AUGUST 2003
MONTHLY MEETING

Date: Monday, August 4, 2003
Time:
6:00 P.M. – Social Hour
7:00 P.M. – Dinner
8:00 P.M. – Presentation

Place: Wyndham Garden Hotel in Costa Mesa. See enclosed map

Cost:
$22 - RESERVATION FEE - when made before noon on Friday prior to meeting
$12 - STUDENT FEE - includes a free gift for first-timers!
$5 - LATE FEE - (for reservations made after noon on Thursday, July 31, 2003)

RSVP: For Reservations please contact Leighton and Associates, Inc. at (949) 250-1421, ext. 570 by noon on Thursday, July 31, 2003. Please spell your name for the recording. Late reservations/cancellations are preferred over walk-ins or no-shows. Fees payable at the meeting.

The Monterey Formation in the San Joaquin Hills, Orange County, California: Preliminary Sedimentologic and Diagenetic Findings

By Dr. Richard J. Behl

The Los Angeles Basin is a famously prolific petroleum-producing province and the Miocene Monterey Formation is the likely source of much of its oil. Much of the development in the San Joaquin Hills, and now in San Clemente, is built on the Monterey Formation, as well. In spite of this significance, only one portion of extensive Monterey outcrops in the southwestern LA basin - the Newport Back Bay (NBB) section - has been extensively studied for publication, and that was primarily for its biostratigraphic and paleoceanographic record. Remarkably little is known of the fundamental sedimentology of the Monterey in the San Joaquin Hills of coastal Orange County. As part of a collaborative research/outreach program, we are conducting a stratigraphic, lithologic, geochemical, and diagenetic investigation of the Monterey between Newport and Laguna Beach. In addition to characteristic Monterey lithologies (diatomite, siliceous shale, dolostone, porcelanite, and chert), local facies include abundant turbidites, leaf- and twig-bearing shales, and large (1-5m diameter) wood-nucleated dolomitic concretions, suggesting a relatively proximal depositional environment. The study area also contains distinct canyon-fill facies of interbedded hemipelagic sediment, intraformational conglomerate/breccia, and massive sandstone. Much of the formation is tightly folded and cut by low-angle, sometimes bedding-parallel, faults. At present, we are unable to unequivocally distinguish synsedimentary from postdepositional deformation at all scales.

Increased burial from NBB to the south end of Crystal Cove State Park (CCSP) is indicated by the silica phase of fine-grained rocks. The NBB area consists mostly of opal-A phase diatomaceous lithologies. Increased diagenesis to the south is shown by a transition to opal-CT around Corona Del Mar and to diagenetic quartz in the coastal CCSP area. Different diagenetic grade at the top of the Monterey section in NBB and CC indicates at least 600m greater burial at CC than at NBB before uplift. Total Organic Carbon in the mudrocks ranges from <1% to 5%, making the Monterey a potential petroleum source rock in the area. Oil saturated sandstone and oil-coated fractures indicate that petroleum migration has occurred locally.

Further study will investigate lateral and vertical facies variation, the timing of deformation, and employ additional methods to determine maximum burial depth. We are also studying the diagenesis and properties of common schist-bearing sandstone beds.

About the Speaker:

Richard J. (Rick) Behl is Associate Professor of Geological Sciences at California State University, Long Beach. Rick earned his Bachelors degree at the University of California San Diego before working as a wellsite geologist in the petroleum and geothermal energy industries. Becoming fascinated by important fractured chert reservoirs in the Monterey Formation, he completed his Ph.D. in Earth Sciences at University of California (UC) at Santa Cruz on the sedimentology and diagenesis of continental margins and deep-sea upwelling zones. Rick then went to UC Santa Barbara as a post-doctoral fellow where he began ongoing paleoceanographic research into Quaternary climate change. He is widely published (Nature, Science, Geology, USGS Bulletin, GSA and AGU Special Publications), has participated in several expeditions of the Ocean Drilling Program and other international coring programs, and has led numerous field
trips for professional organizations and international conferences. At Long Beach State, Rick teaches classes in Sedimentology & Stratigraphy, Sedimentary Petrology, Petroleum Geology, Oceanography, and Earth Systems & Global Change. Rick has been selected to be a Distinguished Lecturer for the American Association of Petroleum Geologists in the 2003-2004 year.

ANNOUNCEMENTS

A Call for Papers: Plans for the South Coast Geological Society's (SCGS) annual field trip to be held sometime in late October or early November are underway. The theme of the trip is “The Elsinore fault and gem bearing pegmatites between Palomar Mountain and the Coyote Mountains, San Diego County, California”. If you can contribute a paper pertaining to the geology, geomorphology, mining, history, or biology of the general area in which the field trip will take place, please consider submitting it for publication in the guidebook. The trip and guidebook will be a joint effort of the San Diego Association of Geologists and the SCGS. For more information, please contact Mike Hart (mwhart@AOL.com) or Monte Murbach (mmurbach@AOL.com).

SCGS 2003 Directory: Through the efforts of Larry Cann (SCGS Historian), Joan Baldwin and Marina West, a directory of SCGS members now available for sale. The Directory is available for $2.00, plus postage and for an additional $1, a color photo collage of past fieldtrips will be included with the Directory.

Employment Opportunities:

LEIGHTON & ASSOCIATES, Inc., a leading geotechnical consulting firm, wants you to join our team of engineers and geologists. We offer exciting opportunities and professional challenges in a team oriented environment. Immediate openings for staff geologists and geotechnical engineers of all levels are available in our six regional offices. See our website (www.leightongeo.com) for more information. Send your resume in confidence to:

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Employment Opportunity: Ninyo & Moore’s Orange County office announces immediate openings for Senior, Staff Engineers, with 3 plus years of experience. Resumes should be submitted to the attention of Ms. Ruth Dolecki at: Ninyo & Moore, 475 Goddard, Suite 200, Irvine, CA 92618. Additional information may be obtained at www.ninyoandmoore.com. (EOE)

SCGS Sponsors: SCGS would like to thank our corporate and individual sponsors for 2002 and hope they will continue their support again this year. The generosity of our sponsors help defer much of the financial burden the membership would otherwise have to shoulder. As a new year begins we once again ask for your generous support of our upcoming endeavors. Sponsors are listed in the monthly newsletter, displayed on the SCGS website, recognized in the fall fieldtrip guidebook, and provided a complimentary copy of the guidebook. There is always room for additional participants!

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NEXT MEETING:
Monday, September 8, 2003
Wyndham Garden Hotel, Costa Mesa
Our speaker and topic to be announced.