



San Joaquin Geological Society

Date: Tuesday, May 9, 2017

Time: 6:00 PM Social Hour
7:00 PM Dinner
8:00 PM Lecture

Place: Eagles Lodge
1718 17th Street, Bakersfield, CA 93302

PSAAPG Members & Mesozoics
\$25 with reservation
\$30 without reservation

Non PSAAPG Members
\$30 with reservation

Full-time Students with ID:
\$10 - Courtesy of Chevron &
California Resources Corp.

*** RSVP ***

By: Sunday, May 7, 2017

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<http://www.SanJoaquinGeologicalSociety.org/>

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The Lost Hills Lower Brown Shale: A diagenetic-stratigraphic trap in a Miocene diatomite reservoir, San Joaquin Basin, California

Presented by: Mike Clark, Aera Energy

Abstract: The Lower Brown Shale (LBS) play on the south flank of Lost Hills anticline in the San Joaquin basin, California produces gas where a Miocene channel-levee complex intersects the diagenetic transition where diatomite in the Opal CT silica phase (porcellanite) transforms to brittle Quartz (chert). Although the levees produce some gas, most production derives from a 1-km wide channel containing 1 to 5 sandy diatomite beds, each <9 m (<30 ft) thick and separated by sand-poor diatomites. The sand-rich beds in logs and core stand out as high-resistivity (<1.4 ohm-m) intervals, called "lobes", containing, thin (<10 cm thick), ripple-laminated sandstones. Correlation of lobes to sonic travel times <150 msec indicates fracturing, whereas sand-poor beds between lobes are unfractured. Interestingly, the "interlobe" diatomites are Opal CT, whereas the lobes are Quartz phase. Apparently, sand grains facilitate the CT-Quartz transformation at Lost Hills at burial depths below 1.3-1.4 km (4,000-4,500 ft). By contrast, sand-poor diatomites remain Opal CT at the same depths. Most likely, the entire LBS interval contains gas, but the quartz-phase rocks fracture easier. Thus, where the channel-levee complex intersects the CT-Quartz transition, sandy diatomites in both channel and levee facies produce, provided these beds are fracture stimulated. Previously considered a secondary target, the LBS diagenetic trap is now the primary completion objective at south Lost Hills. Because the CT-Quartz transition extends around the basin perimeter, similar traps elsewhere in this basin are likely, as well as in other diatomite basins, such as the Sakhalin basin of easternmost Russia.

Biography:

- PhD in 1981 from Colorado School of Mines
- Worked for several energy companies over the last 30 years, including 10 years as an independent consulting geologist
- Employed for the last two years as a geologist at Aera Energy in Bakersfield
- Past-president of the San Joaquin Geological Society, and recipient of the Distinguished Service Award from the Pacific Section of AAPG

We will "Pass the Hat" to benefit the Buena Vista Museum of Natural History & Science. Cash, Checks, or Credit cards are welcome!

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