



San Joaquin Geological Society

Date: Tuesday, December 10th, 2013

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

Place: American Legion
2020 H St. Bakersfield, CA 93301

PSAAPG Members & Mesozoics
\$25 w/ reservation
\$30 without reservation

Non PSAAPG Members
\$30 w/ reservation

Full-time Students with ID:
Free, Courtesy of Chevron & Occidental

SJGS WEBSITE

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

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Petrographic, Log and Lithologic Interpretations of an Upper Miocene Diatomite Core Well 35MBC-302C, Midway-Sunset Field, San Joaquin Basin, California (Section 35, T12N-R24W, MDBM, Moco Lease)

Bonnie Bloeser, Development Geologist
Diatomite Thermal Recovery Team - Aera Energy, LLC

The Upper Miocene Monterey Formation, Reef Ridge diatomaceous units of the Midway-Sunset Field are hydrocarbon charged and occur as thick accumulations or as interbedded horizons within turbidite sequences. The opal-A diatomite silica phase trends across much of the Midway-Sunset(MWSS) Field and is recognized as a reservoir of increasing economic importance. Hydrocarbon production from clastic Miocene reservoirs is approaching thermal maturity in numerous producing leases of MWSS thus leading to exploitation of opal-A and opal-CT diatomite reservoirs. Diatomite reservoirs will likely be prominent players in the remaining hydrocarbon reserve potential of the San Joaquin Basin. Sub-meter scale reservoir property characterization and modeling of these siliceous reservoirs is essential to unlocking their realized hydrocarbon potential. The unique attributes of an opal-A diatomite reservoir are best understood by characterizing not only the first order log derived diatomite cycles (~ 7 meter scale) but also by special core analysis and rock mechanics of meter to micron scale frequencies. Pairing electric log evaluation with petrophysical rock properties derived from core analysis will aid in property modeling validation throughout the basin. Well 35MBC-302C (API 040302185000), drilled by Aera Energy LLC in 2003 to a total depth of 1274' and completed in Monarch turbidites, was continuously cored in the "Monarch Diatomite", an informal unit in the Reef Ridge diatomite reservoir, for the purpose of lithofacies characterization and reservoir assessment. Core samples for routine PKS (porosity, permeability, saturation) analysis were sampled every foot but was resampled in 2011 for additional reservoir understanding. Selected intervals for this study were identified from the gamma ray (GR) log curve to define mineralogy changes, particularly clays, in response to specific diatomite cycle signatures. Diatomite cycles are correlated based on the GR log signature and serve to define and distinguish lithologic intervals in this core. The Monarch Diatomite interval in this well exhibits two ~20 meter thick intervals that are composed of three 5-8 meter cleaning-upward cycles. Core samples for X-ray diffraction (XRD) analysis were selected from low, intermediate and high GR response end-members of multiple cycles to determine clay volume, mineralogy and organic matter variations. The Monarch Diatomite opal-A reservoir is defined by cleaning-upward depositional cycles in the GR log that correlate to varying clay content, as verified by XRD analysis and petrography. The cycles are poorly visible in standard core photography, but contrast enhancement of the white light and UV light images reveals that the highest oil saturation corresponds to low GR log response which are those cycle signals with low total clay content.

Bonnie Bloeser – Bio

Bonnie Bloeser received a BS and MS in Geology from the University of California, Los Angeles (1978) where her graduate research on Neoproterozoic biostratigraphy led to the discovery of a diverse microbiota in organic rich shales of the Chuar Group, Grand Canyon Supergroup, Arizona. Her work on stromatolites of the Newland Limestone, Belt Supergroup, Montana, the Grand Canyon Supergroup shales and on extant algal mats in a hypersaline lagoon, Baja Mexico, were published in Science, Journal of Paleontology and Journal of Sedimentary Petrology respectively. She joined Texaco, Los Angeles Division, in 1978 and initially worked on a joint venture with Tenneco to develop the Yowlumne Field, San Joaquin Basin, CA. Assignments in the Exploration Department for the evaluation of petroleum systems and prospect generation on Outer Continental Shelf leases in the Beaufort, Chukchi, and Bering Seas, Alaska and in the Santa Maria and Santa Barbara basins, California, led to Texaco's successful bid and drilling on various OCS parcels. In 1990 she joined Unocal, Los Angeles, as the exploration geologist for offshore Myanmar (Burma). She was instrumental, along with the geophysicist on this project, in the discovery of the multi-TCF Yadana Gas Field, Gulf of Martaban Basin, Andaman Sea (now operated by Total and Chevron). She also worked on Unocal Canada's unconventional shale prospects based on her knowledge of Proterozoic microbiotas and stromatolites. In 1994 she moved to San Diego and worked at Scripps Institution of Oceanography, UCSD, in Dr. Charles Keeling's Carbon Dioxide Research Group. While employed in Keeling's laboratory at SIO, she had the opportunity to participate in cutting edge research of carbon dioxide sources and sinks. She joined Aera Energy in 1997 as a development geologist with surveillance assignments in the San Ardo, Coalinga and Midway-Sunset Fields. She is currently assigned to the Diatomite Thermal Recovery group working on diatomite appraisal and development opportunities in the Midway Sunset Field. She has taught geology at the University of San Diego, San Diego State University, and Mira Costa and Palomar Colleges. She has served on various Pacific Section AAPG and SEPM committees throughout her career and has held officer positions (past President of the Los Angeles Basin Geological Society, Treasurer of the Pacific Section SEPM and past President of PSSEPM).

*** RSVP ***

By: Friday, Dec. 6th, 2013

By Replying to this email

or by phone 412-5143

or PayPal on the Website:
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