

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



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## MARCH MEETING ANNOUNCEMENT

**DATE:** Thursday, March 22, 2001 (please note day change)

**LOCATION:** Chevron Overseas Petroleum Inc. (Chevron Park)  
6001 Bollinger Canyon Road, San Ramon, CA.

**TIME:** 12:00 noon, Building A, Room A-1036 (map on back)

**RESERVATIONS:** Not needed. Lecture is free.

**SPEAKER:** Dr. Andrew Pulham, Dept. of Geological Sciences,  
University of Colorado, Boulder, CO.

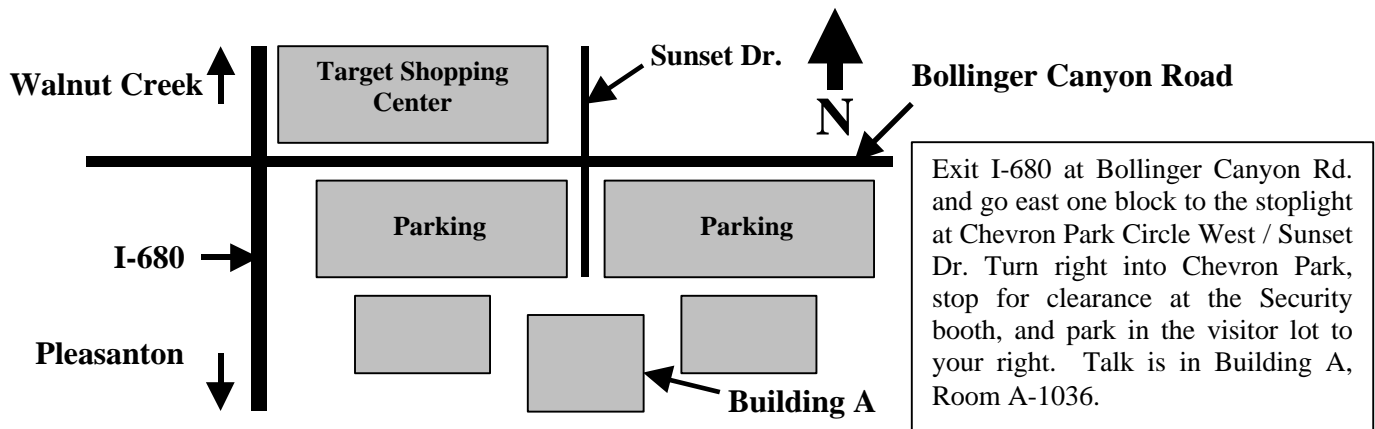
***“Reservoir Performance and Reservoir Quality in a  
Sequence Stratigraphic Framework: Case Studies from  
Siliciclastic Reservoirs in the Americas and Europe”***

Understanding oil and gas reservoir production characteristics is the key to effective exploitation and intervention strategies. The most important rock property for reservoir management is permeability. The stratigraphic architecture of the depositional system that is being produced can influence the distribution and heterogeneity of rock permeability, and consequently the reservoir behavior. Key surfaces and events like sequence boundaries and transgressive episodes can make the most significant changes in lateral and vertical reservoir properties. Recognizing stratigraphic events within any reservoir is dependent upon understanding its sedimentological genesis. Often overlooked techniques such as ichnofacies analysis and quantitative biostratigraphy are critical to building a complete picture of the depositional history. In establishing the controls on reservoir permeability, simple sandstone textural analysis can provide most of the information needed to quantify the effects of various stratigraphic effects.

Several case studies will be offered that examine how the high resolution stratigraphic architecture of producing reservoirs compares with dynamic information like pressure decline and well production data. The themes of each case study are the recognition of the stratigraphic surfaces and their hierarchy and a quantification of which stratigraphic events have the greatest significance to reservoir behavior. Some of the key conclusions based on the examples presented are that primary depositional fabrics are fundamentally important in explaining reservoir behavior despite the complexities of the post-depositional histories.

In support of the producing reservoirs, additional case studies examine the distribution of reservoir quality in a stratigraphic framework. These also indicate that key stratigraphic events have a major control on how permeability is distributed within depositional systems.

**Continued on the back page of the newsletter**



Themes of the case studies include the importance of competing processes such as fluvial and tidal regimes during stratigraphic episodes, the utility of combining disciplines like ichnology, biostratigraphy, and sedimentology and how simple descriptions can identify critical permeability fabrics.

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**Andrew Pulham** received his B.Sc. in Geology and Geography from Liverpool University in 1980, and his Ph.D. in Geology from the University College of Wales at Swansea in 1988. He has worked for British Petroleum Exploration as a petroleum sedimentologist in the North Sea, Western Europe, the Gulf of Mexico, Colombia, and Venezuela. He is currently Research Associate in the Energy and Minerals Applied Research Center, Department of Geological Sciences, University of Colorado, Boulder, where he is Principal Investigator, Reservoir Geology. His primary interests are clastic sedimentology and stratigraphy. His consulting interests include projects in South America, the Gulf of Mexico, and Madagascar. Dr. Pulham's teaching and training duties include leading geology field trips and classes in Desktop Applications to geology. His professional studies involve the Jurassic regional geology in the North Sea, the deepwater Late Tertiary in the Gulf of Mexico, and appraisal of the Cusiana Field in Colombia. He is currently completing investigations of the production characteristics of marginal marine siliciclastic oil and gas reservoirs; subsurface projects in the Americas, Europe, and Papua New Guinea; and an investigation of the alluvial architecture of the Early Eocene Big Horn Basin, Wyoming. His professional affiliations include AAPG, SEPM, and the International Association of Sedimentologists.

Northern California Geological Society  
 c/o Judy Hayes  
 453 Scotts Mill Rd.  
 Danville, CA. 94526-4234

*Would you like to receive the NCGS newsletter by e-mail?* If you are not already doing so, and would like to, please contact **Dan Day** at [dday@nrmc.com](mailto:dday@nrmc.com) to sign up for this service.

# NCGS 2001-2002 Calendar

## Wednesday, January 31, 2001

*Keith Knudsen*, California Division of Mines and Geology (CDMG)

**New Quaternary Geologic and Liquefaction Susceptibility Mapping of the Nine-County San Francisco Bay Region and CDMG's Seismic Hazard Mapping Program**

Orinda Masonic Center

## Wednesday, February 21, 2001 / AAPG Distinguished Lectures (see front page and flyer in this newsletter issue)

*John Warme*, Colorado School of Mines, Golden, CO.

**Active Margin Sequences and Submarine Canyon Facies Models**

Chevron Overseas Petroleum, Inc., 6001 Bollinger Canyon Road, San Ramon, CA. at 12:15 in Room B-1039B

AND

**Anatomy of an Anomaly: The Catastrophic Devonian Alamo Impact Breccia, Nevada**

Lafayette Veterans Memorial Building, 3941 Mt. Diablo Blvd., Lafayette, CA. / 6:30 pm social; 7:00 pm talk; cost \$5

Joint Meeting with BAGS

## Saturday, March 3, 2001

**Caldecott Tunnel Field Trip (Please check flyer in newsletter)**

9:30 am at Caldecott Tunnel Bldg. off Tunnel Rd., Berkeley. Leader: *Grant Wilcox*, Branch Chief, CalTrans Geologists, Oakland, CA.

A trip including a movie on the tunnel construction, a trek through tunnel air ducts, and a synopsis of the tunnel engineering geology

## Thursday, March 22, 2001 / AAPG Distinguished Lecture

*Andrew Pulham*, University of Colorado, Boulder, CO.

**Reservoir Performance and Reservoir Quality in a Sequence Stratigraphic Framework: Case Studies from Siliciclastic Reservoirs in the Americas and Europe**

Chevron Park, San Ramon, CA. at 12:00 noon in Building A, Room A-1036

## Wednesday, April 25, 2001

*Laurel Collins*, San Francisco Estuarine Institute

Tentative topic: **Wildcat Canyon: Watershed and Sedimentation Interactions**

Orinda Masonic Center

## Wednesday, May 30, 2001

*Dave Mustart*, San Francisco State University

Tentative title: **Hydrothermal Pipes in Six Granitic Plutons in California: Evidence for Evolution and Migration of a Magmatic Volatile Phase**

Orinda Masonic Center

## Wednesday, June 27, 2001

*Bruce Jaffe*, USGS Menlo Park

Tentative Title: **Mercury Contaminated Hydraulic Mining Debris in North San Francisco Bay: A Legacy of the Gold Rush**

Orinda Masonic Center

## Wednesday, September 26, 2001

*Richard Sedlock*, San Jose State University

Tentative title: **Blueschists and Ophiolites in Baja: Coast Range Geology, But With Outcrops**

Orinda Masonic Center

## Wednesday, October 24, 2001

*David Lawler*, Far West Geoscience Foundation, Berkeley (Tentative)

Title: **Hydraulic Gold Mining's Historical Legacy - Mercury Contamination Issues: Sierra Nevada and Klamath Mountain Regions, California**

Orinda Masonic Center

## Wednesday November 28, 2001

*David Des Marais*, NASA Ames Research, Menlo Park

Title: **The Biogeochemical Carbon Cycle and the Coevolution of Early Earth and Biosphere**

Orinda Masonic Center

## Wednesday January 30, 2002

*Roger Ashley*, USGS Menlo Park

Title: **Lode Gold Deposits of the Sierra Nevada and Their Environmental Impacts**

Orinda Masonic Center

## **Eocene Forearc Marginal Marine and Submarine Canyon Facies Model Reviewed at AAPG Distinguished Lecture**

Professor **John E. Warme** of the Colorado School of Mines, Golden, Colorado, gave the first of his two AAPG Distinguished Lectures at Chevron Park, San Ramon, on February 21st. His talk *Active Margin Sequences and Submarine Facies Models* showcased a superb Lower and Middle Eocene forearc facies in northern San Diego County, CA., that features shoreline/shallow marine facies unconformably overlain by submarine canyon deposits in rare, well-exposed continuous outcrops.

Dr. Warme's presentation is based on 30 years of research by his students and other colleagues. The field area, located between Torrey Pines State Park and Scripps Institute of Oceanography, reveals a low (sea level) stand unconformity or sequence boundary that separates the Lower Eocene Delmar/Torrey Sequence (fan-delta, lagoon, barrier beach, marine shelf sediments) from the overlying Ardath/Scripps Sequence submarine canyon facies. The lowermost Ardath sediments are typified by small variegated-fill channels that often show 180° arcuate swings in direction. These units are associated with mass flows, conglomerates, slump structures, turbidite sequences, tidal current features, and some abandoned channel mudstones. These features were laid down on a 100-mile wide lower Tertiary continental shelf displaying classic wrench fault tectonic basins. This environment is part of the subduction complex and migrating triple junction that existed far offshore 70 to 45 m.y. ago. This regime created a forearc basin with continental mountains (Laguna Mountains Jurassic plutonics) giving way seaward to a coastal plain with alluvial fan deposits, lagoons, and a marine shelf that drops off into a deep basin. The wrench fault tectonics creates small, compact basins with steep gradients, rapid facies changes, high sediment input rates, and rapid subsidence. The key sedimentary features in the study area are a 5-mile stretch of coastal beach cliffs that expose the Eocene unconformity that marks the base and walls of the Eocene Torrey Submarine Canyon.

The background work for Dr. Warme's study began with lithologic descriptions of the sediments by Kennedy and Moore (1971), which provided rough relationships between the units but no coherent sedimentological models. In the 1970's sedimentary geologists began developing facies change models, and in 1982, the 49.5 m.y. old unconformity in this outcrop was discovered. The 1990's gave way to sequence stratigraphic concepts, and Lohmar and Morgan (1990) interpreted all of the formation boundaries as unconformities. Early lithofacies studies describe the channel bottom oyster bars (tidal inlets), mollusks, mudcracked fine sediments, and tree debris Delmar Formation, a typical sea level facies complex. The Torrey sequence is described as a channelized complex of sandy tidal bundles and cross-bedded deposits. The unconformity is well-exposed at a local landmark near Torrey Pines State Park called the

Bathtub. Rip-up features in the outcrop indicate rapid water movement. The massive basal sand in contact with the unconformity is overlain by cross-cutting marine channels with heterolithic pockets of debris fill, active channel conglomerates, sandstones and siltstones, turbidite sequences, and abandoned-channel mudstones. These features are compatible with a model of a leveed valley cut into and plunging over the continental slope and opening into a broad seafloor fan fed by a system of distributary channels. Such sedimentary features have been confirmed by deep sea dives into the Coronado Canyon off San Diego, and Monterey Canyon off Monterey Bay.

A second sequence-bounding unconformity caps the canyon channel complex and is overlain by the conglomeratic subaerial alluvial/braided stream sediments of the Scripps Formation. Dr. Warme recapped his discussion by describing the Lower to Middle Eocene succession as a forearc shoreline to offshore continental margin sedimentary complex that experienced a rise in sea level to deposit the Delmar/Torrey Sequence of submarine canyon (offshore) and nearshore/subaerial alluvial fan and braided stream sediments. The submarine canyon complex (Torrey) comes across the modern shoreline as a drowned estuary. The hinterland conglomerates come in a Middle Eocene low sea level stand and are deposited down the submarine channel. The canyon topography is deeply incised into the underlying continental shelf sediments. Dr. Warme concluded by noting that age dating of the lower canyon boundary and canyon fill strongly suggest that their development was driven by eustatic changes in sea level, and not by tectonics. This unconformity has been identified in Texas, Belgium, and several other locations worldwide, which implies it was a global event.

The NCGS sincerely thanks Dr. John Warme for this excellent presentation of a submarine canyon facies model which required an undisturbed outcrop like this to expose an entire canyon sequence. This talk would not have been possible without the generous support of **Chevron Overseas Petroleum, Inc.**, who co-sponsors the AAPG Distinguished Lecture series each year by providing financial support through the NCGS, and by making its lecture facilities at Chevron Park, San Ramon, available to the speakers. COPI's continuing support to AAPG lecture programs is greatly appreciated. Dr. Warme's talk was funded through the AAPG Ben J. Carsey Memorial Endowment.

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## **Anomalous Origin of the Devonian Alamo Breccia, Southern Nevada, Presented at February 21st NCGS Evening Meeting**

As a generous treat to the NCGS, AAPG Distinguished Lecturer **John E. Warme**, Professor of Geology, Colorado School of Mines, agreed to present two lectures on February 21st to its members. Dr. Warme's evening lecture was a unique presentation that addressed the recognition of anomalous features in the geological record. His talk *Anatomy of an Anomaly: The*

### ***Catastrophic Devonian Alamo Impact Breccia, Nevada***

introduced viewers to alternative interpretations of phenomena that do not fit conventional geological models.

*One must understand the expectable in order to recognize the anomalous.* This introductory statement sums up the approach Dr. Warne has used to unravel singular geological features in projects that he has been involved with over his career. In setting the tone for his Alamo Breccia presentation, Dr. Warne digressed to the Jurassic of the high Atlas Mountains in Morocco. The Atlas are a classic fold belt and wrench fault system consisting of inverted normal faults—a rift basin formed by tensional tectonics that produces half-graben fault block structures, followed by sedimentation and subsequent compressional tectonics that reactivate the normal faults and fold the in-filling sediments. The two examples of anomalous stratigraphic features involve the Tagounts and Jebels structures in the Atlas Mountains. The Tagounts occur in the Atlas turbidite basin, a part of the classic “steers’ head” rift structure of a collapsed rift basin with a central platform structure. The Tagounts are anomalous carbonate masses in a turbidite (interbedded shale and sandstone) sequence. They are enormous blocks of carbonate reef complex that have literally slid off the shelf where the shallow carbonate and lagoonal deposits formed, down the continental slope onto the deeper water turbidite sequence. The sequence of slides clearly showed from a distance the massive landslide blocks of carbonate reef material that had peeled off the shallow water reef complex and slid down the still intact continental slope to their resting place several hundred meters below. These incredible submarine features have been exposed, essentially undisturbed, on dry land. The block slides occurred along activated basement faults that created the landslide scarps. Similarly, the Jebels are also detached carbonate platform margin slide blocks, some potential reservoir rocks, up to 30 km. long that now rest down slope from their place of origin on the reef edge in deepwater ammonite shales. The carbonate blocks themselves are shallow water oolitic, crinoidal carbonate sands. The juxtaposition of incompatible carbonate and deepwater shale assembles is suggestive of an anomalous relationship. In reality, these phenomena have a reasonable explanation as large carbonate reef blocks transported off the shelf margin into deepwater basins by basement tectonic activation of reversed normal faults. The recognition of these anomalous situations and careful examination of the local geology leads to a plausible clarification of the field relationships. The Alamo Breccia, however, does not have an easy explanation.

The Devonian Alamo Breccia occurs in 15 mountain ranges in southern Nevada about 100 miles north of Las Vegas. It is a megabreccia that occurs anomalously within the shallow water carbonate platform facies of the upper Devonian Guilmette Formation. The size of the “clasts” within the breccia require an enlargement of the traditional particle grade scale from clay to boulder size material to encompass larger objects like blocks, slabs, monoliths, and megaliths several kilometers in dimension.

The breccia is often easy to spot, and overlies a prominent yellow slope-forming unit. The Guilmette is part of a series of prograding and retrograding carbonate platform deposits that occur during Cambro-Ordovician and Silurian-Devonian times. In addition to a well-documented iridium (Ir) anomaly, the examined units also show detachment surfaces from the underlying carbonate platform deposits and other evidence indicating 1 to 50 km. of transportation from their source; some features suggest a tsunamite (tidal wave-action transport) origin. The breccia itself covered a north-south distance of 200 km. and an area of several thousand square km. across the carbonate platform before it was dismembered by subsequent tectonism. The breccia is up to 130 meters thick at its center and thins to a feather edge at its periphery. It covers an area of over 5,000 km<sup>2</sup> and encompasses a volume of over 250 km<sup>3</sup>. It can be divided into three “bull’s eye” type zones. Uniquely, the units underlying the breccia, and the overlying beds are all in the same conodont fossil zone, transcending only about 500,000 years of time. The intermediate zone 2 breccia has a stratigraphy that can be divided into units A, B, C, and D; which include fine-grained graded bed deposits, huge monolithic blocks over 1000 feet long, and a zone of fluidized rock whose origin is uncertain. Zone 3 is an outlying region of graded beds that transition into mudstones at the top. Detailed examination of the internal structure of these units, their spatial relationship to each other, the recorded high iridium anomalies, the occurrence of sandstone dikes injected into or blocks commingled with the breccia, and unique zoned carbonate spherules require an innovative explanation. A key clue was provided by quartz detritus exhibiting shock metamorphic features. Piecing together all the lines of evidence compiled by students and researchers, the team concluded that the Alamo Breccia is an impact feature.

A plausible reconstruction interprets zone 1 as an infilled crater (it contains impact-shocked beds and quartz crystal fragments), zone 2 as an intermediate ring displaying a fluidized detachment surface underlying massive carbonate blocks severed from the carbonate platform overlain by layers of impactite and tsunamite (tidal wave) sediments; and a marginal zone 3 representing tsunamite deposits that lapped up onto the shoreline. John drew analogies with the famous Reis Crater near Nordlingen, Southern Germany, and the late Eocene Popagai impact event in Siberia. The latter actually experienced impact-induced melting of the basalt target which pooled and formed columnar cooling structures. Determining the original extent of the breccia required computer reconstruction of pre-thrust geology in southern Nevada. This complex study indicates that there are probably many stratigraphic anomalies like this with fascinating stories to tell—if one takes the time to unravel and interpret their mysteries.

Many thanks to Dr. John Warne for giving this second intriguing presentation to its members as part of his AAPG Distinguished Lecture tour. The NCGS wishes to extend its gratitude to Chevron Overseas Petroleum, Inc., for annually funding the AAPG Distinguished Lectures.

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



## NCGS May 19-20, 2001 Field Trip

### *"The Golden B.E.A.R.\* Tour 2001"*

*\*(Blueschists, Eclogites, Amphibolites, Refreshments)*

Led by Neotectonics Expert, Consultant, and Beer Aficionado **Dr. John Wakabayashi**

This trip two-day trip will feature the most beautiful metamorphic rocks in California, the blueschists, eclogites, and amphibolites of the Franciscan Complex. These rocks have a fascinating history and have helped make the Franciscan one of the world's best known rock units. The rocks viewed on this trip are so gorgeous that they can be appreciated by the geologist and non-geologist alike. For those that believe that no Franciscan geology puzzle is complete without a pint to help solve it, we offer stops at some of the world's most acclaimed small breweries. These brewpubs are chosen for their fine (and reasonably priced) food as well as their award-winning brews, so these establishments can be appreciated by those who wish to pass on the brew as well. We will camp overnight at **Spring lake Campground, Santa Rosa**. **Please bring your own sleeping bag and bedding/tent. Those who wish to stay at a motel in the area must make their own arrangements. This trip will use a bus so that no one will have to drive. Space is limited and available on a first come-first serve basis! SIGN-UP TODAY!**

**Date:** Saturday-Sunday, May 19-20, 2001

**Departure:** 7:30 a.m. **SHARP** from the Chevron, Concord, parking lot. (see directions below)

OR

*A second meeting place will be arranged for attendees living in the north San Francisco Bay Area.*

**Directions:** Exit I-680 in Concord at Willow Pass Road. Go east one block to the stoplight at Diamond Blvd. Turn left onto Diamond Blvd. and drive north past the entrance to the Willows Shopping Center. Turn left into the Chevron parking lot and park in the lot assigned to the NCGS.

**Cost:** \$60. Price includes bus transportation, breakfast pastries, camping fee, Saturday night barbecue, and guidebook.

**PLEASE NOTE:** Attendees are responsible for their own lunch and beverage costs both days!!

\*\*\*\*\* **REGISTRATION FORM** \*\*\*\*\*

Name \_\_\_\_\_

Address (Street/City/Zip) \_\_\_\_\_

Phone (day) \_\_\_\_\_ Phone (evening) \_\_\_\_\_

E-mail or Fax No. \_\_\_\_\_

Will you meet the group at an alternate site in the north San Francisco Bay Area? \_\_\_\_\_

*Please write a check to the NCGS and mail it with the completed registration form to*

**Tridib Guha, 5016 Gloucester Lane, Martinez, CA. 94553-4373**

If you have any questions or need additional information, call Tridib at (925) 363-1999 or by e-mail at [aars@ccnet.com](mailto:aars@ccnet.com).

# *The Golden B.E.A.R. Tour 2001 Itinerary*

## SATURDAY

**Stop 1:** Ring Mountain, Tiburon Peninsula. This stop visits the dazzling crown jewel of Bay Area geology to view beautiful blueschists, eclogites and amphibolites. The metamorphism of these rocks gives us clues to processes that occur when subduction begins. The rocks are so captivating here it is not an exaggeration to say that it would be possible to spend the entire day here. But, we have other nice places to go...

**Stop 2:** Marin Brewing Company, Larkspur. Marin's Mt. Tam Pale Ale and IPA are benchmark beers, award-winning beers, and the pub food selection here is among the best of Bay Area brewpubs.

**Stop 3:** Blueschist facies metagreywacke, Novato. A brief look at the type of rock that constitutes the vast majority of blueschist facies rocks in the Franciscan. It's not blue, nor schist, but it was metamorphosed some 30 km beneath the Earth's surface.

**Stop 4:** Bear Republic Brewing Company, Healdsburg. This brewery has won a Great American Beer Festival gold medal with its Racer 5 IPA, and some hop-lovers (including me) think their Extra Pale Ale is even hoppier (especially if it's the cask conditioned version). The food is noteworthy, especially the incomparable herb-garlic fries, that feature melted parmesan over fries with tons of garlic, rosemary and parsley--all this and they're not greasy or overly salty, either. Best garlic fries on the planet, bar none!

**Stop 5:** Skaggs Springs schist near Lake Sonoma. This is a classic blueschist unit that makes up a belt that crops out over a distance of 70 km. In spite of its impressive appearance this unit has not received as much attention as some of the less impressive intact blueschists in the northern Coast Ranges. The visit to this schist includes viewing some fascinating field relations that include the occurrence of amphibolite, eclogite, and garnet amphibolite blocks in shear zones that cut the Skaggs Springs schist.

**Camp Site:** Spring Lake Campground, Santa Rosa.

## SUNDAY

**Stop 1:** Jenner. This is a well known eclogite locality at the mouth of the Russian River. Most field trips visit a well-beaten block above Highway 1. Much more interesting is the pile of blocks on the north bank of the river at its mouth. In terms of beautiful blueschist, eclogite, and amphibolite blocks per unit area, this place takes the cake. No words can describe just how dazzling this pile of glittering blocks is. This is the only spot in the Franciscan where the rocks may be even prettier than at Ring Mountain.

**Stop 2:** Blueschist facies metabasalt, Occidental, California. These rocks look almost like ordinary basalt, until you see the those stringers of blue in them.

**Stop 3 (lunch):** Powerhouse Brewing Company, Sebastopol. I have heard good things about this place and will scout it out to confirm.

**Stop 4:** Moylan's, Novato. Moylan's produces some fine ales, particularly some of their specialty beers, such as their Imperial Stout and barleywine.

**Stop 5 (optional).** Moeser Lane, El Cerrito. This stop is a few hundred meters south of one of my favorite geology stops (the Schmidt Avenue quarry). This stop features one of the East Bay's amphibolite and blueschist stops. Alternatively, depending on interest, the Schmidt Avenue stop, with its superb structural relationships (exposed fault of blueschist facies greywacke over lower grade rocks) can be substituted.

# California Council of Geoscience Organizations (CCGO) Dinner Fundraiser

www.ccgo.org

## *"The Origin of San Francisco Bay"*

**Dr. Kenneth R. Lajoie**  
retired U.S. Geological Survey  
Wednesday April 4, 2001

San Francisco Bay, one of the most beautiful places in North America, did not exist just 10,000 years ago. In this multi-disciplinary presentation, Dr. Lajoie explores the geology, tectonics, depositional environments, surface water hydrology, paleontology, and archeology of the Bay area and shares his knowledge of how these events have shaped our region's geography and history.

During his 30-year career, Dr. Lajoie focused on the environmental geology of the San Francisco Bay region, including coastal erosion, earthquake hazards, and the mapping of earthquake ground ruptures.

### DINNER ARRANGEMENTS

This dinner will be held at the Old Spaghetti Factory, 62 Jack London Square in Oakland (510-893-0222). The Old Spaghetti Factory is located on Embarcadero, between Webster and Franklin Streets on the Oakland inner harbor. You may park in front of the restaurant, which will validate parking for one hour. Additional parking costs \$0.75 per half hour. Jack London Square can also be reached via the San Francisco - Oakland Ferry, which docks several blocks away.

|             |                                |             |                 |
|-------------|--------------------------------|-------------|-----------------|
| 6:00 - 6:45 | Hosted social and registration | 8:00 - 9:00 | Keynote speaker |
| 6:45 - 8:00 | Dinner and announcements       | 9:00 - 9:30 | Questions       |

### RSVP REQUIRED!!!

Please mail or FAX (preferred) by March 30, 2001  
John A. Karachewski  
Weiss Associates  
Lawrence Livermore National Laboratory  
L Code 530  
Livermore, CA 94550  
OFFICE: (925) 424-5063      FAX: (925) 424-3155  
e-mail: [karachewskil@llnl.gov](mailto:karachewskil@llnl.gov)

**Name:**  
**Firm:**  
**Phone:**  
**No. in party:**

**Dinner choice (circle one): Baked Chicken or Baked Lasagna**

**Dinner costs \$25.** A \$5 surcharge will be added to late reservations.

**Student rate \$10**

Please make checks payable to: **California Council of Geoscience Organizations**

Special thanks are extended to the California Groundwater Resources Association and David Abbott for assistance with mailing this flyer.



# **SECOND ANNUAL CCGO SACRAMENTO DRIVE-IN A TREMENDOUS SUCCESS**

On March 1, California Council of Geoscience Organizations delegates spent the day in Sacramento meeting with State legislators, State Geologist Jim Davis and six senior staff of the California Division of Mines and Geology (CDMG), and State Board for Geologists and Geophysicists Executive Officer Paul Sweeney. Stocked with pamphlets and program information from the CDMG, we briefed the legislators on CCGO's mission, asked them to support additional funding for the Seismic Hazard Zone Mapping Program, discussed the proposed changes to the Geologists and Geophysicists Act in Senate Bill (SB) 136, and offered CCGO as an information resource on public policy issues related to geoscience.

Senator Liz Figueroa and Adam Smith, aide to Assemblywoman Elaine Alquist, were particularly interested in ensuring continued funding for the Seismic Hazard Zone Mapping program when the Federal matching funds program expires in 2003. The resultant maps, which show areas of high probability of liquefaction and seismically induced landsliding, are used by local building departments to require liquefaction and landslide investigations for new construction in those areas. They are also a key component of California's new Natural Hazard Disclosure law. CCGO is likely to work with key legislators to craft a bill next year to provide additional State funding for the mapping program.

SB136, an omnibus bill that will include proposed changes to the Geologists and Geophysicists Act developed by the Technical Affairs Committee of the State Board for Geologists and Geophysicists, updates the 30-year-old act to include provisions such as the new national exam and a change from the term "registered" to either "licensed" or "professional" geologist or geophysicist. It also requires a licensed geologist to affix his or her seal to geologic reports and prohibits the use of the seal on Natural Hazard Disclosure Statements, to avoid misleading the public. Other provisions include elimination of the seldom-used 7-year experience requirement for licensure (the 5-years plus bachelor's degree and 3-years plus master's degree options remain), requiring that the experience be obtained under the supervision of a licensed geologist (as opposed to the current provision which allows the experience to be obtained under the supervision of a licensed civil engineer), and requiring that reviewing geologists in public agencies be licensed. CCGO will keep in touch with Mr. Sweeney and Assemblywoman Figueroa's staff to follow the progress of the bill.

In our visits to Assemblyman Manny Diaz, Assemblyman Joe Nation, Sunset Committee Consultant Robin Hartley, and Senate Business and Professions Committee Senior Consultant Bill Gage we learned of other geoscience issues of concern during this legislative session, including wetlands protection, abandoned mines, MTBE, education, and funding for investigative visits to earthquake-damaged areas by the State Seismic Safety Commission.

Our productive day in Sacramento was organized by CCGO President Jim Jacobs of AIPG and Fast-Tek Engineering Support Services. He was joined by an enthusiastic team consisting of Betsy Mathieson of AEG-SF and Exponent Failure Analysis Associates, Dave Sadoff of AIPG and Environmental Bio-systems, Inc; Rick Blake of AAPG and Lawrence Livermore National Laboratory, and Stephen Baker of HydroSolutions of California, Inc.

For further information, contact CCGO President Jim Jacobs at (510) 232-2728 or [AugerPro@jps.net](mailto:AugerPro@jps.net). Visit our web site at <http://www.ccco.org>.

# Why spend \$230 to attend a Core Workshop? It's worth it!

On April 12, 2001 the San Joaquin Geological Society is sponsoring a Core Workshop at the Sheraton Universal in Universal City. This is a full day workshop to be held on the day after the closing of exhibits and technical sessions of the Pacific Section AAPG, SEPM, SEG and Cordilleran Section GSA annual meeting.

The San Joaquin Basin has a very diverse and complex assemblage of petroleum reservoirs. This workshop will illustrate that variety. The line-up of exhibitors:

- **Tony Reid, Occidental of Elk Hills**
  - **Rande Gardiner, Texaco**
  - **Mike Clark, Chevron**
  - **Dick Scott, Occidental Elk Hills**
  - **Bryan Bell, Goode Core Analysis**
  - **Allen Britton, Core Lab**
  - **Jon Schwalbach, Occidental of Elk Hills**
  - **Karla Tucker, Consultant**
  - **Tor Nilsen, Consultant**
- **Stevens siliceous shale**
  - **Diatomite**
  - **Horizontal Stevens core**
  - **Main Body B (Stevens) sand**
  - **Core viewer of diatomite core**
  - **RIB analysis of Stevens sand**
  - **Image logs as an alternative to core**
  - **Temblor**
  - **Carneros**

*For Petroleum Professionals:* The workshop provides an opportunity to not only see what your colleagues are doing but also offers the opportunity to see actual reservoir rock and data presented in the perspective of reservoir architecture. Oil saturation distribution, log response to various lithologic and fluid compositions and relationships to productivity will be readily observed. The workshop format will allow one-on-one questioning of, and discussions with, highly skilled development geologists who work with these reservoirs on a daily basis.

*For the Professors and their Students:* Aside from bringing the perspective derived from samples that are not outcropping, the workshop provides an inside look at the technology and skill set of working senior level petroleum geologists. What are the requisite skills? What technology is employed? Why are development geologists so excited about their work?

To register please contact [www.geosociety.org](http://www.geosociety.org) then find the Cordilleran Section meeting. Members of the AAPG, SEPM, and SEG will also receive a mailed out meeting announcement in early March. You do not have to register for the convention to take this short course. Limited financial aid may be available for some students. Please forward this message to anyone you may feel is interested.

*Proceeds from this workshop will be donated to the California Well Sample Repository on the CSUB campus in Bakersfield*

## **Pacific Section American Association of Petroleum Geologists and Cordilleran Section of the Geological Society of America**

### **JOINT MEETING on April 9-11, 2001**

### **SHERATON UNIVERSAL HOTEL, UNIVERSAL CITY, CALIFORNIA**

For meeting information and registration go to the GSA website at  
<http://www.geosociety.org/sectdiv/cord/01cdmtg.htm>

If you have questions, contact Co-chairs **Peter W. Weigand** at (818) 677-2564, or  
**Jeffery E. Shellebarger** at (661) 395-6385