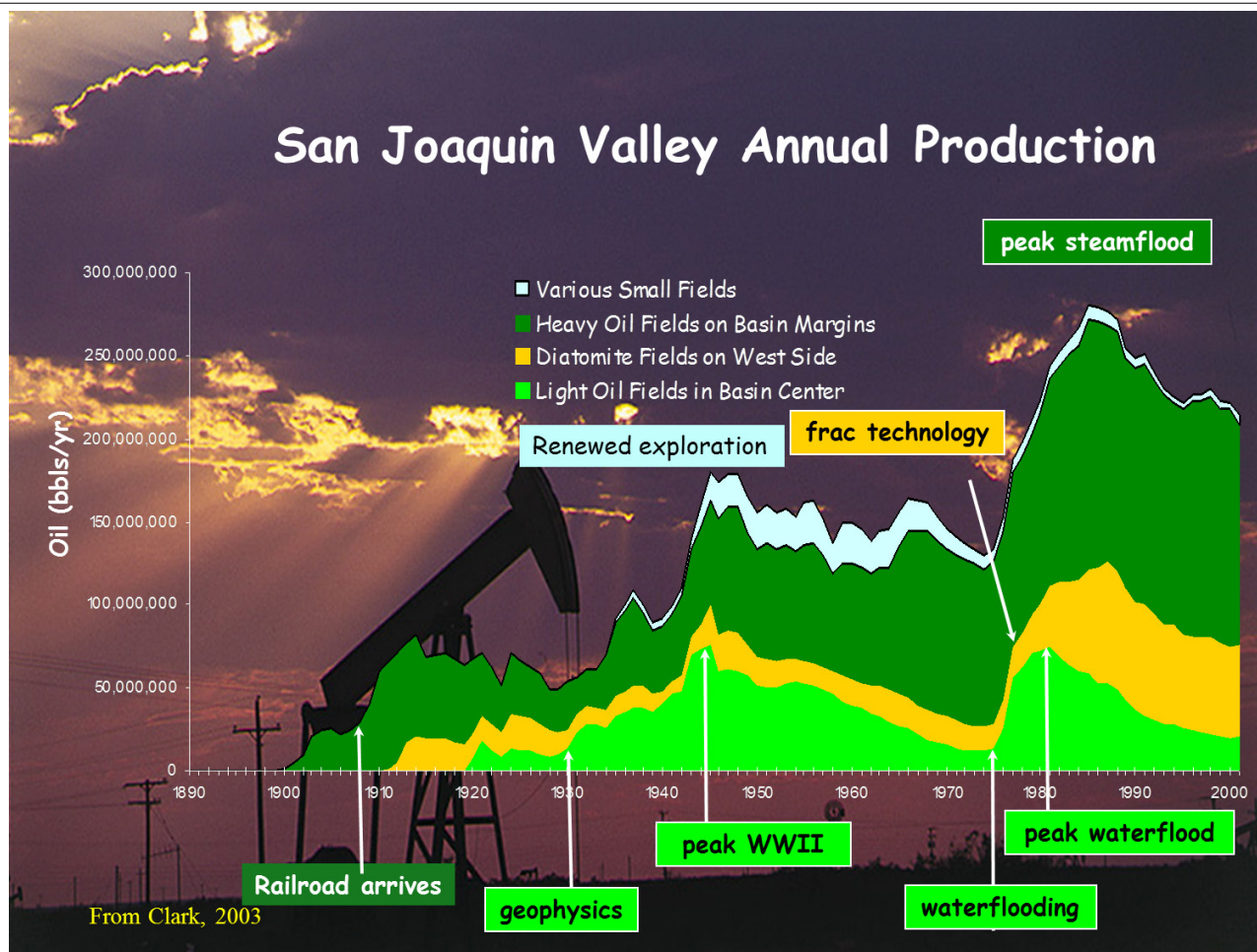


FIGURE 1: Historical San Joaquin Valley Oil Production reproduced with permission of Mike Clark

Belridge, Union at Guadalupe Field in the Santa Maria Basin, and Mobil at Midway Sunset (Rintoul, 1981.) The initial years of cyclic steam injection (huff and puff technology) evolved into 1970's combined projects of continuous steam injection (steamflooding) and cyclic steam injection. The influence of cyclic steam can be seen in Figure 1 by looking at the dark green peak in the late 1960's, when light oil production was declining. But, that was just the beginning for steam's influence. Although implementation of steam projects was well known by the DOGGR and the industry, Rintoul (1981) stated that an Occidental sign on a road at Midway Sunset Field in 1964 was the first acknowledgement to the public of the use of steam by a producing company. The sign said "Danger. Steamflood in Progress. Enter at your own risk."

Particularly telling of the local producers' reluctance to acknowledge thermal efforts is a book published in 1964. *Valley of Oil* was a 143-page book on the history to date of the San Joaquin Basin oil industry, published in Bakersfield by the Independent Petroleum Producers Association of America. It contains a discussion of each large oil company operating in the valley, and had more than one hundred advertisements for oil service industry products and services. None of the text in the book says anything about steam or thermal techniques, except for a couple of cryptic advertisements. But by 1964, production companies were actively collecting connected land positions in fields such as Kern River. They often paid a seemingly high premium for such leases....but that premium was based on current (non-thermal) production rates and reserves. Relative to the OIP recovery, the premiums were low. (Rintoul, 1981.)

We now know that steamflooding can lead to ultimate oil in place recoveries of 70%+. (Hong, 1994) Economies of scale and rising oil prices allowed massive steamflood projects to become commonplace in the San Joaquin Valley in the 1970's and 1980's. Several billion barrels of oil have been produced that would not have been extracted were it not for the technological advance of using steam... most recently combined with another technological advance: horizontal drilling.

Continued on page 18

U.S. heavy oil recovery to date is 13 billion barrels of 105 billion barrels in place (U.S. DOE, National Energy Technology Laboratory, 2014.) Most of those 13 billion barrels have been recovered by thermal techniques, and virtually all of U.S. thermal recovery has been in California.

-Tim Elam

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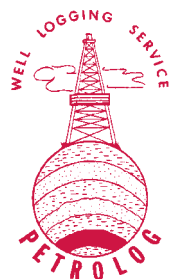
2013 SUMMARY OF NATURAL GAS DRILLING ACTIVITIES IN NORTHERN CALIFORNIA'S SACRAMENTO VALLEY

Each year PSAAPG Honorary Member Roland Bain presents a summary of drilling activities in the Sacramento Valley. This year, highlights of his 29 page summary of 2013 were presented to the Sacramento Petroleum Association on February 19. Mike Cummings of DOGGR assisted Mr. Bain in collection of the data. A very few pertinent statistics are presented below.

- Number of holes drilled 18 *
- Number of completions 12
- Number of Operators 3 (Vintage, Royale, and Sunset Exploration)
 - * Includes three (3) holes drilled for gas- storage or other non-gas-exploration purposes.
- Volume of gas produced: 37 Bcf
- The average price for 2013 was \$3.71.....noticeably better than the \$2.89 average for \$2012.
- SUCCESS RATE:
 - Development wells: 14/14 (100%)
 - Outpost wells: 2/4 (50%)

TOP TEN GAS PRODUCERS — 2013

Operator	# Wells	# Fields	2013 Gas Production Bcf	2012 Production Bcf
Vintage Prod, Calif.	777	37	31.215	14,233
Royale Energy	44	10	1.106	1.309
ABA Energy Corp.	25	5	0.596	0.955
Foothill Energy	39	7	0.533	0.651
Donald C. Slawson Expl.	19	8	0.511	0.584
Signal Hill Petroleum	3	1	0.324	0.363
The Termo Company	21	6	0.323	0.344
Pioneer Exploration	42	1	0.304	0.332
Concordia Resources	8	2	0.281	0.306
Capitol Oil Corp.	4	2	0.213	0.327



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1. The Standard Oil Company trust, which was dissolved by Federal Court Order in 1911, consisted of how many companies?

- 7
- 13
- 34
- 67
- 491

2. Prudhoe Bay, Alaska, is the largest U.S. oil field in terms of cumulative oil production. What field is second?

- Rangely, Colorado
- Wilmington, Ca
- Midway-Sunset, Ca
- East Texas, Texas
- Yates, Texas

3. Horizontal wells became commercially viable in the U.S. in the late 1980's. What year was the first horizontal well drilled in the U.S., according to the U.S. Energy Information Agency?

- 1961
- 1973
- 1929
- 1980
- 1944

4. The first electric log run in a North American well drilled for oil occurred in 1929 in

- Kern County, Ca.
- Santa Barbara County, Ca.
- Ventura County, Ca.
- Los Angeles County, Ca.
- Fresno County, Ca.

5. Australia's early offshore oil fields, discovered in the 1960's, were named for a group of animals. What was the animal group?

- Birds
- Butterflies
- Fish
- Kangaroos
- Whales

6. What year was the most recent year the United States was a net exporter of oil (according to the U.S. Energy Information Agency)?

- 1951
- 1972
- 1949
- 1939
- 1927

7. Which major oil producing nation did NOT "expropriate" or effectively "nationalize" its oil production in the year listed below:

- Mexico, in 1938
- Saudi Arabia, in 1929
- Algeria, in 1951
- Russia, in 1918
- Iran, in 1951

8. Former President George Bush, along with friends founded what oil company?

- Midland
- Fairfax
- Amerada Hess
- Anadarko
- Zapata

Answers on page 24




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AGS TECHNICAL CONFERENCE AND FIELD TRIP

The Alaska Geological Society will conduct a technical conference on May 15, 2014. The Conference theme is "Cook Inlet-Gateway to Alaska." The keynote address will be delivered by David LaPain, Alaska Division of Geological and Geophysical Surveys (DGGS). The one-day Conference will be held at the University of Alaska-Anchorage ConocoPhillips building in Anchorage. Abstracts are due by April 15, and there will be a monetary award to the winner of the student poster contest.

The next day, May 16, a field trip will be held, titled "Bird Creek to Hatcher Pass."



Hatcher Pass

photo by Art Banet

SJGS PARTICIPATES IN ENGINEERING DAY AT CAL STATE- BAKERSFIELD

For the third year in a row, representatives of San Joaquin Geological Society shared ideas about geology and geological careers with over 300 students from Bakersfield area high schools at Cal State- Bakersfield's Engineering Day event. Participating SJGS members were Laura Bazeley, Tim Elam, Vaughn Thompson, and Noel Velasco and Larry Knauer. Larry provided oil-saturated core and logs for the students to prompt questions and discussion.

-Tim Elam



Noel Velasco and Laura Bazeley talk to a high school student about the study of geology at Engineering Day.



Vaughn Thompson (left) and Laura Bazeley (not pictured) talk to students separated only by a box of slabbed Kern River Field core. Center of Picture: Tim Elam shows mineral specimens at Engineering Day.

PSAAPG IMPERIAL BARREL COMPETITION

The PSAAPG Imperial Barrel Award competition finals will be held March 21 at AERA Energy in Bakersfield. Imperial Barrel is a competition between university teams who analyze sets of geologic, geophysical, and engineering data. They present the result of their analysis to industry professionals. Pacific Section schools competing this year are Cal State- Bakersfield, Cal State- Long Beach, University of California- Santa Barbara, University of Alaska- Fairbanks, and San Diego State Univ. The Pacific Section winner will move on to compete at the AAPG Convention and Exhibition in Houston. Attendance at the competition is open to the public. For more information, contact competition coordinator Cynthia Huggins cahuggins@aeraenergy.com; or Cameron Campbell cameron.campbell@chevron.com.

2015 PSAAPG CONVENTION

The Pacific Section AAPG 2015 Convention will be in Ventura, California. Anticipated date will be May 3 -6, 2015, at the Embassy Suites- Mandalay Bay in Oxnard, Ca. Convention Chair Joan Barminski welcomes inquiries and involvement; her contact address is joan.barminski@boem.gov.

-Joan Barminski

NCGS AWARDS 2013-2014 RICHARD CHAMBERS MEMORIAL SCHOLARSHIPS

The Northern California Geological Society is pleased to announce its RICHARD CHAMBERS MEMORIAL SCHOLARSHIP recipients for 2013-2014. The scholarship is named for former NCGS member Richard Chambers who provided a bequest to the society. Two \$1,000 are provided to students pursuing the Masters Degree and one \$2,000 is provided for a student pursuing a Doctorate Degree.

- Recipients of the 2013-2014 Richard Chambers Memorial Scholarships at the Masters Degree level 3 are Kevin M DeLano, a student at Central Washington University. Kevin's research is **Geologic mapping in the northern Eastern California Shear Zone, California: testing a kinematic and geometric fault slip transfer model**. His thesis advisor is Dr. Jeffrey Lee.
- The other RCMS recipient at the Masters Degree level is Edween Hernandez, a student at California State University, Fullerton. Edween's research is **A Multidisciplinary Study of the Paleozoic to Modern Fauna Transition, Favret Canyon, Augusta Mountain, West-Central Nevada**. Her thesis advisor is Dr. Phil Armstrong.
- Receiving the 2013-2014 Richard Chambers Memorial Scholarship at the Doctorate level is Emily A. Orzechowski, a student at the University of California, Berkeley. Her research is **Paleoecological reconstruction of the Last Interglacial Maximum (~130 Kya) in California using uranium-thorium dating and geochemical temperature proxies on Late Pleistocene fossiliferous terraces**. Emily's advisor is Dr. Seth Finnegan.

The Northern California Geological Society received nineteen outstanding applications for the 2013-2014 Richard Chambers Memorial Scholarships. Richard Chambers Memorial Scholarship application information is sent to all colleges and universities in California, Arizona, Nevada and Oregon that offer advanced degrees in September and November of each year.

Reprinted from NCGS Newsletter, February, 2014



The family pictured at left is synonymous with prolific oil and gas production in the United States, because of reservoirs found beneath their land.

Are they:

- A. The Yates Family
- B. The Clampett Family
- C. The Bakken Family
- D. The Barnett Family
- E. The Stevens Family

Answer on page 24

NEXT Newsletter Deadline

(May/June Issue): May 1st, 2014

Alaska Geological Society

- **March 20 Meeting:** “Devil’s Paw Prospect, Chukchi Sea, Alaska;” **SPEAKER:** Greg Wilson, ConocoPhillips Alaska
- **April 11 Meeting:** “Industry-Driven Advances in Predictive Earth Systems modelling;” **SPEAKER:** Alison Thurmond, Statoil; (Evening meeting; 6:00 pm, BP Energy Center)
- **April 14 Meeting:** “Carbon Capture and Storage;” **SPEAKER:** John Kaldi, University of Adelaide; (Meeting to be held in Main Conference Rooms A, B, C at BP Exploration Alaska)
- **May 15:** Keynote Speaker at the Alaska Geological Society Technical Conference, University of Alaska, Anchorage (see *PSAAPG News Briefs*, p. 21)

Coast Geological Society

- **March 18 Meeting:** “Million Steps Over 5 Billion Years, Geology of the Pacific Crest Trail;” **SPEAKERS:** Paul Hacker and Greg Hummel.
- **April 15 Meeting:** “Kern River Oil Field Modeling;” **SPEAKER:** Jon Allen.
- **May 20 Meeting:** “Santa Barbara Marine Terrace Uplifts and Seismic Hazards;” **SPEAKER:** Ed Keller.

L.A. Basin Geological Society

- **March 27 Meeting:** “Unraveling the Geologic History of Mars;” **SPEAKER:** Dr. Robert Anderson, Supervisor, Geophysics and Planetary Sciences, Jet Propulsion Laboratory, Pasadena.
- **April Meeting:** NO MEETING DUE TO PSAAPG CONVENTION

Northern California Geological Society

- **March 26 Meeting:** “Revisiting the Monterey Formation;” **SPEAKER:** Dr. Tom Mackinnon, Consultant.
- **April 30 Meeting:** “Reclamation of the abandoned Spenceville Copper Mine;” **SPEAKER:** Stephen D. Reynolds, California Geological Survey.
- **May 28 Meeting:** DINNER MEETING; TBA

Northwest Energy Association

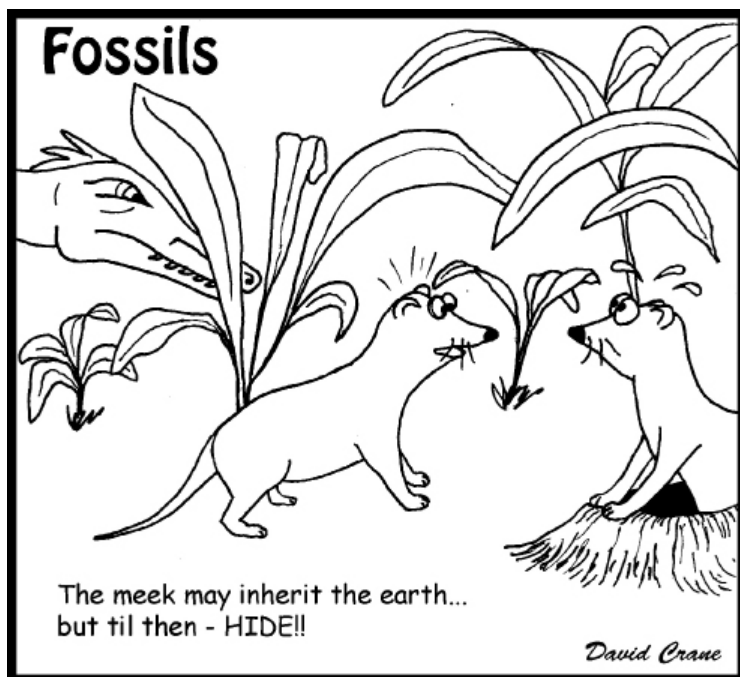
- **March 20 Meeting:** “The Petroleum Geology and Tectonics of the Columbia River Basin - as illustrated by using data from the recent drilling and geophysical programs,” **SPEAKER:** Bill Lingley, Consulting Geologist
- **April 17 Meeting:** “Introductory discussion regarding earlier work in coal bed methane exploration in the Puget lowland and in Colorado; the present state of exploration (i.e., coal bed methane, fracturing source rocks) of the petroleum/energy industries (mainly from experiences in Canada [Alberta and Saskatchewan]) and minor discussion regarding present work with the native peoples natural resource program partnership;” **SPEAKER:** Steve Pappajohn, Advisor Business Development, Native American Resource Partners.
- **May 15 Meeting:** “Update of the Jackson Prairie Storage Facility;” **SPEAKER:** Bob Pinotti, Senior Geologist, Jackson Prairie Gas Storage, Puget Sound Energy.

Sacramento Petroleum Association

- **March Meeting: To Be Announced**
- **April Meeting: To Be Announced**

San Joaquin Geological Society

- **March 7 Meeting** (Special Meeting at the Petroleum Club, 11:30 AM): "Natural Fractures in Shale Hydrocarbon Reservoirs;" **SPEAKER:** Julia Gale, Univ. of Texas Bureau of Economic Geology, Austin, TX **AAPG Distinguished Lecturer.**
- **March 11 Meeting** (Regular monthly meeting at American Legion Hall, 6:00 PM): "Lynch Canyon Oil Field - It's History, Geology, and Development;" **SPEAKER:** Stan Eschner, TRIO Petroleum, Bakersfield, Ca.
- **April 15 Meeting:** "Stratigraphic Framework along Central CA Shelf Margin for Assessment of Quaternary Activity on Hosgri Fault Zone;" **SPEAKER:** Brian Gray, Lettis Consultants.
- **May 13 Meeting:** "STUDENT NIGHT – Research from Cal State Bakersfield, Cal State Fresno, Bakersfield College.




ANSWERS to Trivia

Page 20

1. 34
2. East Texas
3. 1929
4. Fresno Co., Ca (at Westhaven)
5. Fish
6. 1939
7. Saudi Arabia-1929
8. Zapata

Page 22

The Bakken Family



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Alaska Geological Society

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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

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805.745.2149

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); the talk is free. For reservations, please email Bonnie Walters (secretary@coastgeologicalsociety.org), and should be made by 4:00 p.m. on the Friday before the meeting.

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Los Angeles Basin Geological Society

www.labgs.org

515 So. Flower Street, Ste 4800
Los Angeles, CA 90071Contact: 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, in the Monarch Room 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 \$20 (with reservations), \$25 (without reservations), or \$5 for students. Reservations can be made online at www.labgs.org or by contacting Marieke Gaudet at 562.624.3364 or marieke_gaudet@oxy.com. Reservations must be made prior to Tuesday before the meeting.

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Northern California Geological Society

www.ncgeolsoc.org

9 Bramblewood Court
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Barbara.Matz@shawgrp.com

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.nwenergyassociation.org

P. O. Box 6679

Portland, OR 97228-6679

Contact:

Jim Jackson or John Armentrout



Breakfast meetings are held monthly September through May, usually on the second Friday of the month, at the Multnomah Athletic Club (1849 SW. Salmon Street) in Portland. Meeting time is at 7:30 - 9:00 am. The cost is \$18. For information or reservations, contact Jim Jackson.

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Program Chair	Jim Jackson	503.771.3887 jackson.js@comcast.net

Sacramento Petroleum Association

P. O. Box 571

Sacramento, CA 95812-0571

Contact: David Hartley

530.304.4277



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

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Bakersfield, CA 93302

Contact: Laura Bazeley

lbazeley@wziinc.com



We have dinner meetings on the second Tuesday of the month at the American Legion Hall at 2020 "H Street" in Bakersfield. There is an icebreaker at 6:00 pm, dinner at 7:00 pm, and a talk at 8:00 pm. Dinner is \$25.00 for members with reservations and \$30.00 for nonmembers and members without reservations, and the talks are free.

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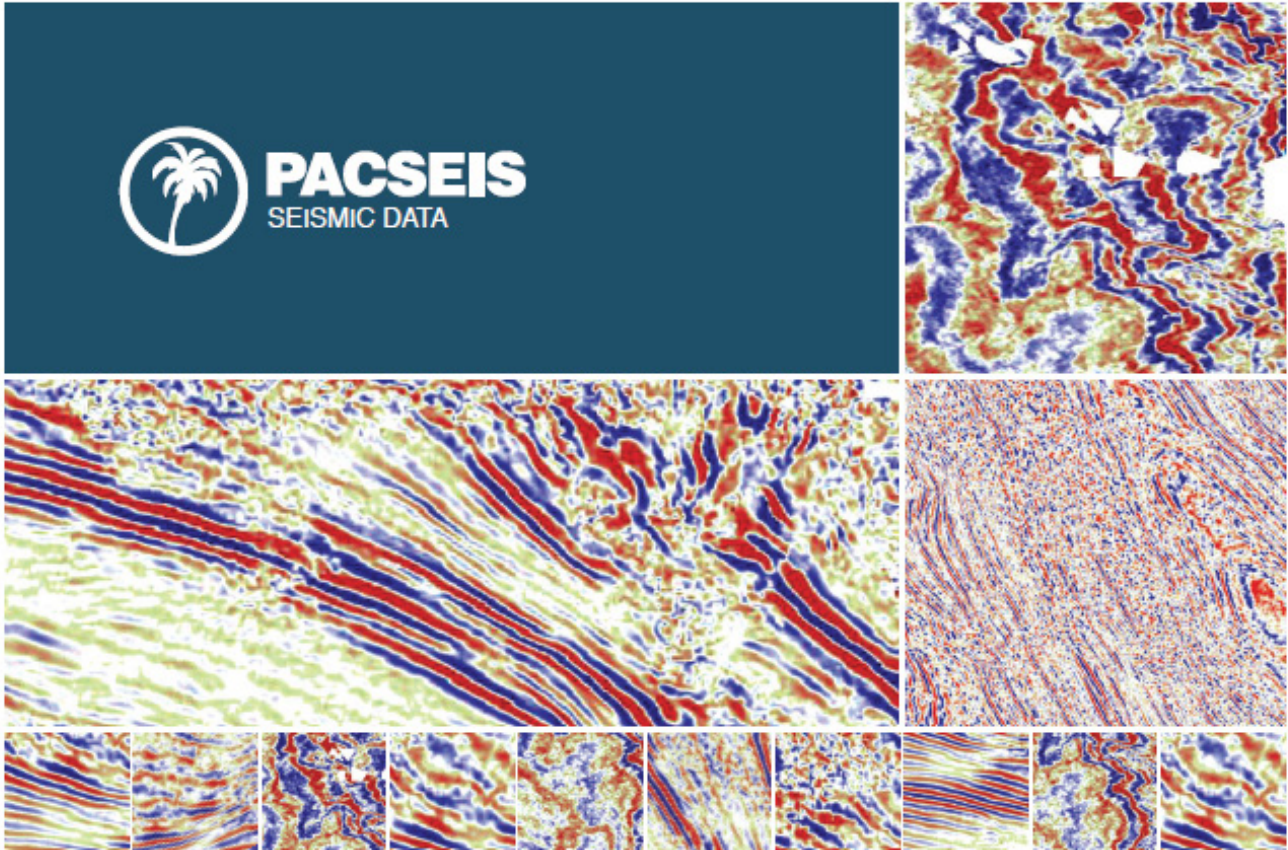
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