



March 2016

LOS ANGELES BASIN GEOLOGICAL SOCIETY MEETING ANNOUNCEMENT

March 24 (Thursday)

James R. Boles

Professor Emeritus, UC Santa Barbara Department of Earth Science

FAULT-RELATED MANTLE HELIUM, LOS ANGELES BASIN, CALIFORNIA

Co-authors:

**Grant Garven, Tufts University; Hilario Camacho, Occidental Oil and Gas Corp;
and John Lupton, NOAA Pacific Marine Environmental Laboratory**

Abstract

Mantle helium with $^3\text{He}/^4\text{He}$ ratios as high as 5.3 times air ratios are found in gas from deep oil wells along the 50 km-long Newport-Inglewood fault zone (NIFZ) within the Los Angeles (LA) basin. Up to 66% of the He gas is derived from the mantle. The $^3\text{He}/^4\text{He}$ ratios along the NIFZ are significantly higher than for other faults and areas sampled within the basin. Surprisingly, the NIFZ is currently in a transpressional rather than tensional stress regime and lacks both high thermal gradients and recent magma emplacement, all of which typically characterize crustal areas with high $^3\text{He}/^4\text{He}$ values. $\delta^{13}\text{C}$ data for CO_2 suggests two types of CO_2 in the basin: CO_2 resulting from methanogenic processes and mantle CO_2 associated with the high R/Ra helium values. Our results demonstrate that the NIFZ is a deep-seated fault in communication with the mantle, in spite of being modeled as truncated by a proposed major, potentially seismically active, decollement beneath the LA basin.

The implications of these results for seismic hazard are uncertain and can be interpreted with contrasting views.

Speaker's Biography

Professor Boles taught at UC Santa Barbara for 35 years, specializing in sedimentary petrology, geochemistry, petroleum geology, and field geology. He is still active in leading field trips and working on collaborative research projects. Most of his more than 110 published papers involve some aspect of diagenesis.

He has been a consultant to numerous oil companies and also environmental and engineering geology companies. He was educated at Purdue University (BS), University of Wyoming (MS), and University of Otago in New Zealand. Aside from his science interests, he is owner of and chief mechanic for a United States Auto Club sprint car and he builds black powder cannons and rifles.

Meeting Time, Place, Cost and Reservations

Time:

Thursday, March 24, 2016

Meeting Agenda

Lunch Served: 11:30 AM to 12:00PM
Announcements: 11:45 AM to 12:00 PM
Guest Speaker: 12:00 PM to 12:45 PM
Questions/Close: 12:45 PM to 1:00 PM

Place:

The Grand at Willow Street Conference Center located at 4101 East Willow Street, Long Beach, CA. (562-426-0555). Take Lakewood Boulevard south from the San Diego Freeway (405), turn west onto Willow Street, and turn right onto Grand Avenue at the sign for the Center. Park free in the garage structure.

Cost:

Lunch and Speaker: \$25.00 with reservations
\$30.00 without reservations
Retired: \$20.00
Student: \$5.00

Meeting Reservations:

We encourage you to make your reservations using the LABGS web site, at www.labgs.org

Otherwise, call Ryan Weller at (562) 637-6019, or e-mail ryweller@gmail.com.

PLEASE Make: ☺ Reservations must be made by 10:00 AM Tuesday morning prior to Thursday's meeting to receive discount price noted above. As always, walk-ins are welcome.

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APRIL MEETING

“SNEAK” PREVIEW:

Speaker: Robert W. Clayton

Topic: Structure of the Los Angeles Basin Revealed by Dense Seismic Surveys