

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



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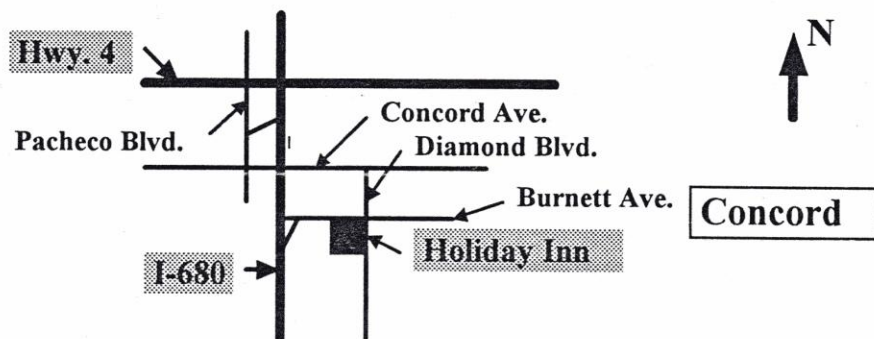
510-842-0592

**NCGS Newsletter:**

510-294-7530

## JANUARY MEETING ANNOUNCEMENT

**DATE:** Thursday, January 22, 1998  
**LOCATION:** Holiday Inn, 1050 Burnett Ave., Concord, CA.  
**TIME:** 6:30 p.m. social; 7:00 p.m. talk (no dinner)  
Cost is \$5.00 per person  
**RESERVATIONS:** Leave your name on the NCGS recorder at  
510-842-0592 anytime before the meeting.



**SPEAKER:** John J. Heberger, Jr., Chevron Overseas Petroleum Inc.

### *Chevron's Exploration and Development Efforts in the Papuan Fold and Thrust Belt, Papua, New Guinea: A Frontier Success Story*

Petroleum exploration in remote Papua, New Guinea (PNG) began about 1911 with the recognition of oil seeps in the Papuan Basin. Subsequent PNG exploration was largely concentrated in this basin and culminated in the 1986 discovery of the ~260 MMBO Iagifu-Hedinia field by a Chevron led joint venture in the southern portion of the Papuan Fold and Thrust Belt (PF&TB) that forms the northernmost part of the greater Papuan Basin province. The PF&TB is the eastern part of a complex fold and thrust belt that spans the entire 2200 km. length of New Guinea. Its remoteness explains its poorly understood nature up to the 1980's and why the first commercial oil discovery at Iagifu-Hedinia was not drilled until 1986. Elements key to understanding the PF&TB and its petroleum potential have only begun to be understood since the discovery of the Iagifu-Hedinia Field, and will be detailed in the talk.

Exploration in the PF&TB has been based largely on field geology, remote imagery, and creative geologic modeling. Because of the ruggedness and remoteness of the fold belt, operations were dependent on helicopter support. Since 1978 Chevron/Gulf

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## 1996 Amendments to Safe Drinking Water Act Presented at December NCGS Meeting

Judy Bloom of the U.S. EPA, San Francisco, highlighted the 1996 amendments to the Safe Drinking Water Act (SDWA) in her December 11, 1997, NCGS presentation "*Protecting America's Drinking Water.*" These amendments instituted the Source Water Assessment Program (SWAP) and Source Water Protection Program (SWPP). The SWAP applies to each state and all of its Public Water Systems (PWSs); discretion and flexibility in program development is left to the states, but five elements (see below) are required. The SWPP is not required, but is strongly encouraged. Judy's talk placed emphasis on SWAP as it applies to groundwater supplies. In 1986, the states were mandated to develop wellhead protection programs, but a few, including California, still have none in place.

The SWAP requires the following five elements (key technical tasks are bolded): 1) **delineation of the source water protection area (SWAP)**; 2) a **contaminant inventory** within the SWAP; 3) a **susceptibility analysis**; i.e. a determination of the likelihood that a contaminant will reach the intake or potable water well in amounts that could affect public health; 4) **public access**, insuring that all information collected is available to the public; and 5) **public participation**, insuring public input into program development. Each state is required to complete, or to have completed, SWAPs covering all PWSs.

California's SWAP effort is being led by the Department of Health Services (DHS), and the state is eligible for \$7.5 million in federal funds, but receipt of these monies requires 20% state matching funds — approval to be decided via a bond measure on next year's primary election ballot. DHS would receive the funds. It is not yet clear to what extent DHS will contract program work to other state agencies (e.g. SWRCB or DWR) or to consultants. However, it seems that at least some of the (larger) PWSs may seek consulting services. Some very large PWSs (e.g. Los Angeles Munciple Water District) may already have some or all of the program pieces in place.

The DHS began to hold technical, public, and intergovernmental advisory panel meetings in August, 1997, and these will resume in early 1998. It is now expected that the actual work of SWAP development would begin in 1999. A PWS will have the option to develop its own detailed SWAP, or could simply let DHS prepare it. It is anticipated that a less intensive water quality monitoring program would be required in the first case than in the second.

It is expected that the DHS will develop a database for its SWAP/SWPP web site with appropriate links, including most relevant information on wells, hydrogeology, and contaminant sources. The DHS has a web site for the SWAP; the URL is [www.cahwnet.gov/prevsrv/ddwem/index.htm](http://www.cahwnet.gov/prevsrv/ddwem/index.htm). Upcoming panel meetings are announced on this web site.

The SWAP/SWPP Final Guidance document (EPA 816-R-97-009, August 1997) is free and still available by contacting Judy Bloom at the U.S. EPA in San Francisco. Some free copies of a relevant publication "*California Ground Water Management Handbook*," prepared by the Groundwater Resource Association (GRA) are also still available, by calling (916) 758-3656.

(Article prepared by Roger Greensfelder, Greensfelder & Associates)

### REG REVIEW 1998 Study Aids for Geology Licensing Exams and ASBOG Licensing Exam

REG REVIEW, Inc. is the leader in providing instruction and study aids for the California geology licensing exams (R.G., C.E.G., and C.HG.) and ASBOG exam. They have sold over 3000 sets of Study Manuals and taught nearly 1500 students in the 12 years they have been in business. The AEG has hired REG REVIEW, Inc. since 1985 to conduct Review Courses for the Geology Registration (R.G.), Engineering Geology (C.E.G.), and Hydrogeology Certification (C.HG.) exams. For more information on these Study Aids and Review Courses contact:

**REG REVIEW, Inc.**  
**37 Rosewell Road, Bedford NH 03110**

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# NCGS Winter / Spring 1998 Calendar

## *AAPG Distinguished Lecturers:*

### **Late February-early March, 1998**

Trevor Elliott, University of Liverpool, U.K.

*A Renaissance in the Analysis of Turbidite Systems*

### **April, 1998**

Ron Kreisa, Mobil Technology Company, Dallas, Texas

*Deposition of Deep-water Sands, Pliocene Niger Delta: Sequence Stratigraphy, Depositional Facies, and Sandy Body Stacking Geometry and Stacking Patterns*

## *Monthly Meeting Speakers*

### **January 22, 1998**

John Heberger, Chevron Overseas Petroleum Inc.

*Chevron's Exploration and Development Efforts in the Papuan Fold and Thrust Belt, Papua, New Guinea: A Frontier Success Story*

### **February 19, 1998**

Ted Bunch, NASA, Mountain View

*Tentative Topic: Meteor Craters with potential topics ranging from Earth to the Moon, Mars, and other planetary bodies. A unique opportunity to learn about this fascinating phenomenon!*

### **March 19, 1998**

Jeff Unruh, Lettis Associates

*Tentative Topic: East Bay anticline growth, the tectonic model, and seismic potential.*

## **BAY AREA EMPLOYER LIST**

The NCGS Greater Bay Area and Northern California Geoscience Employers List has been updated for 1997. More than thirty private firms and government agencies are included, with some details about the type of work done, and whether or not they are interested in receiving applications. A copy of the list can be obtained by sending a **self-addressed, stamped envelope and a check for \$2.00, payable to the NCGS** to:

Randy Kirby  
67 Brookwood Rd. Apt. 20  
Orinda, CA. 94563

# *Around the Bay*

## **From Barney Popkin's Environmental Events Calender**

Northern California Landslide Susceptibility Maps. If you are interested in such a map, see the landslide / debris-flow homepage (ca.38 at last count), soon to be put on the web. This information will be accessible at <http://elnino.usgs.gov/landslides-sfbay>, courtesy of David G. Howell, USGS Menlo Park (tel 650 329-5430, fax 650 329-4936, e-mail: [dhowell@octopus.wr.usgs.gov](mailto:dhowell@octopus.wr.usgs.gov)). These maps were prepared by a group of volunteers who are trying to provide useful information for emergency response planners for the anticipated heavy rains this winter. See <http://www.abag.ca.gov/bayarea/enviro/elnino.html> for El Nino update.

To get on **Barney Popkin's E-mail List for San Francisco-Area Environmental Events** (Every Friday or Saturday Night Since 1994), please e-mail Barney at [bpopkin@sirius.com](mailto:bpopkin@sirius.com), fax him at work at (415) 543-5480, or call him via voice mail at (415) 222-8351. The calender included all sorts of environmental events including classes for professional development, public meetings and political events, ecological courses and nature walks, professional organization events, and opportunities to make the Bay Area a better place to live in. The list can be sent either weekly or monthly. International listings also available. Contributions welcome.

### **University of California Extension Classes for Environmental and HazMat Management**

Contact these locations for more information on the courses offered by each extension

University of California at Berkeley (U.C. Berkeley Extension) (800) 752-0881 or (510) 642-4111 or fax (510) 642-0374, web page [www.unex.berkeley.edu:4243](http://www.unex.berkeley.edu:4243) --classes in Berkeley, Fremont, Oakland, San Francisco, and San Ramon.

University of California at Davis (U.C. Davis Extension) (800) 752-0881 or (916) 757-8777, fax (916) 757-8558, web page [www.universityextension.ucdavis.edu/unit/epin.htm](http://www.universityextension.ucdavis.edu/unit/epin.htm) --classes in Davis, Benicia, Martinez, and Sacramento

University of California at Santa Cruz (UCSC) (800) 660-8639 or (408) 427-6600, fax (408) 427-6690, web page [www.ucsc.edu/unex](http://www.ucsc.edu/unex) --classes in Cupertino, Milpitas, Monterey, Santa Clara, Santa Cruz, and Sunnyvale

## **International IGCP-373 Field Conference**

*Anatomy and Textures of Ore-bearing Granitoids of Sikhote-Alin (Primorye Region, Russia) and Related Mineralization*

Vladivostok, Russia  
September 1-12, 1998

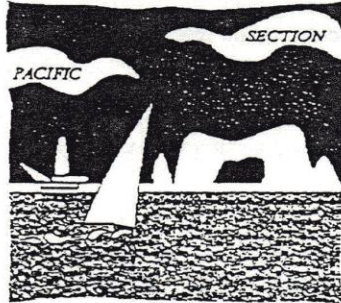
For information on conference topics, field excursions, and accommodations contact:

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# CALL FOR PAPERS

## Geoscience Horizons



Ventura '98

The *Coast Geological Society* invites you to the 1998 AAPG-SEPM-SEG-SPWLA Pacific Section Meeting in Ventura, California, April 29 through May 1, 1998. We are inviting papers for both general and special sessions covering a wide range of topics. The two-day technical program will consist of oral presentations and half-day poster sessions. Short courses and field trips will be held before and after the technical sessions.

The theme for this year's convention, "Geoscience Horizons", should encourage us to look forward to the application of new technologies and new ideas in geology. The convention will feature field trips to Santa Rosa Island, the Ridge Basin and other nearby areas. A symposia on new developments in the Santa Barbara Channel is being organized to take a new look at the geology and development of this area. A special session for primary and secondary educators is planned.

The convention will be held at the Doubletree Hotel, Ventura. This facility is located adjacent to San Buenaventura State Beach Park and near the Ventura Harbor shopping district. Additional information about the convention, and an on-line Call For Papers can be found on our website at <http://www.west.net/~psaapg>

You are invited to submit abstracts for presentations on the following topics:

- ❖ Continuing Developments in Offshore California
- ❖ San Joaquin and Sacramento Basin Studies
- ❖ Marine Geology of the Californias
- ❖ West Coast Tectonics, Sedimentation and Stratigraphy
- ❖ Geology of the Gualala area, Northern California
- ❖ Reservoir Geology and Development Applications
- ❖ Horizontal Drilling
- ❖ Environmental Geology / Hydrogeology
- ❖ Earthquake Hazard Assessment and Prediction
- ❖ Sequence Stratigraphy in Active Tectonic Settings
- ❖ Utilizing New Technologies in Exploration and Development
- ❖ Computer Applications / Geologic Modeling / Visualization
- ❖ General presentations in Geology, Geophysics and Petrophysics

Additional suggestions are welcome for theme sessions, short courses and field trips.

- ❖ General Chair: Jon Schwalbach, Exxon Co., USA, P.O. Box 5025, Thousand Oaks, CA 91359, (805) 494-2249 ❖
- ❖ Vice Chair: Dalton Lockman, Exxon Co., USA P.O. Box 5025, Thousand Oaks, CA 91359, (805) 494-2205 ❖
- ❖ Technical Program Chair: Douglas Goff, CPTC, P.O. Box 446, La Habra, CA 90633, (562) 694-7689 ❖

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has been exploring a 350 km. long portion of the PF&TB, a mountainous and densely rainforested area with no infrastructure. Intense pinnacle karst precludes seismic acquisition over much of the area. Data include surface geological traverses and remote imagery, from which geologic maps, serial balanced cross sections, and objective horizon maps are constructed to define general fold belt structure and specific drillable prospects.

All oil discoveries to date have been along two parallel fault-propagation fold trends. The localization of discoveries in the central segment of the fold belt may be due to greater exploration effort there, greater trap integrity of four-way closures, the presence of a detachment below the lowermost Cretaceous Toro sandstone reservoir along fault-bend fold trends, the timing of trap development relative to migration, hydrodynamics, or a combination of these factors. Main reservoir production specifics, including an account of exploration and development operations, future development schemes, and the unique problems encountered and solved by the field force will be discussed.

The presentation will be illustrated with slides not only of the geology, but also of the jungled karstic terrain, helicopter-supported operations, and the stone-age local landowners. This is an opportunity to learn first-hand about a unique petroleum discovery in a remote and culturally primitive tropical nation.

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**John J. Heberger, Jr.** received his B.S. (1974) and M.S. (1977) degrees in Geology from the University of Missouri, Columbia, where he did his master's thesis on recent volcanoclastic sediments in Guatemala. He has twenty years of experience as a petroleum geologist for Chevron concentrating on various aspects of exploration, basin analysis, structural/log/seismic interpretation, reservoir management, field operations and development, economic and risk analysis, and new ventures development. John has worked in the Gulf Coast, Mid-Continent, Permian Basin, and Rocky Mountain basins of the United States; and in Bolivia, Papua New Guinea, Australia, and Indonesia. His Chevron career includes Development Geologist, Eastern Division, Chevron USA (CUSA)-New Orleans (1977-1979); Exploration Geologist and Geophysicist, Onshore Division, CUSA-New Orleans (1979-1981); Exploration Geophysicist/Project Leader/Economic Evaluations Analyst, Mid-Continent Division, CUSA-Denver (1981-1984); Acting District Supervisor, MonDak District, CUSA-Denver (1984-1985); Exploration District Supervisor, Pecos District, CUSA (1985-1988); Exploration Geologist, South American Division, COPI (1988); Structural Geologist/Exploration Manager, Papua New Guinea SBU (1988-1995); and Senior Advisor, Indonesia SBU, COPI (1995 to present). John currently manages Chevron's Caltex Pacific Indonesia (CPI) interest in science and personnel matters, new venture efforts, technology transfer and utilization, exploration methods and efforts, and technical project cost recovery.

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