



San Joaquin Geological Society

Date: Tuesday, May 10, 2016

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 8, 2016

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Chevron

aauffant@chevron.com

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Courtney Marshall

CRC

courtney.marshall@crc.com

SECRETARY

Beckie Burston

Chevron

661-654-7689 office

661-364-4845 cell

BeckieBurston@chevron.com

rburston8484@att.net

TREASURER

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CRC

goofeesh@yahoo.com

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Aera

gsgordon@aeraenergy.com

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Application of global deep-water outcrop belts to exploration and field extension in Ventura Basin, California

Presented by: Jonathan R. Rotzien, Basin Dynamics, LLC

Abstract: Exploration and field extension wells drilled in the Ventura Basin continue to face key geologic risks including reservoir presence and reservoir deliverability. In particular, the Pliocene deep-water Pico and Repetto formations show a broad spectrum of lithofacies, depositional architecture, and reservoir quality over a stratigraphic interval exceeding 5000 m in the deepest parts of the basin. Further, a number of industry-sponsored studies have argued that the depositional environment for these formations ranges from leveed channels, to sandstone-rich lobes that take the shape of their sub-basin container, to braided lobe complexes that likely represent the deep-water equivalent to coarse-grained and gravelly terrestrial braided systems. Clearly, there is room to enhance the understanding of the sedimentology, stratigraphic architecture in target intervals, and reservoir characterization in this basin.

One of the methods to better understand the uncertainty in Ventura Basin reservoirs is via the study of global outcrop analogues. This presentation features segments of three of the most thoroughly studied and classic deep-water outcrop belts from the West Clare Basin, Ireland, to the Paleogene basins of Southeast France, to the Cretaceous Great Valley and Rosario groups, California, to highlight the stratigraphic complexities and similarities of each system to the Ventura Basin. The history of exploration into these turbidite-dominated outcrops began well over a half century ago and inspired the famous work that led to the identification of Bouma and Lowe division terminology. Today, these systems remain relevant as reservoir analogues for petroleum provinces and will continue to be useful for years as the nature of industry challenges evolve.

Despite decades of research, two important questions have not been solved using the deep-water outcrops in Ireland, France, and California. Using a core drilled through these outcrops, (1) can depositional environment be distinguished and lateral bed continuity be estimated using a process sedimentology approach, and (2) can deep-water sandstone margins be recognized and predicted? These questions address reservoir extent and reservoir quality using common core data that would be acquired in a routine drilling program. Characterization of high resolution stratigraphic data including grain size, sedimentary process, bed thickness, and bed length from previously unpublished sections in each system reveals the range of solutions to both questions as well as the applicability of the data in quantifying geologic risk and reducing uncertainty in modern Ventura Basin drilling programs.

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