NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

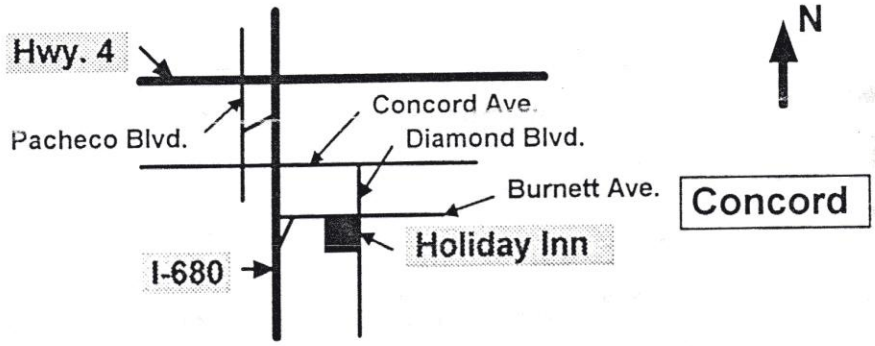
MAY MEETING ANNOUNCEMENT

DATE: Thursday, May 15, 1997

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 recorder at 510-842-0592 anytime before the meeting.



SPEAKER: David L. Jones, Professor Emeritus, U.C. Berkeley

UPLIFT OF THE SIERRA NEVADA: FACT OR FANCY?

Uplift of the Sierra Nevada can be separated into two phases: 1) pre-Eocene uplift and exhumation of Jurassic and Cretaceous granitoid and metamorphic rocks from mid-crustal depths, with development of a regional erosional and depositional surface on these once-deeply buried rocks; and 2) postulated post-Eocene uplift due to block rotation in several stages, with cumulate uplift of the crestal region of 5,000 feet or more. Evidence for the pre-Eocene uplift is profound and well documented; evidence for post-Eocene block rotation is equivical and possibly wrong. The relation of regional Neogene faulting to uplift remains poorly understood, but local uplift within the range may have resulted from this activity. The driving force for quaternary canyon cutting may be the combined result of climatic changes coupled with local depositional and tectonic events. This presentation will explore these aspects of the Sierran uplift, discussing the evidence for the various interpretations.

(continued on the back page of the newsletter)

NCGS Spring 1997 Calendar

May 15, 1997 **Dr. Davey Jones, U.C. Berkeley**

"Uplift of the Sierra Nevada: Fact or Fancy"

Concord Holiday Inn, 1050 Burnett Ave., Concord; 6:30 p.m. Social; 7:00 p.m. talk
$5.00 cost; no meal

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June 14-15, 1997 **NCGS Summer Field Trip (see registration form in newsletter)**

"Gold Deposits of the Sierra Nevada"

Led by: **David Lawler, FarWest Geoscience Foundation**
Dr. Greg Wilkerson, BLM Bakersfield District

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June 19, 1997 **Speaker to be announced, from Chevron Overseas Petroleum**

"Tengiz, Chevron's Super Giant Adventure in Kazakhstan"

Concord Holiday Inn, 1050 Burnett Ave., Concord; 6:30 p.m. Social; 7:00 p.m. talk
$5.00 cost; no meal

To All Members Planning to Attend the June 14-15 *Gold Deposits of the Sierra Nevada* Field Trip

We hope that everyone has noticed that the original date for the trip has been changed to the weekend of *June 14-15, 1997!!*

If you did not notice the change in recent issues of the NCGS newsletter, and will be unable to attend, please contact *Tim Ault* at *510-372-9100 X3160*
He will refund the field trip fee.

We regret any problems that this change in plans has caused you. If you know of anyone who has been inadvertently given a registration form with the old date (one week earlier), please inform them that the date has been officially changed to *June 14-15, 1997.* All other trip information is correct.

NCGS News Notes

Nominations for 1997-1998 Executive Committee

President:	John Karachewski	**President-Elect:**	Dan Day
Vice President:	Don Hill (Field Trip Chair)	**Secretary:**	Clark Fenton
Treasurer:	Ed Simonis	**Program Chair:**	Don Lewis
Scholarship Chair:	currently vacant (must not be from an academic institution)		
Couselors:	Dieter Letsch (Programs)	Bob Horwath (Field trips)	
	William Bailey (Programs)	Greg Bartow (Field trips)	
	Tim Ault (Field Trips)	Frank Picha (Programs)	

If you would like to nominate someone for any of these positions, or would like to serve as Scholarship Chair (must not be affiliated with an academic institution), please contact either **Mel Erskine** at 510-234-6214 / fax: 510-234-5371 / E-mail: **merskine@holonet.net**, or **Ray Sullivan** at 415-338-7730 / fax: 415-338-7705.

Petroleum Exploration Beneath Thrust Belts Discussed at April 24th NCGS Meeting

The April 24, 1997, NCGS meeting was held at Chevron Park, San Ramon, and featured a presentation by **Dr. Frank Picha**, Senior Geologic Advisor, New Ventures, Chevron Overseas Petroleum Inc. Dr. Picha, an expert on compressional tectonics, spoke on ***"Exploration for Hydrocarbons Under Thrust Belts – A Challenging New Frontier in the Carpathians and Elsewhere."*** Born and raised in Czechoslovakia on the western flanks of the Carpathians, and with nearly 20 years on the staff of the Czech Geological Survey, he is quite familiar with this region.

The Carpathian orogenic belt, one of several major thrust belts identified around the world, straddles the Poland-Czechoslovakian border, and extends into the Ukraine on the east and Rumania to the southeast. This thin-skinned thrust belt is one of the oldest petroleum-producing regions in the world, having started its production in the mid-1800's. Formed by the collision of the European and African plates, the Carpathians expose an extensive sequence of sediments representing Devonian carbonate platform development, Hercynian compressional tectonics, Mesozoic (Tethyan) extensional rifting, and Paleogene (Laramide) foreland basin formation. Examples of thin-skinned thrusts were selected from oil fields in the western, northern, and eastern parts of the carpathians, the Adriatic Dinaride thrust belt in Yugoslavia, and thrusts in the southern Apennines of Italy. Each area illustrated two key factors associated with successful hydrocarbon exploration in thin-skinned thrust belts: 1) older geologic structures and reservoir/source rock relationships must be well-understood, and 2) a good understanding of synorogenic structures is critical.

Dr Picha's slides displayed in maps and cross-sections the complexity of both the stratigraphy and the structural geology in these thrust belts. His extensive work in compressional tectonics and orogenic belts has convinced him that substantial undiscovered hydrocarbon plays exist in other thrust belt systems. A major deterrent to commercial production is the depth at which these oil and gas deposits are located. Current oil prices will postpone the exploration and development of these fields until politics, economics, and availability spur interest in this direction. A domestic analogue to the Carpathian complex is the Ouachita Mountains in Arkansas and Oklahoma. Frank's closing remarks emphasized the need for geologists with a good foundation in basic geological concepts as preparation for the challenges presented by petroleum exploration in complex thin-skinned thrust belts. A sound geological background will prove useful to the next generation of exploration geologists as improved 3-dimensional seismic techniques become available for subsurface exploration of deep hydrocarbon plays.

The NCGS wishes to thank Dr. Frank Picha for his stimulating look into the prospects and complexities of petroleum exploration in thin-skinned thrust belts. The Society is also indebted to Chevron Overseas Petroleum Inc. for providing lecture room facilities for this talk at their Chevron Park, San Ramon complex. Thanks also go to our Program Chair, **Don Hill**, of Weiss Associates, for making the arrangements with Chevron for this talk.

Members and Families Enjoy Monterey Aquarium and Moss Landing Marine Research Institutes

Twenty-two enthusiastic NCGS members and their families were treated to two excellent tours of the Monterey Bay Aquarium Research Institute and the Moss Landing Marine Laboratories, and to the world-famous Monterey Aquarium on Saturday, March 15, 1997. The attendees were bussed to Moss Landing, where they were met by **Dr. Gary Greene**, Director of the Moss Landing Marine Laboratories. Dr. Greene, formerly of the USGS, Menlo Park, gave the group a synopsis of the 30 year-old laboratory complex, a non-profit educational and research institution operated by a consortium of seven California State University campuses (Fresno, Hayward, Monterey Bay, Sacramento, Stanislaus, San Francisco, and San Jose). The Laboratories started as a remodeled sardine factory in 1966, and has grown to be an internationally renowned marine institute whose gradautes are respected scientists, teachers, and resource managers. The institute offers undergraduate and masters degrees in Marine Science through the CSU consortium members. Its cirriculum includes 20 undergraduate and 24 graduate courses in marine biology, oceanography, and marine geology taught by a faculty of 15. Key research areas include marine life habitat analysis for dimiinishing species, studies of Monterey Bay tectonics and seismicity, and characterization of cold seeps and associated chemosynthetic biological communities in the Monterey Bay submarine canyon. Dr. Greene also presented plans for the new Moss Landing Marine Laboratory facility that will replace the temporary one now being used. The previous facility was severely damaged in the Loma Prieta earthquake and had to be abandoned for these quarters and classroom facilities in Salinas.

The next stop was just down the street at the Monterey Bay Aquarium Research Institute. "MBARI" is a state-of-the-art marine research laboratory generous funded by the Packard Foundation. Our host, **Dr. Debra Stakes**, gave trip members an excellent introduction to the laboratory, its current research objectives, and future plans for exploring Monterey Bay and seamounts / spreading center complexes off the west coast of North America. Afterwards, everyone was treated to a tour of the laboratory facility, and an introduction to some of the research projects the staff is engaged in. MBARI is fortunate to have a remote oceanographic vessel, the ***Ventana***, at its disposal. This ROV has been used to explore and sample the granitic rocks exposed in the submarine canyon walls off Moss Landing. On-going projects made possible by this ROV include a novel network of in-situ seismic stations located in boreholes drilled into solid rock by the Ventana. This technique eliminates much of the background noise encountered with free-floating seismometers tethered to the ocean bottom. The seismometers embedded in these holes were designed by the Jet Propulsion Laboratory in Pasadena.

Our final stop was at the world-famous Monterey Bay Aquarium in Monterey. For those who have never been there, this was truly the highlight of the trip. The Aquarium encompasses all aspects of California coastal marine environments and the offshore deeps of Monterey Bay Canyon. Visitors are treated to numerous carefully-maintained exhibits, and to several "hands-on" displays of live marine life handled by a staff of trained docents. The facility also houses an auditorium and a small theater for feature presentations, a cafe, and a souvenir bookstore. Attendees were fortunate to enjoy a new special exhibit "Fishing for Solutions," designed to explore the problems that are facing the world's fisheries, with particular emphasis on the shrimp industry.

The NCGS thanks **Mel Erskine** for his part in assembling this educational family event, and to **Tim Ault** and **Tridib Guha** for providing food and refreshments. Tim also deserves credit for handling the registration bookwork. Our special thanks to **Dr. Gary Greene** of the Moss Landing Marine Laboratories, and to **Dr. Debra Stakes** of MBARI, who took time from their busy schedules to speak to the group. A final note of thanks goes to **Sierra Pacific Tours** of Concord, which provided a comfortable bus and a friendly driver, **Dick Childs**, to transport the group on this venture.

Literature available at the Moss Landing Marine Laboratory introduced its visitors to "This Friends of Moss Landing Marine Laboratories," a non-profit organization with over 200 members that supports the MLML in furthering research, education, and conservation in marine and coastal environments. Membership includes subscription to the quarterly newsletter, The Wave; advanced notices about Friends activities, including Community Seminars, Open Houses, and other functions, discounts to Friends events; and other benefits sponsored by the organization. Annual dues are $15.00 for students and senior citizens, $25.00 for individuals, and $35.00 for families. For a membership form and more information about "Friends of MLML," please call (408) 755-8650.

NCGS 1997 SUMMER FIELD TRIP

GOLD DEPOSITS OF THE SIERRA NEVADA

June 14 (Saturday) and June 15 (Sunday), 1997

Led by: David Lawler, FarWest Geoscience Foundation
Dr. Greg Wilkerson, BLM Bakersfield District

The Northern Sierra Nevada region represents one of the most fascinating, but complex, geological provinces in Northern California. The highlights of this trip will focus on site visits to several active placer and lode gold mines in Nevada and Sierra counties where both the bedrock and economic geology aspects of these deposits will be discussed.

The Alleghany Mine District in particular contains world-class high-grade lode gold deposits where exposed in ultramafic rocks, as well as in metasediments and metavolcanic sequences of the highly dissected drainages of the Middle and North Forks of the Yuba River. Attendees will examine sedimentary exposures of the vast early Tertiary-age ancestral Yuba River System in part created by hydraulic gold mining operations during the last century. Placer gold resources produced from this ancient auriferous fluvial system figures prominently in the historical and economic development of California. Tectonic and geological aspects of the Sierra Buttes-Gold Lakes Basin District of Sierra County and the Taylorsville-Indian Valley-Quincy District of Plumas County will also be examined. The Cretaceous Chico Formation exposures and the Cherokee Hydraulic Mine site in the Pentz-Durham Valley of Butte County via the Feather River Canyon will be the final stop.

Time: **Depart on Saturday, June 14, 1997 Concord - 7:30 a.m. / Sacramento - 9:00 a.m.**
Return on the evening of Sunday, June 15, 1997.

Departure Points: **Concord - Chevron Parking Lot** (2101 Diamond Blvd.): exit I-680 at Willow Pass Rd. Go east one (1) block and turn left onto Diamond Blvd. **Sacramento - location to be announced.**

Cost: **$85 for members; $100 for nonmembers (no exceptions).** This fee includes trip guidebook, transportation, meals, refreshments, and lodging at San Francisco State University Camp.

---REGISTRATION FORM FOR "*GOLD DEPOSITS OF THE SIERRA NEVADA*" FIELD TRIP---

Name _____

Address _____

Telephone _____ **E-mail / Fax** _____

Vegetarian (circle if yes) **Will provide a van for transportation: Yes No (circle one)**

Make checks payable to NCGS, and mail with this registration form to:

Tim Ault, Field Trip Coordinator, 125 Banbury Way, Benicia, CA. 94510

PLEASE NOTE: ***Attendance is limited, and on a first come - first serve basis. However, preference will be given to persons providing vehicles (mileage will be paid by the NCGS). There will be moderate uphill hikes to numerous sites.***
PLEASE remember to bring a sleeping bag!

For questions call David Lawler at 510-549-9694; Tim Ault at 510-372-9100 (days); or Tridib Guha at 510-370-0685 (evening).

Dr. David L. Jones is a recent (1997) Professor Emeritus of the Department of Geology and Geophysics at the University of California, Berkeley. He received his Ph.D. in Geology from Stanford University in 1956, and worked at the U.S. Geological Survey from 1955 to 1985, when he joined the Geology Department at U.C. Berkeley. His special interests include the geology of western North America; the origin and character of accreted terrains; the sedimentology, paleontology, and geochemistry of radiolarian cherts; the tectonics of the san Andreas Fault system; and the crustal evolution of the California Coast Ranges and the Sierra Nevada. Dr. Jones has spoken to the NCGS in recent years on the tectonics of the Coast Range in the Bay Area. We are delighted to have him speak to our members again on a topic that anticipates our June 14-15, 1997 ***Gold Deposits of the Sierra Nevada*** field trip.

Chevron's Tengiz Oil Field Venture the Topic of June 19th Meeting

Our able Program Chair, **Don Hill**, has made arrangements with Chevron Overseas Petroleum Inc. to provide a speaker for the Thursday, June 19, 1997 NCGS evening meeting at the Concord Holiday Inn. Don has worked hard to get this fascinating topic for the final meeting of our Spring 1997 speaker season. Many members, particularly past Chevron employees and retirees, have expressed interest this massive project, which has appeared in major Bay Area newspapers and represents a major departure from Chevron's normal business approach to foreign ventures of this magnitude.

Topics to be covered by this presentation include the geological setting of the deposit, descriptions of the reservoir rocks and petroleum reserves, a discussion of the production challenges facing Chevron in this land-locked oil field, and the unique circumstances involved in developing a major oil field with a newly emerged CIS nation.

This talk should provide some very interesting insights into this crucial venture, and some revelations regarding Chevron's long term business strategies as we enter the 21st Century. Don't miss this opportunity to learn about a major international business alliance that rocked the petroleum industry!

NCGS
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