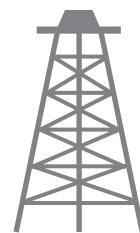




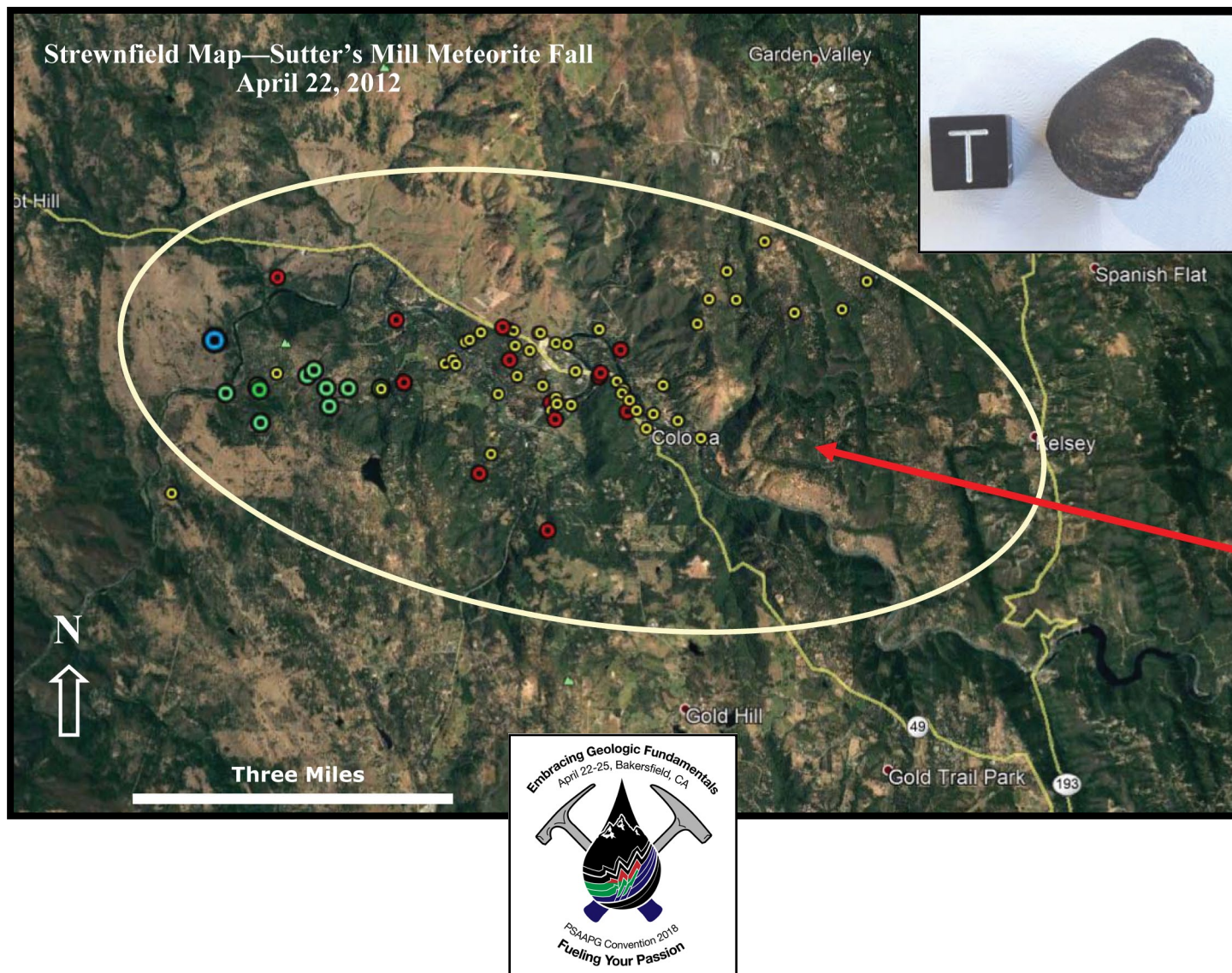
Pacific Petroleum Geology



NEWSLETTER

Pacific Section • American Association of Petroleum Geologists

January & February 2018



2018 PSAAPG-PSSEPM-PCSSEG Annual Meeting
Marriott Hotel, Bakersfield, CA
April 22-25, 2018

www.psaapg.org

THANK-YOU

California Resources Corporation.

For your continued support of local students.
Your sponsorship funded many student dinners
at SJGS scientific talks in 2017-2018.



PAYZONE INC.

Geological, Geophysical, and Petrophysical Consulting Services for the Petroleum Industry 661-387-1715

- Accurate, consistent fieldwide reservoir properties for modeling, OIP, and improved heat management in thermal projects
- Old E-Log interpretation

- Image log interpretation and integration with petrophysical analysis
- 2D/3D seismic interpretation, expertise in old 2D data
- "Mystery logs" and other difficult log problems

Our petrophysical models for siliceous shales and California sands are based on over 30 years of experience with these rocks, including core, log, and lithology data from every basin in the state

Deborah Olson, President
dmolson@payzoneinc.com
661-747-0375

Have a log question? Give us a call!

www.payzoneinc.com

Tom Howard, Image Analyst
tomh@payzoneinc.com
832-407-2862

ROCK SOLID EXPERIENCE



Core Lab
RESERVOIR OPTIMIZATION

www.corelab.com
661-325-5657

© 2013 Core Laboratories.
All rights reserved.

2017-2018 Officers

President Mike Nelson
805-535-2058
mnelson@dcorllc.com
president@psaapg.org

President-Elect Richard Behl
562-985-5850
Richard.Behl@csulb.edu
president-elect@psaapg.org

Vice President Mike Clark
661-378-8134
rocksniffer@aol.com
vicepresident@psaapg.org

Secretary Timothy Gross
562-624-3581
Timothy.Gross@crc.com
secretary@psaapg.org

Treasurer 2017-2018 Simmie Chehal
661- 665-5738
SKChehal@aeraenergy.com
treasurer@psaapg.org

Treasurer Elect 2017-2018 Lisa A. Alpert
661- 665-5557
laalpert@aeraenergy.com
treasurer@psaapg.org

Past President Robert Horton
661-599-7380
rhorton@csulb.edu

Editor-in-Chief 2017-2018 Vaughn G. Thompson
661-633-4748
vaughn.thompson@crc.com
editor@psaapg.org

Staff

Web Master Taylor Carrasco
562-624-3259
Taylor.Carrasco@crc.com

Membership Chair Greg Thompson
661-364-3052
greg.thompsn@gmail.com

Publications Chair Larry Knauer
661-205-4463
laknauer@aol.com

Advisory Council Representative Tony Reid
2015-2018 661-412-5467
Tony.Reid@crc.com

5	President's Message •	<i>Mike Nelson</i>
6	In Memoriam •	<i>Donald R. Lindsay</i>
8-12	Member Article •	<i>Frank Cressy</i>
15-17	Convention •	
18-19	Member News •	<i>Thomas Davis</i>
21-24	Member Society News •	

COVER PHOTO: Strewnfield map of the Sutter's Mill meteorite fall of April 22, 2012. Map shows the locations of recovered meteorites and their size distribution plotted on a Google Earth satellite map. Red arrow indicates the direction of the fireball; colored circles show size range of meteorites. Yellow circles are masses that weigh less than 10 grams; red circles are masses from 10 to 20 grams; green circles are masses from 20 to 50 grams; and the blue circle is the 205 gram main mass. Note the normal, increasing size distribution trending from east to west. Inset photo is a 6 gram individual from the fall. The lighter brown color is a result of an encounter with an oak tree upon landing. Scale cube measures one centimeter.

- 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.

Advertising Rates

<i>Members</i>	<i>Single Issue</i>	<i>Year (6 issues)</i>
<i>Full Page</i>	\$200.00	\$800.00
<i>Half Page</i>	\$125.00	\$525.00
<i>Quarter Page</i>	\$75.00	\$325.00
<i>Business Card</i>		\$125.00

2018 Advertisements reduced price by 50%
due to drastic drop in oil prices

Societies Free Advertising:

Convention: Unlimited Space in PSAAPG Newsletter
Societies: 1/4 Page in AAPG Explorer

2018 PSAAPG-PSSEPM-PCSSEG Annual Meeting
Marriott Hotel, Bakersfield, CA



EMBRACING GEOLOGIC FUNDAMENTALS- FUELING YOUR PASSION

CALL FOR PAPERS

General Themes:

- ✓ California Geological Breakthroughs: Past, Present, and Future
- ✓ Pacific Exploration: Mature Basins and Prolific Reservoirs
- ✓ Sedimentology and Stratigraphy: From Lacustrine to Deep-water Reservoirs
- ✓ Structure and Tectonics: Micro-fractures to Plate Boundary Faults
- ✓ Petrophysics and Geophysics: From Borehole to Basin
- ✓ Geology and Data: Leveraging old data, new data, smart data, and big data
- ✓ Geologic Insights Learned from Regulatory Project Collaborations
- ✓ Sacramento Basin Exploration and Development

Additional Themes will be considered based on submissions!

(250-word abstract limit)

SUBMISSION DEADLINE:

February 1, 2018

For additional information contact:

Plamen Ganev

PSAAPG Technical Program Chair

(661) 665-5459

pnganev@aeraenergy.com

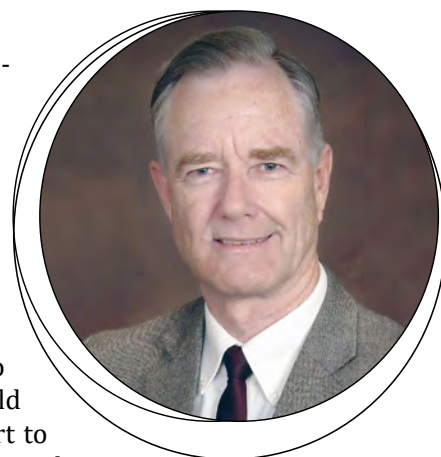
www.psaapg2018.org

Dear Pacific Section AAPG Members,

The Call for Papers for the 2018 PSAAPG Convention has been announced and it is time to put together an abstract for a presentation at the meeting. The theme is "Embracing Geologic Fundamentals – Fueling Your Passion" and the paper categories are quite varied. Think about a category of interest to you and how your knowledge of the subject area could be condensed into a 20-minute presentation. If you have questions contact the Technical Program Chair Plamen Ganey (pnganey@aeraenergy.com). The deadline for abstract submissions is March 1 and there is a 250-word limit. Putting a Pacific Section Convention together is a big effort and I thank Becca Schempp (Becca.Schempp@crc.com) for accepting the job of 2018 Convention Chair. She has assembled a team of volunteers who will chair and implement the various components of convention activity. Mark your calendars with the April 22-25 dates for the upcoming convention in Bakersfield. Plan to attend so you can get an update on the latest work and activity in petroleum geology on the West Coast and in Alaska. There is no better opportunity to see current research in the geosciences and hear about recent advances in petroleum exploration and development.

The California oil industry produces 34% of the oil that California uses during the year, amounting to 560,000 barrels of oil per day¹. California uses 1.65 million barrels of oil per day with most of it being used in the transportation sector for gasoline, diesel, and aviation fuel. So where does the remaining 1.09 million barrels of oil that California uses every day come from? Almost all of it is imported by oil tanker into Los Angeles and San Francisco area harbors. There are no oil pipelines that bring oil into the state. A very small amount comes in by rail car – about 16,000 BOPD. So almost all of the imported oil California needs every day comes to us by oil tanker ships - about 400 million barrels a year! That amounts to about 730 tanker trips per year if 600,000-barrel capacity tankers are used, which is the average size. So where is the greatest risk of oil spill, supply disruption, CO2 emissions, and environmental damage – is it oil imported by tanker from foreign suppliers, or in oil produced in California? It is clearly the first. A relatively small amount – 190,000 BOPD - comes from Alaska (11%); the rest is foreign supply at 900 thousand BOPD (55% of total CA consumption). Of that 900 thousand BOPD of foreign oil, half comes from the Middle East – Saudi Arabia, Kuwait, Iraq, and Oman.

Another 40% is imported from South America – Ecuador, Columbia, and Brazil. All of these places have much less stringent environmental regulations than California producers are required to meet. California should be making every effort to reduce foreign imports and increase California production so that the oil that we consume meets California environmental standards for oil production. It is environmentally irresponsible to replace California oil with imported oil that we know is produced under lax regulation. Let's let California oil producers supply more of the oil that Californians use every day to go to work and transport goods across the state. It means more jobs, a stronger economy, greater security, and a safer supply of energy for our state.



On January 4, the U.S. Department of Interior issued a draft lease sale schedule that includes the Pacific Outer Continental Shelf (OCS) of California, Oregon, and Washington. The OCS areas of southern, central, and northern California OCS are listed on the schedule for sales between 2020 and 2022. This is a reminder of the large amounts of estimated recoverable oil in the Pacific OCS in studies done by the Bureau of Ocean Energy Management (BOEM; formerly the MMS). BOEM has estimated that the California OCS holds 10 billion barrels of recoverable oil with half of that in the southern California OCS area. This area has already produced 1.3 billion barrels of oil so there is nearly as much recoverable oil left as has already been produced!

Have a great 2018!

Mike Nelson

PSAAPG President, 2017-2018

¹ http://www.energy.ca.gov/almanac/petroleum_data/statistics/crude_oil_receipts.html

Donald Ransom Lindsay

February 7, 1925 - November 19, 2017

Donald Lindsay passed away peacefully in Pacific Grove, the town he called his "little slice of Paradise." He had a long, full, and happy life and loved his family above everything else. Don was one-of-a-kind. He could discuss geology and evolution in depth - but he could also be found conducting a symphony or at Count Dracula Society meetings wearing his cape and vampire fangs.

Don's earliest memories are of his mother playing piano for silent movies in a theater in his birthplace of Oakland, California. This instilled in him a lifelong love of music and the movies. He took lessons from his gifted mother, and continued to play piano throughout his life.

Don joined the Navy during WWII and they sent him to Caltech to study mechanical engineering. He always said that was the luckiest break of his life, as his roommate, Art Wilbur, set Don up on a blind date with his sister, Paula, who became his beloved wife for 69 years. Don finished his B.S. at Stanford University where he discovered a love of geology. The G.I. Bill allowed him to return to school at UCLA for his M.S. degree in geology, and that led to his long career as a petroleum geologist with Shell Oil, and as an expert in geothermal energy with Occidental. Science was his specialty, but following his formal education, his desire to expand his own liberal education led him to purchase and read the Great Books.

Don's two great loves besides his family were classic films and music. He taught seminars on classic film and film music to senior groups in Bakersfield and in Monterey, and he frequently snuck movie quotes into his daily conversation. He served on the Board of Directors of the Bakersfield Symphony Orchestra for 18 years, including several years as Board President. Don and Paula moved to Pacific Grove in 2005. They immediately became active with the Monterey Symphony, and he served on its Board of Directors from 2006 through early in 2017. He has four times enjoyed the thrilling experience of conducting both the Bakersfield Symphony and the Monterey Symphony as a guest conductor.

Don leaves behind a loving family who will greatly miss their Dad and "Boompa": three children, Joan and husband Rob Kerr, Barbara and husband Bill Selig, and Robert and wife Chris Lindsay; seven grandchildren, Brian and wife Deena Letlow, Libby Letlow, Sarah and husband Sam Cummings, Rachel Lindsay, Grayson and wife Pao Peters, Tasha and husband Matt Pittser, and Michelle DeMand; and seven great-grandchildren, Ruby Thompson, Lucas Letlow, Jack and Ava Pittser, and Mikey, Ellie, and Aria Rose DeMand. Don's death leaves a great void in our family.

Published in Bakersfield Californian on Nov. 28, 2017



Don's two great loves besides his family were classic films and music.

Marty Hall
Program Development Manager
Multi-Client Services

7765 Windwood Way
P.O. Box 549
Parker, CO 80134
USA

P: 720 851.6152
C: 303 885.8860

Geokinetics™

geokinetics.com

marty.hall@geokinetics.com

Geolog

GEOLOGICAL LOGGING INC.
9229 Beatty Drive, Suite B
Sacramento, CA 95826
(916) 452-9570 Tel
(408) 307-4653 Cell
(916) 452-9573 Fax
david@geologinc.net

DAVID BURROUGHS
President

www.geologinc.net

2018 PSAAPG NEWSLETTER has gone DIGITAL!

In a continual effort to reduce overhead and provide meaningful programs to our membership and the community, PSAAPG have decided to go DIGITAL. For those members still wanting hard copies of the newsletter, please email greg.thompsn@gmail.com or write to us at Pacific Section AAPG, P.O. Box 1072, Bakersfield, CA, 93302.

PSAAPG Membership Directory

The PSAAPG website will have a members-only password-protected membership directory available on March 1, 2018. Please email greg.thompsn@gmail.com if you do not want your name listed. There will also be a checkbox for this on the PSAAPG membership renewal form that goes out before the end of this year.

MUNGER MAP BOOKS

The CA Well Sample Repository is seeking donations of MUNGER MAP BOOKS. The collection is incomplete, so any donations would be kindly appreciated!!! Please contact Larry Knauer at laknauer@aol.com



RESERVOIR CHARACTERIZATION
GEOLOGY
PETROPHYSICS
DATABASE MANAGEMENT
DIGITIZING & SCANNING

EarthQuest Technical Services, LLC

David R. Walter

drwalter@eqtservices.com
www.eqtservices.com

P.O. Box 1697
Bakersfield, CA 93302
661•321•3136

GREGORY GEOLOGICAL SERVICES

Glenn J. Gregory

Calif. Prof. Geol. #3676

8804 O'Meara Ct.
Bakersfield, CA 93311

(661) 747-5065

glenng@bak.rr.com



PETROLOG

PETROLOG, INC.

JOHN T. WILLIAMS
Geologist, P.G. #5899, President

Geological Well Logging

P.O. BOX 7028
VENTURA, CA 93006
jtw@petrolog-geological.com

(805) 642-2847 • Fax (805) 980-5569 • Cell (805) 231-3793

WITNESSED METEORITE FALLS OF THE PACIFIC SECTION

by Frank Cressy *

Part 1 – California

INTRODUCTION

Meteorites are rare, especially those that are seen to fall. These “witnessed falls” account for only nine of the nearly 300 meteorites officially recognized by the Meteoritical Society to have been recovered from California, Alaska, Hawaii, Oregon, and Washington. The other meteorites, commonly known as “finds” may have resided on Earth for tens, hundreds, or even thousands of years and cannot be tied to any known fireball.

Meteorites fall randomly on Earth, but their recoveries are a function of population density and geography. In general, the greater the population density in an area under a meteorite-dropping fireball, the greater the chance of the recovery of fallen meteorites. Geography and geology also influence recoveries. Only single meteorites from witnessed falls have been recovered from the states of Oregon and Washington, and only 12 meteorites total from both states. The forested lands of the western parts of the states and the highly rocky, volcanic terrains of the eastern parts of the states make looking for black rocks from space extremely difficult. Of the 10 meteorite “finds” from these states, it is no surprise that seven are iron meteorites that are significantly different from the country rocks as to be easily recognizable.

All nine of the witnessed falls in the Pacific Section are classified as stoney meteorites, the most common type, accounting for about 93% of all meteorites. The other major meteorite types are irons and stony irons, accounting for 5% and 2% respectively. Stony meteorites are subdivided into chondrites and achondrites. Chondrites, the most common type of stoney meteorite are composed of chondrules, or small, sand-size spherical grains of olivine and pyroxene together with grains of FeNi metal. Chondrules are the remains of melted grains created from the dust of the solar nebula during the birth of the Solar System. Achondrites are differentiated rocks where chondritic rocks were melted by radioactive heating during burial on large asteroids, moons, or planets, or by melting during large impact events. These rocks commonly have little or no metal and have igneous textures. The only achondrite that was witnessed to fall in the Pacific Section is the Washougal meteorite that fell in Washington in 1939. The remaining eight witnessed falls in the Pacific Section are ordinary chondrites which account for about 85% of all stoney meteorites.

CALIFORNIA

California currently has 281 recognized meteorites, but the majority of them are pebble-sized or smaller stones found in the last 20 years by intensive searches of dry lake beds in the Mojave Desert. Only five witnessed falls have been recovered in the Golden State (Figure 1). No doubt earlier meteors were observed and dropped stones, but none were ever recovered. The first recovery occurred at the coastal village of San Juan Capistrano in 1973, when a small single stone impacted an aluminum carport roof. Then, after a 34 year hiatus, the state was the target of four meteorite falls during an eight year period. In 2007, a small single stone was recovered near Red Canyon Lake in the Sierra back country after a large fireball traversed the skies over the northern part of the state. In 2012, northern California was the recipient of two falls. In April, the area around the historic gold discovery site at Sutter’s Mill was showered with numerous carbonaceous chondrites, and six months later, a fireball located north of San Francisco showered the town of Novato with several small stones. Lastly, in 2015, a small shower of chondrites fell in central California near the small rural community of Creston.

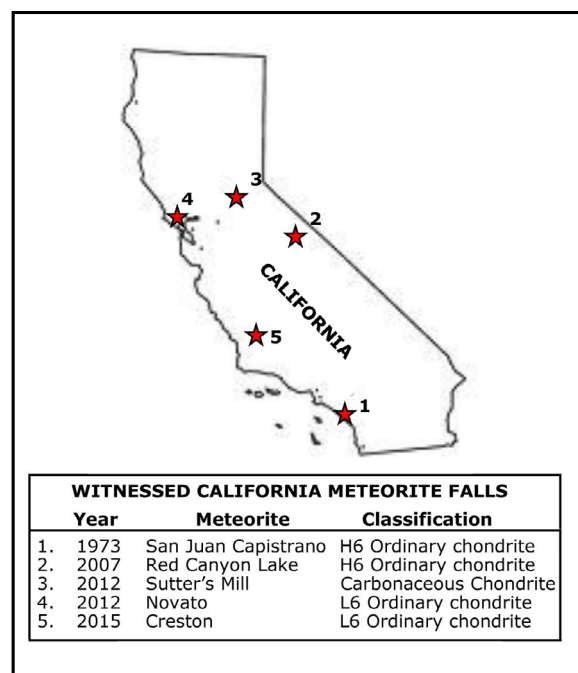


Figure 1: The five falls witnessed in CA, and described in this article.

(Continued on next page)

The recoveries of the last three falls, Sutter's Mill, Novato, and Creston, were aided by the use of Doppler Radar data which allowed the imaging of falling meteorites during dark flight and the rapid determination of the fall locations. Doppler radar was developed and implemented in the early 1990s as a tool for aircraft safety by detecting areas of severe weather. During the last decade, it also was found useful in meteorite recovery. By allowing the rapid detection of the fall site, recoveries have been made which otherwise may have been lost.

San Juan Capistrano – H6 Ordinary chondrite.

In the early morning hours of March 15, 1973, just prior to the arrival of the main flock of swallows to San Juan Capistrano, a small stone meteorite ended its journey. Asleep in his mobile home in the Villa San Juan Trailer Park, Mr. George Stinchcomb was awakened sometime after midnight by a sound like a shotgun blast. He looked outside and could find nothing amiss, so he returned to bed. The following morning he went next door to see if his neighbor, Jack Shurlock, had heard the noise. He found a small black rock in Shurlock's driveway and noticed a two-inch-diameter hole near the edge of the aluminum carport awning (Figure 2). The walnut-sized stone was complete except for a small broken area and weighed 50.5 grams. A few weeks later, Shurlock found the small, 5.5 gram missing fragment while he was cleaning the gutter along the carport. The small meteorite is classified as an H5 ordinary chondrite.



Figure 2: Jack Shurlock's aluminum carport roof at the Villa San Juan Trailer Park (now razed) that was struck by the San Juan Capistrano meteorite. Inset shows a close-up of the hole made by the stone; hole measured about 2" in diameter. The hole was located about 8" from the edge of the roof.

(Photos courtesy of Candice Kohl).

Red Canyon Lake – H6 Ordinary chondrite

Just after midnight on August 11, 2007, a large fireball exploded over the western slope of the Sierra Nevada north of Yosemite. The fireball, traveling in a southeasterly direction, was witnessed throughout northern and central California (Figure 3). Of the event, Lt. Dan Bressler of the Tuolumne County Sheriff's Department was quoted in the August 18, 2007 edition of the Sacramento Bee:

"We got reports from all ends of the county. It was either bright blue or bright green. It lit up Lake Melones so somebody could see every boat on the lake. The houses shook. Every deputy on patrol called in. 911 lines were briefly flooded, and throughout the 24 hours, dispatchers handled 200 more calls than usual."

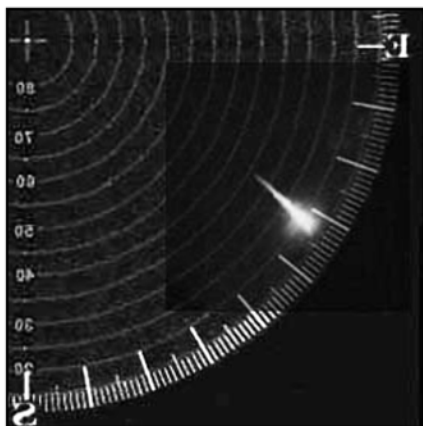


Figure 3: Sentinel All-sky camera photo taken at 0 hours, five minutes from Yuba City, California on August 11, 2007. The fireball is shown traveling in a southeast direction. (Image courtesy of Larry Stange).

Upon learning of the fireball, meteorite hunter Robert Ward acquired Allsky camera data of the fireball taken at Yuba City and immediately traveled to east central California looking for eyewitness accounts to narrow down and triangulate the probable fall location. He interviewed hundreds of witnesses over a week-long period, from Bishop in the eastern Sierra to the slopes of the western Sierra. Witnesses in the Pinecrest area *"described a terrifying noise, and several people were nearly knocked off their feet while inside their homes from the energy released during the [fireball's] break-up."* He also ran newspaper ads, and posted "meteorite wanted" flyers. He coordinated searches through a local hiking club and trekked nearly 13 miles into the rugged and remote Sierra back country north of Yosemite National Park to search the probable fall location, spending several days there without any luck.

Shortly thereafter, Ward was in southern Spain hunting for meteorites from another fall when he received an email from Mr. Ben Deutsch, a member of a local hiking club that Ward had visited. Deutsch had been in the Sierra back country during the same time Ward was also searching, ironically across a huge glacially-carved canyon from where Ward was hunting. The canyon separated

(Continued on next page)

Ward from a small, strange black rock that Deutsch found, resulting in his subsequent email. Ward waited for the attached image of the stone to download, and after one look, he had his “Eureka!” moment, immediately recognizing the rock as a fresh meteorite. Upon returning to the U.S., Ward contacted the hiker and made plans to visit the find area. They spent two weeks searching there for more stones, but none were found.

The initial small 18 gram meteorite is the only mass found. No doubt there are other meteorites that fell, but the remote location and rugged terrain of the fall area will make the recovery of additional stones of this H6 ordinary chondrite extremely difficult.

Sutter’s Mill – Ungrouped Carbonaceous chondrite

About 8:00 a.m. on Sunday morning, April 22, 2012, a blazing fireball entered the atmosphere at a tremendous velocity of 28.6 km/sec and exploded east of Sacramento. The entry speed was over twice that of typical falls from which meteorites have been recovered. After the aerial explosion, some residents reported hearing whistling noises while others smelled a “welding” odor. Based on the infrasound signal recorded at two stations, at least a 4 kiloton blast of kinetic energy had been released.

Within hours, images of Doppler radar anomalies were posted on the Internet showing a possible meteoritic debris “cloud” over Coloma and Lotus, located in the California Mother Lode. Meteorite hunter Robert Ward was the first to arrive on location, and within hours, he had found a small, black meteorite that he announced as a rare carbonaceous chondrite. Soon other meteorite hunters and fortune seekers flocked to the area, looking for relatively open areas among the thick, forested hills. Knee-high grass, poison oak, ticks, and rattlesnakes hampered the hunters, and much of the early searching centered on the sports fields and parks in Lotus and the John W. Marshall State Historical Park in Coloma, and then branched out to roads and trails criss-crossing the area. Professional meteorite hunters, scientists, residents, and others searched for the elusive black stones.

Dr. Peter Jenniskens, of NASA Ames Research Center and SETI, also quickly arrived on location and shortly found a fragmented but pristine individual. Jenniskens then spear-headed a scientific consortium to acquire more of this unique space material for study, gave public lectures, organized search parties, acquired specimens, and put together a database of recovery weights and locations. Samples acquired by the consortium and also provided by professional meteorite hunters were sent worldwide for study.

Sutter’s Mill meteorites are carbonaceous chondrites. Stones have a brecciated interior composed of angular to rounded clasts embedded in a comminuted, fine-grained matrix (Figure 4). The clasts show varying degrees of alteration; some are more clay-rich showing a greater amount of aqueous alteration whereas others show evidence of thermal alteration.

The heterogeneity of clasts and implanted solar wind-implanted gases indicate formation in the regolith or on the surface of an asteroid. The rapid recovery of the initial Sutter’s Mill meteorites allowed for the measurement of amino acids from nearly pristine material as well as the detection of highly moisture-reactive minerals that otherwise might have been lost. The mineral oldhamite (CaS) is one such mineral, found for the first time in these type meteorites.

During the four months immediately after the fall, 77 stones were recovered that collectively weighed 943 grams from a strewnfield that measured nearly 9 miles long by 4 miles wide. The meteorites have an average weight of 12.3 grams, but the average decreases to 9.7 grams if the largest stone of 205 grams is excluded. The fall area is heavily vegetated and no doubt the number of meteorites that actually fell are many times that of the recovered number.



Figure 4: Close-up of a 12.4 gram half individual of the Sutter’s Mill carbonaceous chondrite showing an interior composed of sparse, small whitish chondrules in a dark gray matrix. Stone measures 2.5 cm (~1 inch) across. (Courtesy of the Utas collection).

(Continued on next page)

Novato – L6 Ordinary chondrite

On Wednesday, October 17, 2012 at 7:45 p.m., a brilliant fireball was seen by thousands of northern Californians. The meteor streaked across the skies from the south-southwest to the north-northeast on a track that took it only 10 miles north of the Golden Gate. Explosions were heard throughout Marin County, north of the city of San Francisco. Various instruments, as well as cell phone cameras, also captured the event. It was photographed by a CAMS camera in San Mateo, imaged by Doppler radar, and its terminal explosion was recorded by an earthquake seismic array. Interpretation of the data indicated the fireball traveled to Earth at a shallow entry of about 20° leaving a potential strewnfield over 25 miles long across the Marin peninsula.

Dr. Peter Jenniskens, based in the Bay area, quickly gathered available data, began public outreach programs to alert local residents on what to look for. His goal was to acquire meteoritic material and data and to provide it to a research consortium. The first meteorite was recovered by Novato homeowner Lisa Webber, who had heard something strike the roof of her home at the time of the fireball. The following Saturday, upon learning that the meteor had passed over the Novato area and may have dropped stones, she searched her yard for the object she had heard. Her efforts were rewarded upon finding a 63 gram stone that was donated to the research consortium. Later, an investigation of her roof revealed a small, one-inch-diameter impact pit on an asphalt shingle.

Only six stones, ranging in size from 23.7 to 107 grams, were recovered from the fall. Other than the stone that impacted the house, all were found on streets or parking lots in the Novato area, although Doppler radar data suggests meteorites may have fallen along a 20-mile-long track. Many other meteorites may have fallen in green belts and in yards around the many homes under the meteor's path and may not easily be recovered. Others may have fallen on streets, but were lost to hungry street-sweeping equipment in this urbanized environment. Based on the distribution of the recovered stones, the strewnfield measures about 4 miles long by 2.5 miles wide.

Fusion crust on Novato stones is poorly reserved, and there was some initial question if the first two recovered stones were even meteorites due to the fact that thick black primary crust occurs in scattered patches surrounded by thin secondary crust or larger areas where any crust is absent. This surface texture may be a result of late meteoric break-up, or because the fusion crust adheres poorly to the rock due to its fractured nature and heterogeneous interior.

The Novato meteorite is classified as an L6 ordinary chondrite exhibiting a highly brecciated interior characterized by light and shock-darkened lithologies and numerous dark shock veins (Figure 5). Individual olivine and pyroxene grains exhibit common fracturing and plagioclase grains commonly are melted or transformed to maskelynite glass. Black shock veins contain finely disseminated troilite (FeS) and small vesicles are present in areas of melt.

Figure 5: 11.7 gram end slice of the Novato meteorite showing its brecciated interior. Black shock veining is prevalent as well as an area of black melt rock containing tiny vesicles. (Photo by the author).



Creston – L6 Ordinary chondrite

Between 10 and 11 p.m. on October 23, 2015, many hundreds of people were startled by celestial fireworks in the sky over central and southern California. Over 300 reports of a fireball were logged on the website of the American Meteor Society, and preliminary computations suggested a path over northern Los Angeles or Ventura County. However nothing was observed there on Doppler radar data that might suggest a meteorite fall. A closer look at the eyewitness reports indicated that two meteors were observed during this period and the reports had been averaged together, giving an incorrect, preliminary path.

(Continued on next page)

The correct fall area was quickly determined by two individuals. Rob Matson used an All-sky camera in Riverside that caught the fireball to determine its direction and time, and then used California's seismic earthquake array to locate the fireball's terminal explosion. Three seismic stations recorded the sonic boom and triangulation of them gave an approximate location near Paso Robles. He then found Doppler weather radar anomalies in the Creston area. Robert Ward used a more traditional approach and also realized two meteors had been observed. He focused on a couple of meteor reports from central California that stated:

"I saw a bright light flash across the sky similar to lightning, then heard loud booming for at least a minute off and on. I am located in Creston California."

Another report from the Creston area said:

"We heard what sounded like bombs dropping and then a long rumble followed. Sound went on for over a minute."

Ward immediately knew that any meteorites must be near this location and notified Mark Fries to look for radar signatures over Creston. Within minutes, his call was returned informing him that radar anomalies had been found, located a few miles northeast of the community. Ward arrived on location five days after the fall, and learned that another group led by Sonny Clary had arrived two days earlier. They had not found anything after two hard days of searching. Undeterred, Ward started driving the roads through his postulated search area. Amazingly, within 20 minutes, he found a broken meteorite on a road bank. It had hit a metal fence post and fragmented on impact. Ward and his wife spent the next half hour carefully picking up a myriad of broken fragments from a 410 gram stony meteorite (Figure 6). The Clary group was soon rewarded for their perseverance, finding three stones (72.6, 82, and 102 grams) during their 8 day, 230 man-hour search.

Creston is a small meteorite fall with a strewnfield measuring about six miles long by two miles wide based on Doppler radar analysis. Radars imaged six returns from the falling debris from 16.2 km (51,300 feet) to 1.2 km (3800 feet) above sea level. However, only six stones totaling 906 grams have been recovered despite relatively open hunting ground. Limited access to large areas of the strewnfield by private property owners contributed to the low recovery of meteorites. During the first month after the fall, over two dozen meteorite hunters plus property owners have searched for meteorites with little success.

Creston is classified as an L6 ordinary chondrite with a light gray interior. Coarse grained chondrules and the matrix are highly crystallized and thin black shock veins are common. The shock veins, generally less than one millimeter wide, exhibit slickensides where broken along these surfaces.



Figure 6: Reassembled mass of the ~410 gram Creston meteorite that was found by Robert and Anne Marie Ward. Note the ash-gray interior covered by a thin black fusion crust. (Photo courtesy of Robert Ward).

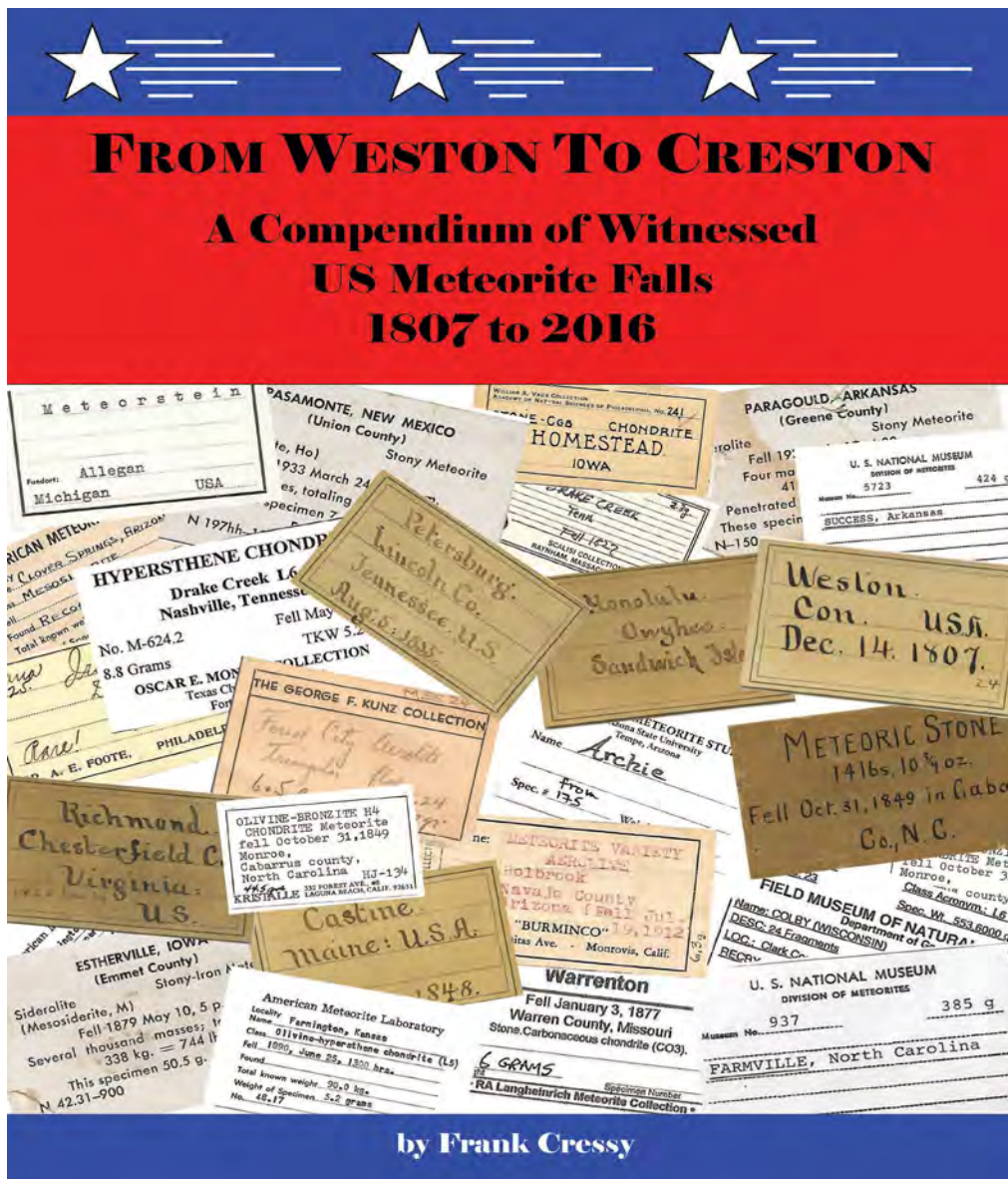
New Publication

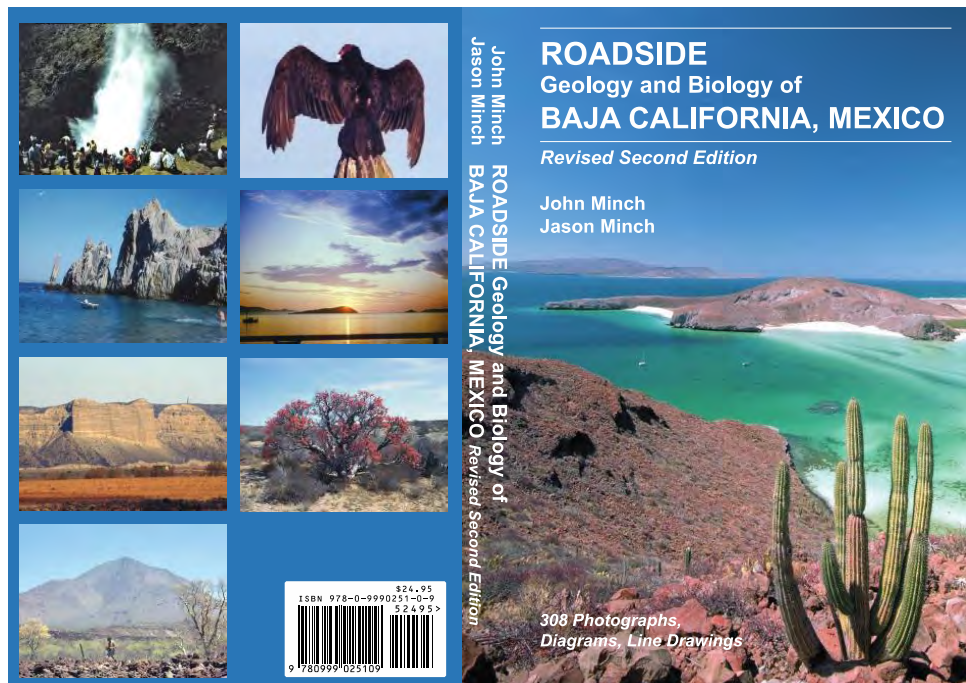
"FROM WESTON TO CRESTON – A Compendium of Witnessed US Meteorite Falls – 1807 to 2016"

by Frank Cressy

The violent display of blazing light and explosive sounds ending with meteorites crashing to the ground is an unforgettable event to those who witness it firsthand. This book summarizes the fall histories of nearly 170 witnessed meteorite falls that have occurred in the United States since the first documented fall at Weston, Connecticut in 1807. It is written not only for the collector of these rare objects, but also for those interested in the history and the growth of the branch of science known as Meteoritics. The accounts of the fall phenomena and recoveries associated with these extraordinary events are the focus of the book. However, the book is more. The reader will learn about those individuals responsible for the growth of the science and their contributions, together with interesting facts and coincidences about these visitors from space; 257 pages with over 300 color photos plus maps, figures and illustrations.

Soft Cover books \$36.00; for ordering, contact: fcressy@prodigy.net





Roadside Geology and Biology of Baja California

John Minch and Jason Minch

Second Edition, completely updated and revised - Over 300 color photos, sketches, and drawings, 6x9, full color, 288 pages, Includes Rock charts, Geologic time scale, References, Glossary, Index

Introductory Meeting Sale Price
\$20 cash

or check made out to "John Minch Publishing"

To order additional copies remit \$25+\$2 CA tax+\$3 shipping to:
John Minch Publishing, 27441 Betanzos. Mission Viejo CA 92692
jmainc@earthlink.net

HOME MOVIES TO DVD,
PHOTO GIFTS, RESTORATIONS
& MORE

digital creations

1705 20th St.
(661) 322-5552
digitalcr1@gmail.com

 like us on facebook
digitalcreations.bakersfield

Retirement Planning
College Savings Plans
Financial Planning

Morgan Stanley

The Hopps Group Lydia Hopps & Benjamin Hopps CFP®

Investment Management Consultant
Senior Vice President
Financial Advisor
300 Esplanade Dr., 10th Floor
Oxnard, CA 93036
1 805 278-3609

www.morganstanleyfa.com/thehoppsgroup/

© 2014 Morgan Stanley Smith Barney LLC. Member SIPC.
CRC897562 03/14

TECHNICAL SESSIONS (Oral and Poster).

PACIFIC EXPLORATION: MATURE BASINS AND PROLIFIC RESERVOIRS (PS-SEPM-SPONSORED)

California's complex structural history and variety of depositional environments have provided a playground for exploration over the past 100+ years. Despite the maturity of the area, "discovery thinking" has resulted in breakthroughs that have led to the discovery of new fields and exploitable step-outs that have extended the life of the basins. This session will present exploration efforts, discoveries and techniques used in successful "exploration thinking" in mature areas.

SEDIMENTOLOGY AND STRATIGRAPHY: FROM LACUSTRINE TO DEEP-WATER RESERVOIRS

California has beautiful exposures of clastic reservoirs with sediments and stratigraphy that are unique to our region. Presentations will include examples of the stratigraphic framework and the depositional interrelationships ranging from deepwater marine to shallow marine to non-marine alluvial, fluvial and lacustrine environments. Data gathered from outcrops, cores, and logging interpretation are used to explore the varied depositional history of the western margin.

STRUCTURE AND TECTONICS: MICRO-FRACTURES TO PLATE BOUNDARY FAULTS

The Pacific margin has an amazingly complex tectonic history of overprinted extension, compression and strike-slip systems that shape the oil fields. This session describes the structures of all scales – regional tectonics to borehole micro-fracture mechanics – that shape the producibility and trapping mechanisms of the reservoirs. Presentations will include the faults and folds that set up fields and the ways that we study them to regional cross-section interpretations and the syn-tectonic relationships that develop from deformation.

PETROPHYSICS AND GEOPHYSICS: FROM BOREHOLE TO BASIN

Session topics will range from borehole petrophysical calculations to basin-wide geophysical interpretations, including new logging tools and interpretation, rock fracture mechanics, and FMI interpretation to geophysical acquisition, processing or interpretation.

GEOLOGY AND DATA: LEVERAGING OLD DATA, NEW DATA, SMART DATA, AND BIG DATA

There is a wealth of data available in many mature basins and new concepts to explore using this data. In this session, share your insights in making the most of historic data, or introduce the new logging techniques, new types of modeling or uses of neural networking applied to your field. This session is for leveraging any type of data to solve a problem in California reservoirs.

SACRAMENTO BASIN EXPLORATION AND DEVELOPMENT

The Sacramento basin is a huge area for regional exploration and development, from deep gas to shallow heavy oil fields. This session includes new frontiers in exploration and continued work on developed fields.

GEOLOGIC APPLICATIONS IN A CHANGING REGULATORY ENVIRONMENT

The field-wide geologic evaluations associated with aquifer exemptions that have combined geology, engineering data and water quality data and have resulted in new geologic insights. This session will present those new geologic perspectives gained from the preparation of aquifer exemptions, UIC applications and sump closures and other regulatory requirements associated with oil and gas extraction and injection.

OIL AND THE ENVIRONMENT: ENVIRONMENTAL AND REGULATORY TOPICS ASSOCIATED WITH OIL AND GAS PRODUCTION (DEG-SPONSORED)

This session will provide updates on State and Federal regulations associated with underground sources of drinking water and protection of drinking water sources, including aquifer exemptions and the discharge of produced fluids to unlined surface impoundments. In addition to regulatory updates, the session will include groundwater investigations and case histories of aquifer exemptions, sump cleanups and refinement of the Underground Source of Drinking Water boundary.

(Continued on next page)

FIELD TRIPS

THE MONTEREY FORMATION OF THE PISMO BASIN

Leader: Heather Stang, Rick Behl, and Jon Schwalbach

Time and Date: 7:00am - 5:00pm, April 21 - 22, 2018

Cost: TBA

Summary: The Pismo Basin provides world-class coastal exposures of the Monterey Formation. This two-day, one-night trip will visit outcrops along the coast in the Shell Beach and Montana de Oro areas and will focus on stratigraphy, sedimentology and structural deformation of this important source rock and hydrocarbon reservoir. Discussions will emphasize:

- Basin setting, evolution and hydrocarbon system
- Sedimentologic observations and facies associations that reveal clues to depositional environment
- The expression of key stratigraphic surfaces that are critical for subsurface mapping
- Fracture distribution and the role of mechanical stratigraphy and structure

Reservoir character and analogs for numerous producing fields

STRATIGRAPHY AND DEPOSITIONAL ENVIRONMENTS OF THE TULARE FORMATION, ELK HILLS AND BUENA VISTA HILLS

Leader: Tony Reid, Jonathan Goodell, and Eric Greenwood, California Resources Corporation

Time and Date: TBA

Cost: TBA

Summary: Pleistocene uplift of large anticline structures and subsequent erosion has exposed over 100 square miles of the Tulare in outcrops in Buena Vista Hills and Elk Hills. The Tulare section uncovered in the hills represents a depositional fairway located between alluvial fans derived from the growing Temblor Range, located to the southwest and west, and the Kern River delta to the east. Sediments in the fairway have characteristics of the neighboring depositional system, as well as unique facies including at least two major phases of basin floor lake sedimentation. This field trip will view outcrops of the Tulare as seen in road cuts and well pads across Buena Vista and Elk Hills and allow observation of a more distal Tulare facies, including fan delta, braided fluvial, and lacustrine deposits. Additionally, structural features, including normal faults and localized detachment anticlines, will be examined and discussed in reference to the tectonic development of the area.

STRUCTURE OF THE NORTHWESTERN TRANSVERSE RANGES AND SOUTHEASTERN COAST RANGES, CA

Leader: Thom Davis, Geologic Maps Foundation, Inc.

Time and Date: 7:00am - 6:00pm, April 21, 2018

Cost: TBA

Summary: This trip will make an east to west traverse from the San Andreas fault near Frazier Park, through Lockwood Valley, the Cuyama Badlands and Valley, to the southernmost Coast Ranges near Stanley Mountain. Focus will be on the map-scale faults and folds, synorogenic deposits, tectonic history, and oil fields and petroleum system of the Cuyama basin. Stops will view and discuss the San Andreas and Big Pine faults, the San Guillermo and Ozena faults, the Morales thrust system, the South Cuyama fault, the South Cuyama and Russell Ranch oil fields, fold and thrust structure of the Caliente Range, Oligocene to early Miocene age half-grabens with Simmler Formation growth strata, and the Rinconada fault and its crystalline-basement boundary. Regional cross section interpretations of the major convergent structures will be shown and discussed. Exceptional outcrops of Oligocene to Quaternary synorogenic deposits will be visited and their significance to the tectonic history reviewed.

(Continued on next page)

GEOLOGY AND WINE: TERROIR OF THE PASO ROBLES AREA

Leader: Tim Cleath, PG CEG CHG, President of Cleath-Harris Geologists; Neil Currie, Project Geologist, Cleath-Harris Geologists

Time and Date: April 25, 2018

Cost: TBA

Summary: The Paso Robles area has become known as a world-class wine grape growing region of California. The Paso Robles American Viticulture Area has a distinctive terroir (the geology, soils, landform, climate, water resources that effect the growing of grapes and the quality of wine) that we will see and learn about during this field trip. At our first stops at Parkfield and Cholame, we will learn about how the tectonics at the Pacific/North American plate boundary formed the boundaries of this area. Our third stop at Franklin pond near Paso Robles will focus on the geothermal resources. Our fourth stop, at Niner Winery, will feature information on the soils and water resources of the Monterey Formation and the high quality wines of the Templeton/Adelaida region between the Rinconada and Nacimiento faults. Our fifth stop in Atascadero will be along the Salinas River where Santa Margarita Formation fossil beds can be sampled and geotechnical issues related to pipeline and bridge crossings will be discussed. The sixth stop will be at a well-loved wildflower and fossil locality on the Avenal Ranch at Shell Creek and Highway 58.

SHORT COURSES**INTRODUCTION TO BASIN AND PETROLEUM SYSTEM MODELING**

Leader: Allegra Hosford Scheirer, Consulting Faculty, Stanford University

Time and Date: 8:00am - 5:00pm, April 25 - 26, 2018

Cost: TBA

Summary: Course attendees will learn both the theory and practice of basin and petroleum system modeling. All lectures are accompanied with suggestions of both key readings and foundational texts. Outcrop photos and seismic expressions illustrate key concepts; case studies are essential to apply theory to practice; and effects of basin dynamics and sedimentation on petroleum systems weave through all modules. Class discussion is encouraged!

The course starts with a section on the petroleum system concept and the role that basin modeling plays in investigating it. It proceeds with discussions of boundary conditions, geohistory analysis, interpretation of organic geochemistry for basin modeling, petroleum migration, output analysis, and model calibration. Theoretical concepts will be illustrated with examples from real sedimentary basins.

DEEP-WATER CLASTIC RESERVOIRS

Leader: Jon Rotzien, President, Basin Dynamics LLC

Time and Date: 8:00am - 5:00pm, April 21 - 22, 2018

Cost: TBA

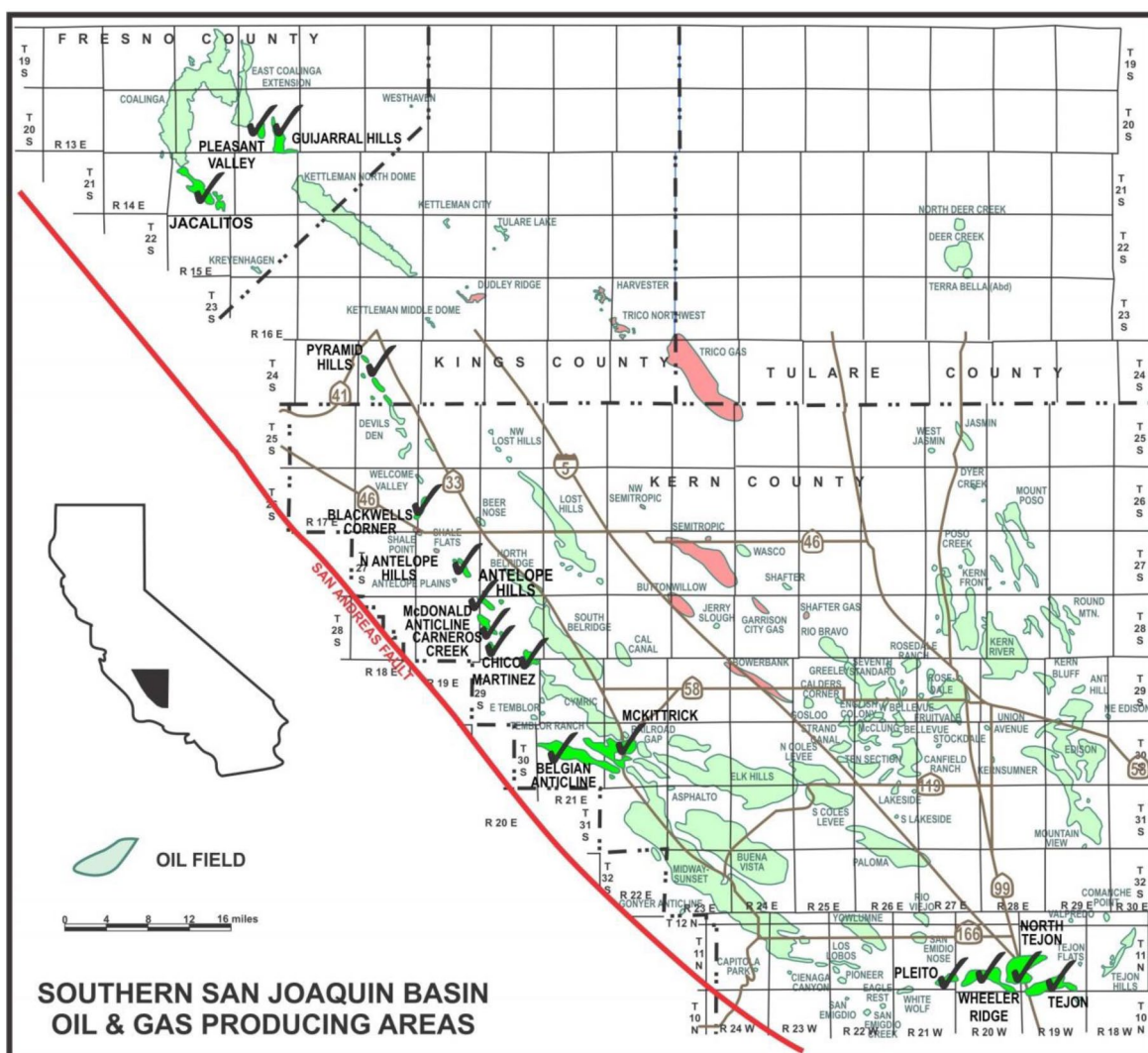
Summary: This two-day seminar is designed to provide professionals with a modern awareness of the full spectrum of clastic deep-water petroleum reservoirs, their mechanisms of transport and deposition, their stratigraphic stacking patterns, their predictive characteristics, and their 3D heterogeneity. This collaborative course examines reservoirs from feeder systems that link the shelf to submarine canyon and transport sediment downslope to submarine fan and distal basin plain environments, using extensive outcrop, core, and seismic examples from various passive and active margins – including several examples from petroleum basins in western California.

This course is designed to give industry professionals an appreciation of deep-water sedimentary transport processes that control depositional products, as well as knowledgeable insight into the scale and architecture of the wide range of deep-water reservoirs. This course draws from materials presented in Basin Dynamics, LLC field trips to major deep-water sedimentary outcrops and petroleum basins worldwide, including California, France, New Zealand, Gulf of Mexico, and Ireland.

ASSESSMENTS OF SMALL-TO MEDIUM-SIZE OIL FIELDS OF THE SAN JOAQUIN BASIN, KERN, KINGS, AND FRESNO COUNTIES, CALIFORNIA

The San Joaquin basin still holds significant oil potential and opportunities for small- to medium-size exploration and production companies according to geologist Thomas L. Davis (www.thomasldavisgeologist.com). This belief is founded on 35 years of experience in the basin and the geologic complexity of the basin and oil fields that yield a wide range of traps and reservoirs, the great volumes of oil-in-place, the success of enhanced oil recovery (EOR) over the last half a century, and the enormous oil and gas data base. Plus, local government and residents are supportive of the oil industry which can make a significant difference when dealing with regulatory agencies and responding to environmental concerns in California.* At present, exploration activity is low but interest in purchasing, investing-in, or farming-into producing properties is growing from companies-especially those not presently operating in the basin.

Since the 2014 decline in oil prices, Davis's company has been assessing the oil potential of small- to medium-size oil fields in the basin and betting that interest in producing properties will increase. While the geologic complexity and richness of the basin offer numerous untested or under-exploited opportunities, this complexity and the enormity of the data base are challenges to newcomers. Geologist Geoff Gallant, who has worked at Davis' company for over 20 years, convinced Davis that updated assessments of the oil fields were needed. Such assessments would asset managers and



(Continued on next page)

acquisition specialists evaluating onshore California plus showcase the basin's potential that is now poorly appreciated by much of the oil and gas industry. Davis' company has now completed assessments of 19 oil fields (or major areas of fields) that provide an overview of the geology, reservoir(s), trap(s), and remaining oil potential. These assessments have:

- A base map showing field location, with wells highlighted by producing pool, pool extents and acreage.
- A representative cross section showing simplified geologic structure, productive horizons, and trap(s).
- An oil field location map showing the regional setting and location relative to other

producing fields of the San Joaquin basin.

- Decline curves showing production during the last 40 years (or earlier if the field has been idle recently).

- A type log showing geologic markers with producing zones high-lighted.

- A review of the location, geologic conditions, production to date, production methods, and any enhanced oil recovery techniques used to date.

- Technical data for the producing horizons such as porosity, permeability, and simplified calculations of original-oil-in-place (OOIP), plus recovery percentage to date.

- An assessment of remaining potential of the producing areas, analysis of potential EOR techniques that have been used as well as potential methods that can be brought to bear on the property. Any exploration potential within the field or its adjacent areas are highlighted.

**Davis believes that CA oil production is an environmental and public benefit given the State's considerable oil consumption and the risks associated with oil importation and other energy sources.*

A free sample of the North Antelope oil field is available at: <http://thomasldavisgeologist.com/dataforsale.html>. The North Antelope oil field is an excellent example of an overlooked and under developed producing property that has responded very well to modern oil recovery techniques such as horizontal drilling and steam stimulation. In addition to North Antelope, the other 18 assessments are Antelope Hills, Blackwell's Corner, Carneros Creek, Chico-Martinez, Guajarral Hills, Jacalitos, McDonald anticline, North Tejon, Pleasant Valley, Pyramid Hills (Westslope Area), Wheeler Ridge (Windgap Area), Tejon (Western Area), Tejon (Central Area), Tejon (Eastern Area), Belgian anticline (Northwest Area), Belgian anticline (Main Area), Pleito Creek, and Northeast McKittrick.

The assessments are in Microsoft Powerpoint™ and Adobe Acrobat™ formats and have sufficient detail and resolution to be used on a conference room projector, or they can be printed on a plotter as 3 foot by 5 foot sheets for a hardcopy display in meetings and expos.

Thomas Davis.



California Well Sample Repository

Our 60+ Volunteers



Our Volunteers curate material from Superior Oil Company's collection from the early 1930's.



Step 1



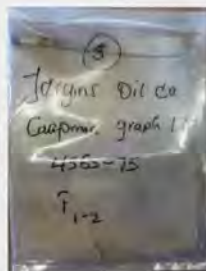
Wooden Crates with Samples

Step 2



Samples in Paper Bags from 1920's

Step 3



Samples Transferred into Plastic Bags

Step 4



Plastic Bags Placed into Boxes

Step 5



Boxes Placed on Shelf



Dr. Victor Church Memorial

The only facility in California providing permanent storage and public use of cores, sidewall samples, drill cuttings, outcrop samples, microfaunal slides, foundation borings, and mineral suites.



**The Repository is open on
Mondays 7am-2pm
Tuesdays 7am-9am
Wednesdays 7am-2pm
Thursdays 7am-9am.**

Visit us on the web at www.wellsample.com or call (661) 654-2324 for more information.

Alaska Geological Society

January 18th, 2018.

Speaker: TBA.

Talk: TBA.

February 20th, 2018.

Speaker: Dr. Jeff Benowitz, UAF.

Talk: "Cenozoic off-set history of the Denali Fault system".

Coast Geological Society

January 16th, 2018.

Speaker: Dr. Matthew Jackson, Professor in the Department of Earth Science at UC Santa Barbara.

Talk: "The fate of subducted tectonic plates and the survival of primordial reservoirs in the Earth's deep interior".

L.A. Basin Geological Society

January 25th, 2018.

Speaker: Wenli Want, GeoMechanics Technologies.

Talk: "Identifying hydraulic fracture gradient for depleted fields, common in Los Angeles Basin".

February 22nd, 2018.

Speaker: Jayne Bormann, CSULB.

Talk: "Active Faulting in the Inner California Borderlands: new constraints from high-resolution 2-D multichannel seismic reflection surveys".

Northern California Geological Society

January 31st, 2018, TBD.

February 28th, 2018, TBD.

March 28th, 2018.

Speaker: Dr. Tom MacKinnon.

Talk: "Geology of the 'type' area of the Eastern Belt of the Franciscan Complex in Northern California, Reconsidered".

Northwest Energy Association

January 18th, 2018.

Speaker: J. D. McClaughry.

Talk: "Detrital zircon assemblages in sandstones indicate revised late Early to Late Cretaceous age for the Dothan Formation in southwestern Oregon".

Sacramento Petroleum Association

January 17th, 2018.

Speaker: The Dutra Group.

Talk: "The Oroville Dam Disaster and Working to Save the Power Plant".

February 21st, 2018.

Speaker: TBA, Likely Dr. Greg Croft, St. Mary's College.

Talk: "Worldwide Energy Analysis".

March 21st, 2018.

Speaker: Roland Bain and Mike Cummings.

Talk: "Review and Highlights of Natural Gas Drilling Activities, Sacramento Basin, 2017".

San Joaquin Geological Society

January 9th, 2018.

Speaker: Mike Clark, Consulting Petroleum Geologist, San Joaquin Geological Services, Inc.

Talk: "Depositional Facies of the Pliocene Tulare Formation in Outcrop and Core".

February 13th, 2018 – SPOUSE NIGHT.

"Talk to be announced".



Alaska Geological Society
www.alaskageology.org

P. O. Box 101288
Anchorage, AK 99510

Contact: Dave Buthman
dbuthman@hilcorp.com



Geology meetings/talks 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 am to 1:00 pm. Open To The Public. No Charge to Attend.

President:	Larry Smith	ljsmith@gci.net
President-Elect:	Greg DuBois	
Vice-President:	Keith Torrance	keith.torrance@uicurniaq.com
Secretary:	David Buthman	dbuthman@hilcorp.com
Treasurer:	Carla Sanchez Phelps	carlasphelps@gmail.com
Past-President:	Chad Hults	chadcph@gmail.com

Coast Geological Society
www.coastgeologicalsociety.org

P. O. Box 3055
Ventura, CA 93006

Contact: Theresa Heirshberg
805-443-7641



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 Shelby Fredrickson (secretary@coastgeologicalsociety.org), and should be made by 4:00 p.m. on the Friday before the meeting.

President:	Theresa Heirshberg	president@coastgeologicalsociety.org
Past President:	Alastair Haddow	pastpresident@coastgeologicalsociety.org
Vice President:	Eric White	vicepresident@coastgeologicalsociety.org
Secretary:	Shelby Fredrickson	secretary@coastgeologicalsociety.org
Treasurer:	Stacey Zeck-Boles	treasurer@coastgeologicalsociety.org
Membership chair:	Bonnie Walters	membership@coastgeologicalsociety.org
Webmaster/Tech Support:	John Rice	webmaster@coastgeologicalsociety.org

Los Angeles Basin Geological Society
www.labgs.org

Contact: Bert Vogler
949-585-3103



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 Ryan Weller at 562-637-6019 or ryweller@gmail.com Reservations must be made prior to Tuesday before the meeting.

President:	Bert Vogler	hvogler@kleinfelder.com
Vice President	Nate Busch	nbusch@eecenvironmental.com
Treasurer:	Nicky White	nwhite@geomechanicstech.com
Secretary:	Ryan Weller	ryweller@gmail.com
Scholarships:	Karla Tucker	ktkr2@aol.com
Webmaster	Ivan Aburto	Ivan.aburto@crc.com

Northern California Geological Society
www.ncgeolsoc.org

803 Orion #2
Hercules, CA 94547-1938

Contact: Barbara Matz
barbara.matz@cbifederalservices.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)

NCGS Officers:

President:	Greg Bartow	gregbartow@yahoo.com
President-elect:	open	open
Past President:	Will Schweller	willschweller@yahoo.com
Treasurer:	Barbara Matz	barbara.matz@cbifederalservices.com
Recording Secretary:	Crystal Replogle	ctreplogle@gmail.com
Membership Chair:	Tom Barry	tomasbarry@aol.com
Outreach Chair:	Mark Petrofsky	
Newsletter Editor:	Mark Sorensen	msorensen64@earthlink.net
Field Trip Coordinator:	Will Schweller	willschweller@yahoo.com
K - 12 & Geoscience Program Coordinator:	open	open
Scholarships:	Phil Garbutt	plgarbutt@comcast.net
Program chair:	John Karachewski	cageo@sbcglobal.net
Website Manager:	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.

President	Laird Thompson	lbtfracs@gmail.com
Vice-President	Steven Pappajohn	pappajohn@narpllc.com
Treasurer	Barb Portwood	bbportwood@gmail.com
Co-Treasurer	Jim Jackson	jackson.js@comcast.net
Secretary	Clark Niewendorp	clark.niewendorp@state.or.us

Sacramento Petroleum Association

P. O. Box 1844

Folsom, CA 95630

Contact: Pam Ceccarelli

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: Lindsey Thompson

lthompson@envirotechteam.com



We have dinner meetings on the second Tuesday of the month, October through June, 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:	Cameron Campbell	cameron.campbell@conservation.ca.gov
Past President:	Greg Gordon	gsgordon@aeraenergy.com
President-Elect:	Jonathan Goodell	Jonathan.Goodell@crc.com
Vice-President:	Matt Andersen	MAndresen@aeraenergy.com
Secretary:	Lindsey Thompson	lthompson@envirotechteam.com
Treasurer:	Kathy Jennifer Prosser	jprosser@envirotechteam.com
Webmaster:	Ivan Aburto	Ivan.Aburto@crc.com



BEST CORE SERVICES

where BETTER became BEST

We Supply Quality Data with Quality Service

4031 Alken St Suite A1
Bakersfield, CA 93308

Bryan Bell: (661) 496-2654

Office: (661) 835-6001

NOW AVAILABLE

Anomalies

✦ **Pioneering Women in Petroleum Geology: 1917-2017**

To be released April 1, 2017, *Anomalies* represents a deep foraging into the unrealized and near lost history of women that began in 1917 their 100 year journey as petroleum geologists.

“Robbie Gries and her contributors have created a remarkable account of early women in petroleum geology. The book represents a “deep dive” into the lives, accomplishments, triumphs, and, even, terrors, of early women professionals. It displays impressive scholarship, and reflects four years’ efforts to source histories of these largely forgotten women professionals.

An astounding network of women professionals, formed by need, strengthened by time, constituting an amazing support system. Robbie has done an amazing, multi-year research effort in uncovering hundreds of early petroleum geologists, active in many countries, whose early efforts are now recorded for our belated appreciation.

A delightful, hopeful, sense of progress is conveyed by the book, as the intense survival stories of early women geologists, give way to a prideful modern acknowledgement of the importance of women petroleum geoscientists in our modern petroleum industry.

The book should be read by every petroleum geologist, geophysicist, and petroleum engineer; partly for the pleasure of the sprightly told adventures, partly for a sense of history, and, significantly, because it engenders a proper respect towards all women professionals, forging their unique way in a “man’s world”.

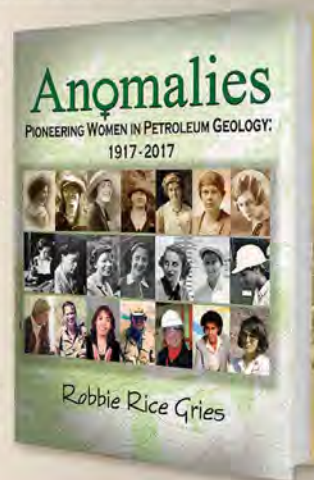
Buy this book! It will renew your pride in being a petroleum geologist, and it will enlighten you on the struggles of our wonderful women associates as they followed their professional dreams.”

– Marlan Downey, Past President of AAPG, CEO Roxanna Petroleum

“*Anomalies* celebrates the inspiring achievements of an intrepid group of pioneering women that have laid the groundwork for female geoscientists today. Robbie Gries provides an entertaining and informative narrative of 100 years of trailblazers that is enriched by excerpts from diaries, letters and interviews. The women in these pages were true scientific contributors and innovators at a time when women were just emerging into the growing field of petroleum geology. This is a must read for any historian of the oil patch, as it provides the only comprehensive record of the hidden history of these ground-breaking women.”

– Allyson Anderson Book,
Executive Director - American Geosciences
Institute

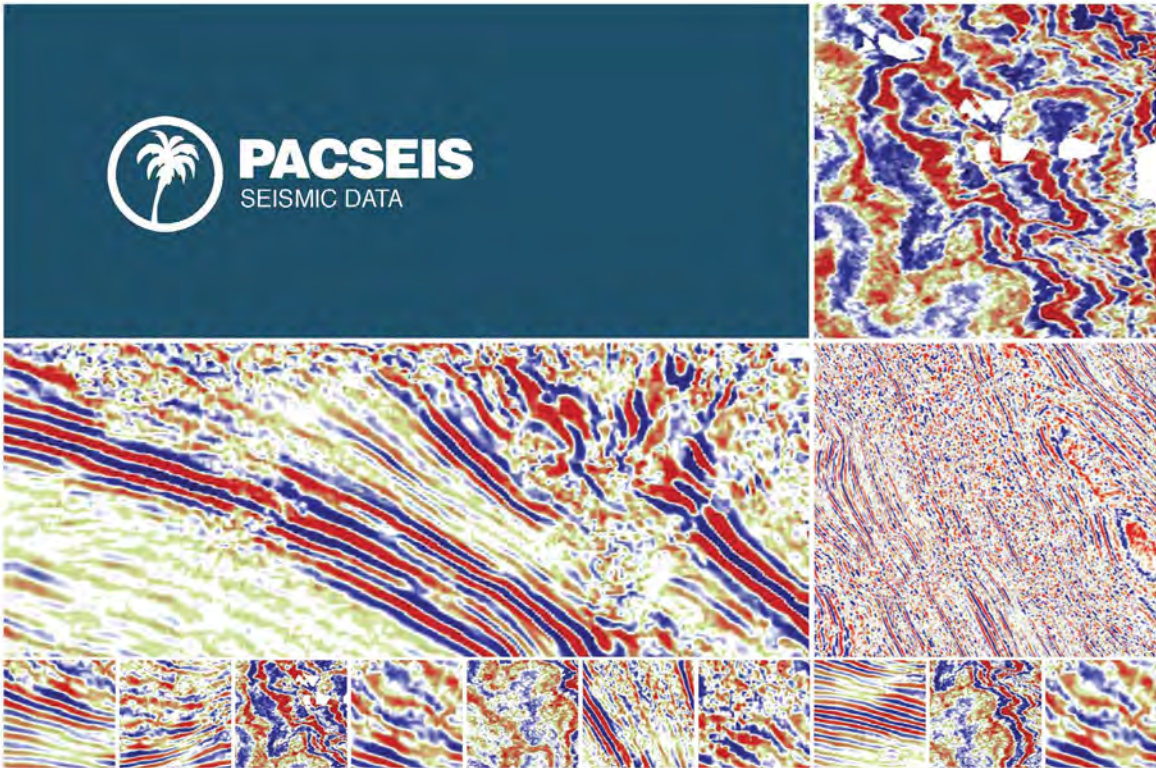
Once released, the book can be ordered from the AAPG Store for \$50 plus shipping and handling. Please e-mail publications@AAPG.org expressing your interest and we will contact you as soon as the book is available. Don't want to wait? Visit the AAPG Center at the 2017 ACE meeting to purchase your copy.





PACIFIC SECTION AAPG
P. O. Box 1072
BAKERSFIELD, CA 93302

PRESORTED
STANDARD
U.S. POSTAGE PAID
BAKERSFIELD, CA
PERMIT NO. 1163



PACIFIC SEISMIC COMPANY

The leader in subsurface information

RESOURCES THAT DELIVER THE DIFFERENCE

- One of the largest seismic databases available for license
- Seismic available for immediate license
Over 500,000 line miles of 2D data located in domestic United States (onshore & offshore)
- 2,500 square miles of 3D surveys

RECENTLY ACQUIRED SEISMIC DATABASES BY PACIFIC SEISMIC CO.

- Chevron USA California, OXY USA Nationwide (including Arco & Enron)
- Santa Fe energy, TXO, Cities Service Oil & Gas Nationwide
- Southern Pacific, PG&E/ NGC, SOHIO

PACIFIC SEISMIC COMPANY | Your Full-Service Seismic Brokerage & Acquisition Company

EXPLORATION CONSULTING

PROJECT DEVELOPMENT

Tel (661) 322-1171 | Fax (661) 322-1181 • www.pacseis.com | Bakersfield | Houston